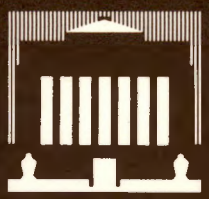

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TWO CANADIAN INVESTMENT OUTLOOK SURVEYS: AN OVERVIEW AND A REVIEW

by
Brian O'Reilly

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ABSTRACT

In this report the author studies the forecasting performances of Statistics Canada's Private and Public Investment Survey and the Industry, Trade and Commerce Large Corporation Investment Survey. The aims are to discern any effects of systematic biases and to find evidence of a link between the forecasts and final outturns of both surveys and the actual evolution of aggregate economic activity. In order to do this, various descriptive statistics including regression results, all based on growth rates calculated from the survey data, are presented and analyzed for different subperiods.

The results suggest that certain systematic deviations between investment intentions reported by survey participants and final investment outturns do exist at each of the various stages of both surveys. In addition, with respect to the Statistics Canada survey, there appears to be some relationship between these biases and the cyclical stages of economic activity.

RESUME

Dans le présent rapport, l'auteur étudie les résultats des prévisions publiées par Statistique Canada dans son enquête sur les Investissements privés et publics et par le ministère de l'Industrie et du Commerce sur les Investissements des grandes entreprises. Il cherche à cerner les effets que pourraient produire les biais systématiques et à déceler un lien possible entre ces prévisions, les conclusions des deux enquêtes et l'évolution effective de l'ensemble de l'économie. Pour y parvenir, l'auteur a produit et analysé pour diverses sous-périodes des statistiques descriptives (y compris les résultats des analyses de régression) basées sur les taux de croissance calculés à partir des données des enquêtes.

Les résultats de l'étude semblent indiquer que chacune des étapes de l'une et l'autre des enquêtes comporte certains écarts systématiques entre les intentions d'investissement communiquées par les participants à l'enquête et les investissements effectués en réalité. Par ailleurs, en ce qui concerne l'enquête de Statistique Canada, il semble exister un certain rapport entre ces biais et les phases conjoncturelles de l'activité économique.

1. INTRODUCTION

Since the Second World War, the volume of business fixed investment excluding residential construction has accounted for about 14 percent, on average, of Canada's real Gross National Expenditure. In some of these years, moreover, the proportional contribution of business investment to the total growth in real output has been substantially greater than 14 percent. Because business expenditures can play such an influential role in the cyclical fluctuations of the economy, it is important to be able to forecast investment outlays accurately. There are two major investment surveys currently used by forecasters - the Statistics Canada Private and Public Investment (P&PI) survey, and the Industry, Trade and Commerce (IT&C) large corporation survey. In light of the over-all significance of business investment, this paper will attempt to determine how closely the recorded investment intentions of these surveys correspond to the actual outturn figures ultimately shown by them.

The Statistics Canada Private and Public Investment survey of nominal investment expenditures is the more comprehensive of the two surveys (some 24 thousand establishments are surveyed). While it provides outlook information[1] on one year only, the P&PI survey does present four consecutive observations on that year over a two-year period, thus allowing some assessment of whether the results from each successive stage of the survey become more accurate in predicting the final outturn. The findings of the P&PI survey, disaggregated on the basis of the

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1. See sample questionnaires in Appendix 4 for exact detail of information requested.

Standard Industrial Classification[2] and for national and provincial breakdowns, are provided in two annual publications[3] in the following sequence. The results of the first stage of the survey on a given year are usually available by the end of February of the year in question and thus constitute a forecast of intentions for that year. By the end of July, another survey is conducted and mid-year or revised investment intentions data (revised forecast) are published. Finally, in February of each of the two succeeding years, 'preliminary actual' and 'final actual' figures become available. These figures, after certain adjustments (discussed in Section 2.1), form the basis for estimates of private business investment expenditures (excluding housing but including government business enterprises) in the National Income and Expenditure Accounts.

Although the Industry, Trade and Commerce large corporation survey uses a smaller sample coverage (around 300 large corporations which represent some three thousand establishments), it collects figures on businessmen's expectations regarding investment outlays over a longer time horizon (up to five years into the future). Not only is this longer time frame of interest to the extent that it allows analysis of the evolution of investment intentions over a more extended period, but it also implies the earlier availability of information on businessmen's investment intentions for any particular year. It should be noted that in recent years IT&C has published the information relating to the five-year-ahead forecasts in index number form only, and in its press releases has discussed this medium-term forecast as a whole rather than on the basis of individual

2. Statistics Canada, Standard Industrial Classification Manual: Revised 1970, Catalogue No. 12-501.
3. See Sources in Appendix 1.

years.[4] However, the data on the upcoming year are available some months in advance of those from the P&PI survey (see Table 12).

The research reported in this study emphasizes the relationship between intentions and actuals measured in terms of percentage changes since forecasters of investment activity are mainly interested in growth rates. There are several objectives of this research. The usefulness of survey data as indicators of the actual growth rate in business investment for selected aggregations is assessed. In addition, evidence of systematic errors that may indicate possible ways of adjusting the survey results is sought. The successive stages of each survey are examined for signs of improvement in the forecast performances of the revised, as opposed to the earlier stages of the surveys. As well, some comparison of the ability of each survey to predict its own final results is made. The approach used includes the presentation of descriptive statistics on the survey results, descriptive statistics on the relationship between the forecast and actual growth rates, and some regression results. It should be noted that the focus on percentage growth rates is somewhat different from the approach used in earlier studies[5] of the forecast performance of the P&PI survey.

In his 1965 study, R.A. Holmes concentrated on the accuracy of the P&PI forecast surveys of manufacturers' capital and repair expenditures for seventeen individual manufacturing industries as well as the aggregate over the 1952-60 period. Two specific null hypotheses were put forth: (i) "That the mid-year revised forecast is no more accurate than the original forecast"; and

4. See IT&C, News Release, Capital Investment Intentions Survey of Large Corporations, June 11, 1980 and Report of the IT&C Capital Investment Intentions Survey Conducted in April 1980, June 1980.
5. The Tanner (1972), Hodgins and Tanner (1973), Tanner (1974) and Kenward (1976) studies are not discussed here since their focus was somewhat different. Daub (1980) is currently in the preliminary stages of his evaluation of the IT&C survey, so it is difficult to make statements about his work.

(ii) "That neither the original nor the revised forecast is more accurate than estimates obtained from naive forecasting models" (Holmes, page 243). These hypotheses were tested using Fisher's Z transformation of correlation coefficients, with the aid of constructed accuracy indexes (Holmes, page 245). With respect to the first hypothesis, Holmes noted that "the revision of the original forecast adds almost nothing to the estimates of original values of capital and repair expenditures, and not significantly more to the estimates of first differences" (page 251). For the second hypothesis, he concluded that "with capital expenditures the surveys perform very well" (page 254). Holmes added that while "the accuracy of the original and revised forecast is not always significantly better than the naive models at the 0.05 significance level, this is generally a result of the large sampling errors of our estimates and not necessarily any indication of weakness in the surveys." (Holmes, page 254.)

Durand and Assayag (1977) used regression analysis to investigate the relationship between investment intentions for both the non-residential construction and machinery and equipment sectors, and the dollar change in the actual investment levels. They considered the aggregate data for the private business sector as a whole and for nine individual sectors over the 1957-72 and 1957-74 periods. In addition, they also analyzed and compared the tracking properties and turning-point predictability performances of the raw (as published by Statistics Canada) intentions data, their corrected (using the results of their regressions) intentions data, and alternative naive models. They found the intentions data more reliable at the aggregated level than at the disaggregated level, although all the intentions models did provide reasonably reliable indicators of turning points in the capital spending cycle. Durand and Assayag concluded that the P&PI survey provided "very useful information on future investment outlays over a one-year horizon" but that the "forecasting accuracy of stated intentions is improved

significantly when correction procedures are employed to eliminate biases in the data" (page 25). In light of their findings they: recommended that the survey results be made available earlier; noted the desirability (from a forecasting viewpoint) of quarterly surveys; and advocated the extension of the time horizon of the survey from a one-year to a two-year period. In addition, they also recommended that some estimate of expected prices be used to "allow forecasters to have a better idea of the anticipated volume of investment, a variable of major interest in the analysis of economic activity" (page 25).

In the next section, the relationship between the P&PI survey results and the estimates of investment levels provided in the National Income Accounts is outlined. Following this, the Private and Public Investment survey and the Industry, Trade and Commerce measures of nominal business investment excluding housing are discussed and compared. Sections 3 and 4 then assess the ability of the P&PI and IT&C intentions surveys, respectively, to predict accurately their own final results. A brief summary and concluding chapter is then followed by four Appendices which provide background on the surveys, a discussion of historical revisions to the P&PI survey, a list of references and some sample questionnaires.

2 A DESCRIPTION OF THE OUTLOOK SURVEY DATA FOR BUSINESS INVESTMENT AND THE RELATIONSHIP WITH NATIONAL INCOME ACCOUNT ESTIMATES

The most widely used measure of business fixed investment excluding residential construction is provided in the National Income and Expenditure Accounts (NIA). As a matter of practice, Statistics Canada uses the final actual level from the Private and Public Investment survey as a benchmark for the NIA estimates. This final actual estimate is available in February of the second year following the year in question. In addition, the various stages of the P&PI survey are used in conjunction with projector series[6] for the machinery and equipment and non-residential construction subcomponents to provide the initial NIA estimates of business fixed investment.

As for the IT&C survey, while its results are not utilized directly to derive an economy-wide measure of business investment, the survey data are available somewhat sooner than those from the P&PI survey (see Table 12). This timeliness should therefore theoretically be an asset to those who need to formulate a view about investment activity before the more comprehensive P&PI survey is released. In what follows, the adjustments that have to be made to the P&PI survey figures for investment by business excluding institutions to arrive at the NIA measure of business fixed investment are outlined, and some comparisons of levels and growth rates are provided. Finally, the differences between the P&PI and IT&C surveys are discussed.

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6. See Statistics Canada, National Income and Expenditure Accounts, Vol. 3, System of National Accounts, Catalogue 13-549-E, (occasional) pp. 229-33 and 377-79.

2.1 The National Income Accounts and the Private and Public Investment Survey Measures of Business Investment

The P&PI survey provides data on all aggregate investment in the economy including that by governments and for housing. The focus in this paper is on aggregate investment data for business excluding institutions which is defined as total investment, less investment by institutions and government departments and for housing.[7] These figures from the P&PI survey are subject to several adjustments to arrive at the National Accounts number. As well as the inclusion of investment by private institutions, these adjustments "... comprise deductions for ... net sales of used motor vehicles, scrap and salvage and an addition for transfer costs of land and existing buildings."[8] Some idea of the relative size and direction of these adjustments may be obtained from Table 1. It can be seen that the adjustments have usually been in an upward direction and that they have exceeded 2 percent of the level of business investment (measured on a P&PI basis) in only three of the years under scrutiny. It should also be noted here that investment by private institutions in 1979 was only about 1 percent of the level of investment for business excluding institutions.

7. Summary Table 1 in Sources [1], Appendix 1.
8. Sources [1] Private and Public Investment in Canada: Outlook 1979, Statistics Canada Catalogue 61-205, footnote 27 on page 46.

Table 1

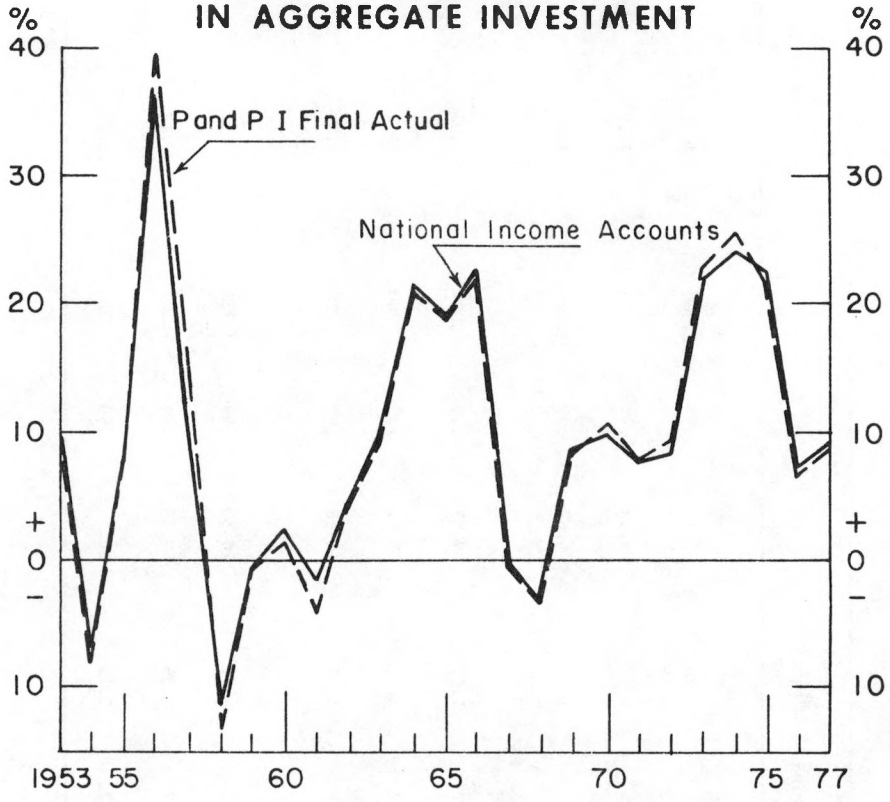
COMPARISON BETWEEN LEVELS AND GROWTH RATES FOR BUSINESS FIXED INVESTMENT:
PRIVATE AND PUBLIC INVESTMENT SURVEY
AND THE NATIONAL INCOME ACCOUNTS

	Levels ($ Millions)			Growth Rates (Percent)		
Year	(1) Private and Public Investment Survey*	(2) National Income Accounts	(3) National Income Accounts minus P and PI Survey as a percentage of (1)	(4) Private and Public Investment Survey	(5) National Income Accounts	(6) Percentage point difference (National Income Accounts minus P and PI Survey)
1953	3,684	3,699	0.4	8.7	9.7	1.0
1954	3,389	3,429	1.2	- 8.0	- 7.3	0.7
1955	3,643	3,689	1.3	7.5	7.6	0.1
1956	5,084	5,031	-1.0	39.6	36.4	-3.2
1957	5,769	5,693	-1.3	13.5	13.2	-0.3
1958	5,000	5,049	1.0	-13.3	-11.3	2.0
1959	4,950	5,006	1.1	- 1.0	- 0.9	0.1
1960	5,015	5,119	2.1	1.3	2.3	1.0
1961	4,931	4,929	-	- 1.7	- 3.7	-2.0
1962	5,122	5,128	0.1	3.9	4.0	0.1
1963	5,591	5,612	0.4	9.2	9.4	0.2
1964	6,760	6,800	0.6	20.9	21.2	0.3
1965	8,037	8,105	0.8	18.9	19.2	0.3
1966	9,781	9,915	1.4	21.7	22.3	0.6
1967	9,709	9,865	1.6	- 0.7	- 0.5	0.2
1968	9,318	9,518	2.1	- 4.0	- 3.5	0.5
1969	10,087	10,332	2.4	8.3	8.6	0.3
1970	11,148	11,342	1.7	10.5	9.8	-0.7
1971	12,010	12,230	1.8	7.7	7.8	0.1
1972	13,132	13,263	1.0	9.3	8.4	-0.9
1973	16,127	16,156	0.2	22.8	21.8	-1.0
1974	20,232	20,022	-1.0	25.5	23.9	-1.6
1975	24,594	24,489	-0.4	21.6	22.3	0.7
1976	26,252	26,256	-	6.7	7.2	0.5
1977	28,505	28,597	0.3	8.6	8.9	0.3

* Final actual level for business excluding institutions calculated from data taken from Sources [2], Appendix 1.

Figure 1

NOMINAL GROWTH RATES IN AGGREGATE INVESTMENT



From Table 1 and Figure 1 it can be seen that the year-to-year growth rates for final actual expenditures by business excluding institutions from the P&PI survey and for nominal business fixed investment from the National Income Accounts are very close. Further confirmation of this relationship is illustrated in Table 2 which shows the results for regressions run at the aggregate level, as well as for the machinery and equipment and non-residential construction subcomponents. These regressions take the form:

Table 2

RELATIONSHIP BETWEEN NATIONAL ACCOUNTS
AND PRIVATE AND PUBLIC INVESTMENT SERIES
(Growth rates, t-values in brackets)

Dependent Variable	Constant	Final actual growth rate	Durbin-Watson	Standard error	Mean	$\bar{R}^2$	F-Statistic	Critical value of F at 5% level of significance
Estimation Period: 1957 to 1977								
Business excluding institutions	.30 (1.18)	.97 (51.63)	2.12	.86	9.07	.99	2,666	4.38
Machinery and equipment	.28 (.95)	.99 (46.42)	2.25	1.02	9.58	.99	2,155	4.38
Non-residential construction	.28 (.86)	.96 (41.56)	1.90	1.15	8.67	.99	1,727	4.38
Estimation Period: 1957 to 1966								
Business excluding institutions	.33 (.81)	.99 (31.74)	2.39	1.07	7.57	.99	1,007	5.32
Machinery and equipment	.27 (.56)	1.01 (29.33)	2.47	1.27	8.62	.99	860	5.32
Non-residential construction	.39 (.84)	.97 (27.89)	1.88	1.27	6.66	.99	778	5.32
Estimation Period: 1967 to 1977								
Business excluding institutions	.34 (1.09)	.96 (41.97)	2.01	.67	10.43	.99	1,761	5.12
Machinery and equipment	.43 (1.25)	.96 (38.76)	2.67	.75	10.45	.99	1,502	5.12
Non-residential construction	.20 (.38)	.95 (26.90)	2.12	1.15	10.51	.99	723	5.12

$$N_t = A_0 + A_1 I_t$$

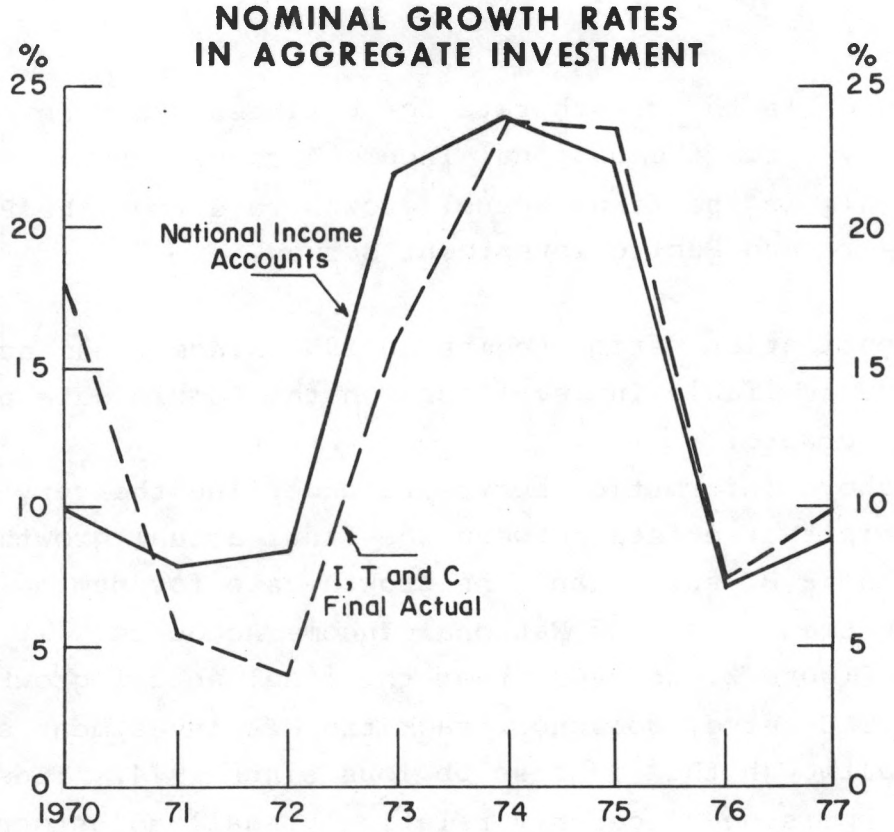
where N_t is the growth rate for business fixed investment from the National Income Accounts, and

I_t is the final actual growth rate from the Private and Public Investment survey.

The estimation period begins in 1957 since final actual numbers are available in level form on the Cansim data base only from 1956 forward.

The above information serves to underline the very close relationship that exists between the final actual growth rate shown by the P&PI survey and the growth rate for nominal business fixed investment from the National Income Accounts. It can be seen from Figure 2, however, that the final actual growth rate from the IT&C survey does not track the NIA investment series as closely, although this is less obvious since 1974. These results are not surprising since only relatively small adjustments are required to eliminate the inherent differences between the NIA and P&PI estimates of business investment. The IT&C survey, on the other hand, is less comprehensive and is not a random survey designed to represent the entire business investment community. We turn now to a discussion of the major differences between the P&PI and IT&C surveys.

Figure 2



2.2 The Private and Public Investment Survey and Industry, Trade and Commerce Measures of Business Investment

The two surveys differ with respect to coverage, conceptual basis, and the historical availability of data. As stated previously, in the P&PI survey some 24 thousand establishments are asked for their investment intentions and the estimated coverage (before being supplemented by indirect estimates to arrive at the published figures and calculated by expressing expenditures of reporting firms as a percentage of published expenditures)[9] of the 1978-79 survey was about 89 percent of the universe. In contrast, the Department of Industry, Trade and Commerce surveys some 300 large corporations and estimates that

9. Statistics Canada, Private and Public Investment in Canada: Outlook 1979, Statistics Canada, Catalogue No. 61-205. Annual.

these firms account for about two-thirds of Canada's non-agricultural business outlays on new plant and equipment.

The conceptual basis of the Statistics Canada survey is the establishment, "the smallest unit that is a separate operating entity capable of reporting all the elements of basic industrial statistics."[10] The main advantage of the approach used by Statistics Canada is that it allows the data to be disaggregated into relatively homogeneous industry classes. The Industry, Trade and Commerce survey, on the other hand, relates to the investment intentions of large corporations who may or may not be reporting for their various subsidiaries. Hence, since corporations and their subsidiaries may be engaged in a wide range of industrial activities, the possibility for careful disaggregation of the data on an industrial basis is reduced considerably.

As for historical availability, the data from the P&PI survey are available on a consistent basis from 1952 onward for aggregates (except energy and non-energy) comparable to those considered in this paper. In contrast, data from the IT&C survey are available from 1969.

At this point, we will examine the historical relationship between the final actual growth rates recorded in the P&PI survey and those recorded in the IT&C survey. This relationship was estimated using regressions of the form

$$P_i = a_0 + a_1 I_i$$

where

P_i is the final actual growth rate from the P&PI survey for aggregation i;

I_i is the final actual growth rate from the IT&C survey for aggregation i; and

10. See Statistics Canada, Standard Industrial Classification Manual: Revised 1970, Catalogue No. 12-501, p. 9.

i is one of: business excluding institutions (all industries), manufacturing, non-manufacturing, energy, and non-energy.

The data period extended from 1969 to 1977 reflecting the fact that at the time this project was started, final actual numbers for the year 1977 were the most recent available.

The regression results shown in Table 3 do not suggest a particularly strong relationship between the two surveys. The coefficients on the final actual growth rates from the IT&C survey are generally less than one - indicating that an increase of 1 percentage point in this growth rate implies a less than 1 percentage point increase in the P&PI final actual growth rate. The exception to this is the energy[11] aggregation where the coefficient on the IT&C variable was greater than one but not significantly so. That the energy category revealed the closest over-all relationship was a result to be expected given that this is the area where the IT&C coverage is the largest.

Since it is the P&PI actual figures that are used (after small adjustments) as a benchmark for business investment in the National Income Accounts, this relationship between the two series would seem to indicate the comparatively poor ability of the basic data provided by the IT&C survey to predict the NIA figure.

Having noted this however, it should also be acknowledged that the press release on the results of each IT&C survey also

11. Energy investment in the IT&C survey is defined as the sum of intended outlays by oil and gas companies, oil and gas pipelines and electric utilities. In the P&PI survey, investment expenditures for six industries are added together. The industries are: electric power, gas distribution, oil and gas pipelines, industrial chemicals, petroleum and coal products, and oil and gas pipelines. The proportion of energy expenditures reported by IT&C respondents relative to the P&PI survey results varies from year to year, but is generally around 0.8 or larger.

Table 3

RELATIONSHIP BETWEEN PRIVATE AND PUBLIC INVESTMENT
AND INDUSTRY, TRADE AND COMMERCE INVESTMENT SERIES
(Growth rates, t-values in brackets)

Estimation Period: 1970 to 1977 Independent Variable	Constant	IT&C Final actual growth rate	RHO	Durbin-Watson	Standard error	Mean	$\bar{R}^2$	F-Statistic	Critical value of F at 5% level of significance
Business excluding institutions (all industries)	5.37 (1.16)	.67 (3.85)	.60 (1.73)	1.31	4.04	14.09	.73	10.39	5.99
Manufacturing	3.40 (1.47)	.70 (5.39)	- .50 (-1.08)	1.93	6.86	12.06	.79	13.89	5.99
Non-manufacturing	6.31 (1.07)	.61 (2.73)	.63 (1.85)	1.85	4.79	14.91	.58	5.89	5.99
Energy	-3.20 (-.87)	1.15 (6.35)		2.09	3.97	18.29	.85	40.33	5.99
Non-energy	8.77 (1.98)	.48 (2.48)	.51 (1.43)	1.82	5.24	12.51	.60	6.35	5.99

provides an estimate of the real growth in aggregate business fixed investment on a National Accounts basis implied by the IT&C survey results. In order to produce this estimate some sort of mechanism is required to link the two figures after adjusting for the slippage between intentions and realizations, and for the effect on nominal expenditures of price increases for investment goods. No attempt has been made in this paper to evaluate the forecasting record of IT&C using their 'adjusted' survey data. This reflects the fact that the focus here is on the basic survey data since the adjustments applied to the survey results will vary from forecaster to forecaster depending upon the outlook for output growth, profitability and other relevant variables.

In summary, the results reported above indicate that if the prediction of the final actual growth rate for business excluding institutions from the P&PI survey were shown to be reliable, then one could be very confident about the outturn that would be reported for NIA fixed investment excluding housing. A similar assumption can be made with respect to the IT&C survey, although with a lesser degree of certitude. In Section 3 the relationship between the intentions data provided at various stages of the P&PI survey and the final actual growth rate data from that survey is investigated. In Section 4 a similar analysis is carried out using the IT&C data.

3 THE FORECAST PERFORMANCE OF THE PRIVATE AND PUBLIC INVESTMENT SURVEY

During recent years, Statistics Canada has noted in publishing the results of the P&PI survey, that two factors must be kept in mind when considering the accuracy of investment intentions data.[12] These are: "the extent to which investment plans are formulated in advance", and "the comparison of anticipated investment expenditures with the actual investment statistics ... for the period in question" (Outlook 1979, page 32). With respect to the first point, Statistics Canada notes that it can be sometimes difficult "to obtain reliable data on the future plans of business firms", but this is not considered to be a major problem since new investment programmes generally do require long-range planning - especially those dealing with large-scale projects. As well, the seasonality of construction in Canada tends to promote advanced planning of capital expenditures. More central to an explanation of the differences between planned investment and the final outturn is the second point mooted by Statistics Canada: modifications of plans throughout a year. As Statistics Canada states, these modifications may occur for a variety of reasons - a change in the general business outlook, revisions of cost estimates, a different than anticipated labour situation, particularly good or bad weather, or other factors of a similar nature. One might suspect that as the number of firms surveyed decreases relative to the total population, the above factors could alter substantially the final outturn for investment from that originally projected. This effect is likely to be more pronounced when a non-random sample is used - and it would appear that the last point would apply more to the IT&C survey than to the more comprehensive P&PI survey.

12. For example see Private and Public Investment Outlook 1979, Statistics Canada Catalogue #61-205, p. 32.

The remainder of this section is divided into two parts. The first is composed of four subsections and provides some descriptive statistics as well as a discussion of the estimation errors in the forecast surveys relative to the final actual growth rates for the 1953-77 period and for the 1970-77 subperiod. The second section contains some regression results. Initially, the growth rate indicated at each stage of the P&PI survey is compared to the final actual growth rate shown by that survey. Next, a cyclical variable is included in the regressions between the growth rate from the forecast survey and the final actual growth rate, and the effects are examined.

3.I The Performance of the Forecast, Revised Forecast and Preliminary Actual Stages of the P&PI Survey with Respect to Final Actual Growth Rates

3.I(a) Some descriptive statistics

In Table 4, descriptive statistics based on the year-to-year growth rates are shown for investment intentions by business excluding institutions, its major subcomponents, and selected aggregations for the 1953-77 and 1970-77 periods. It should be noted that two types of statistics are included in Table 4 (and later in Table 13). These are: a) descriptive statistics on the survey results (mean, standard deviation, and coefficient of variation) and b) descriptive statistics showing the relationship between the forecast and actual growth rates. Briefly, the ideal values for the statistics measuring forecast accuracy are: one for the squared correlation coefficient, and zero for the root mean square error, the mean absolute error, and Theil's inequality coefficient. The attainment of these ideal values would indicate that the forecast equals the actual data.

The rather volatile nature of investment expenditures is reflected in the high standard deviation relative to the mean (summarized in the coefficient of variation) shown over the entire sample period. This volatility is less pronounced in the 1970-77 period because of successive years of strong real

Table 4

SOME DESCRIPTIVE STATISTICS
(For period-to-period percentage change)

	Forecast						
1953 to I977 Inclusive	Total	Machinery and equipment	Non-residential construction	Manufacturing	Non-manufacturing	Energy*	Non-energy*
Arithmetic mean	7.37	6.38	8.63	7.64	7.47	14.55	6.91
Standard deviation	8.84	7.83	10.71	14.37	7.82	8.87	6.95
Coefficient of variation	1.20	1.23	1.24	1.88	1.05	0.61	1.01
R-squared	0.86	0.76	0.90	0.84	0.83	0.73	0.78
Root mean square	5.37	6.95	4.53	7.54	5.38	5.40	5.55
Theil's inequality coefficient	0.36	0.46	0.28	0.38	0.37	0.30	0.41
Mean absolute error	4.34	5.97	3.60	5.85	4.32	4.23	4.33
Mean error	2.18	3.01	1.25	1.40	2.42	0.37	2.21
1970 to 1977 Inclusive							
Arithmetic mean	11.49	10.04	13.32	12.02	11.46	17.15	9.21
Standard deviation	5.35	5.24	6.19	12.50	4.18	9.04	5.46
Coefficient of variation	0.47	0.52	0.46	1.04	0.36	0.53	0.59
R-squared	0.72	0.68	0.74	0.70	0.77	0.66	0.55
Root mean square	4.77	5.71	4.74	7.63	5.27	5.72	6.23
Theil's inequality coefficient	0.30	0.37	0.28	0.41	0.32	0.28	0.42
Mean absolute error	3.90	4.71	4.06	5.76	4.38	4.51	4.96
Mean error	2.60	3.54	1.52	0.04	3.44	1.14	3.30

	Revised Forecast						
1953 to I977 Inclusive	Total	Machinery and equipment	Non-residential construction	Manufacturing	Non-manufacturing	Energy*	Non-energy*
Arithmetic mean	11.15	10.09	12.52	13.35	11.00	17.83	10.36
Standard deviation	11.01	9.88	13.03	17.45	9.91	9.42	8.61
Coefficient of variation	0.99	0.98	1.04	1.31	0.90	0.53	0.83
R-squared	0.93	0.89	0.92	0.94	0.89	0.70	0.87
Root mean square	3.55	4.21	4.51	6.00	3.72	6.36	3.86
Theil's inequality coefficient	0.24	0.28	0.28	0.30	0.26	0.35	0.29
Mean absolute error	2.87	3.56	3.46	5.38	2.96	5.41	3.03
Mean error	-1.60	-0.71	-2.64	-4.31	-1.11	-2.91	-1.24
1970 to 1977 Inclusive							
Arithmetic mean	14.98	13.77	16.54	16.44	14.70	19.75	13.03
Standard deviation	6.36	6.42	7.24	14.12	5.59	10.03	7.38
Coefficient of variation	0.42	0.47	0.44	0.86	0.38	0.51	0.57
R-squared	0.85	0.80	0.80	0.90	0.86	0.71	0.78
Root mean square	3.02	3.52	4.17	6.16	2.88	5.54	3.68
Theil's inequality coefficient	0.19	0.23	0.25	0.34	0.17	0.27	0.25
Mean absolute error	2.51	2.83	3.09	5.82	2.56	4.89	2.98
Mean error	-0.89	-0.18	-1.71	-4.38	0.21	-1.46	-0.52

	Preliminary Actual						
I953 to I977 Inclusive	Total	Machinery and equipment	Non-residential construction	Manufacturing	Non-manufacturing	Energy*	Non-energy*
Arithmetic mean	7.35	5.92	9.12	6.63	7.38	16.00	5.95
Standard deviation	11.44	11.75	12.43	17.48	10.84	9.37	10.00
Coefficient of variation	1.56	1.99	1.36	2.64	1.47	0.59	1.68
R-squared	0.99	0.97	0.97	0.99	0.97	0.91	0.97
Root mean square	2.54	3.99	2.26	3.20	3.14	3.45	3.57
Theil's inequality coefficient	0.17	0.27	0.14	0.16	0.22	0.19	0.27
Mean absolute error	2.22	3.53	1.74	2.62	2.63	2.48	3.22
Mean error	2.20	3.47	0.76	2.41	2.51	-1.08	3.16
I970 to 1977 Inclusive							
Arithmetic mean	11.95	11.03	13.14	10.13	12.67	18.45	9.41
Standard deviation	7.50	7.79	8.21	14.80	7.09	9.86	8.50
Coefficient of variation	0.63	0.71	0.62	1.46	0.56	0.53	0.90
R-squared	0.99	0.94	0.97	0.98	0.99	0.93	0.98
Root mean square	2.32	3.13	2.30	2.64	2.39	2.54	3.27
Theil's inequality coefficient	0.15	0.20	0.14	0.14	0.15	0.12	0.22
Mean absolute error	2.15	2.55	1.88	2.08	2.23	1.96	3.10
Mean error	2.15	2.55	1.69	1.93	2.23	-0.16	3.10

*Energy and non-energy are available only from 1966 on (thus from 1967 inclusive in percent change).

investment growth early in the period and subsequent high rates of inflation that sustained nominal investment growth when real activity weakened.

The mean error (the average deviation between the final actual growth rate and that forecast by the relevant stage of the survey) indicates that over the sample period taken as a whole, the forecast and preliminary actual stages underestimated the final actual growth rate for business excluding institutions by just over 2 percentage points. The revised forecast survey, on the other hand, tended to overestimate on average by 1.6 percentage points.

With respect to whether the various stages of the survey become more accurate as one moves closer to the final actual figure, the squared correlation coefficient, the root mean square error, Theil's inequality coefficient and the mean absolute error all generally suggest that this is the case. The results, however, have not been subjected to rigorous statistical tests to measure their significance.

3.1(b) The frequency and importance of particular types of estimation errors

An analysis of the estimation errors (the difference between the final actual growth rate and that predicted by each earlier estimate), provides the user of the survey with additional information regarding the biases of each forecast. In Table 5 a summary of estimation errors both for aggregate investment and for the major subcomponents is shown for the 1953-77 and 1970-77 periods. This summary includes the number and type of error (i.e., under- or overestimation), the mean absolute error, and the percentage of total absolute error accounted for by each type.

For the period 1953 to 1977, it can be seen that at the aggregate level, the growth rate shown by the forecast intentions underestimated the final actual growth rate some two-thirds of

Table 5

ESTIMATION ERRORS FOR THE PRIVATE AND PUBLIC INVESTMENT SURVEY
(Deviation between final actual and forecast growth rates)

	Forecast			Revised Forecast			Preliminary Actual		
	Number	Mean absolute error (percentage points)	Percent of total absolute error	Number	Mean absolute error (percentage points)	Percent of total absolute error	Number	Mean absolute error (percentage points)	Percent of total absolute error
1953 to 1977 Inclusive									
Underestimates									
Business excluding institutions	16	5.09	75.12	9	1.76	22.02	23	2.40	99.55
Machinery and equipment	16	7.02	75.20	13	2.74	40.10	24	3.65	99.15
Non-residential construction	13	4.66	67.34	7	1.46	11.85	18	1.73	71.80
Manufacturing	13	6.97	61.97	4	3.37	10.00	21	2.99	96.07
Non-manufacturing	16	5.26	77.97	10	2.31	31.21	24	2.68	97.59
Energy*	6	4.22	54.41	3	4.58	23.08	5	1.54	28.20
Non-energy*	7	5.13	75.45	4	2.46	29.52	10	3.51	99.04
Overestimates									
Business excluding institutions	9	3.00	24.87	16	3.50	77.98	2	.13	.45
Machinery and equipment	9	4.12	24.80	12	4.44	59.90	1	.75	.85
Non-residential construction	11	2.67	32.66	18	4.23	88.15	7	1.74	28.20
Manufacturing	12	4.64	38.03	21	5.77	90.00	4	.64	3.93
Non-manufacturing	9	2.64	22.03	15	3.39	68.79	1	1.59	2.41
Energy*	5	4.25	45.59	8	5.72	76.92	6	3.26	71.80
Non-energy*	4	2.92	24.55	7	3.36	70.48	1	.34	.95
1970 to 1977 Inclusive									
Underestimates									
Business excluding institutions	5	5.20	83.33	4	1.62	32.22	8	2.14	100.00
Machinery and equipment	6	5.50	87.56	5	2.12	46.76	8	2.55	100.00
Non-residential construction	5	4.47	68.69	3	1.84	22.39	7	2.04	95.01
Manufacturing	3	7.72	49.36	1	5.75	12.36	6	2.67	96.45
Non-manufacturing	5	6.26	89.30	5	2.22	54.12	8	2.23	100.00
Energy	5	4.52	62.67	3	4.58	35.09	4	1.80	45.86
Non-energy	6	5.51	83.27	4	2.46	41.28	8	3.10	100.00
Overestimates									
Business excluding institutions	3	1.73	16.67	4	3.40	67.78	0	0	0
Machinery and equipment	2	2.35	12.44	3	4.02	53.24	0	0	0
Non-residential construction	3	3.39	31.31	5	3.83	77.61	1	.75	4.99
Manufacturing	5	4.75	50.64	7	5.83	87.64	2	.30	3.55
Non-manufacturing	3	1.25	10.70	3	3.14	45.88	0	0	0
Energy	3	4.49	37.33	5	5.08	64.91	4	2.13	54.14
Non-energy	2	3.32	16.73	4	3.50	58.72	0	0	0

* Energy and non-energy are available only from 1966 on (thus from 1967 inclusive in percent change).

the time, a ratio that was maintained in the latest 8-year period (1970 to 1977). As to the relative sizes of the under- and overestimation errors as measured by the mean absolute error, over the entire sample period, underestimation errors were 1.7 times as large as overestimation errors, while during the 1970-77 period, the underestimation errors were 3 times as large as the overestimation errors. This difference in the relative sizes of the errors is also reflected in the percentage of the total absolute error accounted for by underestimation errors - 75 percent over the entire period, and 83 percent over the 1970-77 subperiod.

In the case of the subcomponents, the picture presented at the aggregate level generally holds true. The main exception over the entire period for which it is available (1967-77) is the energy category, where the number of under- and overestimation errors and the proportion of total absolute error accounted for by each, is nearly evenly split. This might be anticipated in a grouping that should be dominated by projects with longer-term time frames and less expected sensitivity to near-term fluctuations in economic activity.

With respect to the proportion of total absolute error accounted for by under- or overestimation errors in the 1970-77 period, the manufacturing grouping seems to be the only other exception to the situation prevailing at the aggregate level. This exception, however, is not so much related to a particularly good planning performance by manufacturers as to the averaging of errors during the 1970-77 period. For, as may be seen from Table 5, the somewhat fewer but larger underestimation errors were offset by more but smaller overestimation errors.

For the revised forecast, it can be seen that at the aggregate level the proportion of under- and overestimation errors over the entire sample period is the converse of that observed in the initial forecast. For example, two-thirds of the mid-year surveys provided growth rates that were, on average, some 3.5 percentage points above the final actual growth rate. For the 1970-77 subperiod, although there was an even split between under- and overestimation errors, the overestimation errors were twice as large as the underestimation errors. Over both sample periods the largest and greatest number of overestimation errors made at the revised forecast stage occurred in the manufacturing industries. Similarly, the errors made in the energy category also appear to have tended towards overestimation.

With respect to the preliminary actual numbers, the growth rate shown at the time of that survey has almost always underestimated the final actual growth rate by between 2 and 2.5 percentage points at the aggregate level. This underestimation error is, however, about one half the size of the underestimation errors shown at the forecast stage of the survey.

3.I(c) Forecast errors in relation to the over-all business cycle

The cycles in aggregate activity referred to here are the unofficial ones identified by Statistics Canada. The peaks and troughs of these cycles are shown in Table 6. Since the reference cycle dates are quarters within a year and we are working with annual data, it was necessary to specify particular years as periods of cyclical contraction or cyclical expansion.

Table 6

Reference Cycle Dates*		Annual	
Peak	Trough	Years of Cyclical Expansion	Years of Cyclical Contraction
1951:1	1951:4	1953	1954
1953:2	1954:3	1955 to 1956	1957
1956:4	1958:1	1958 to 1959	1960
1960:1	1961:1	1961 to 1969	1970
1969:4	1970:4	1971 to 1973	1974
1974:1	1975:2	1975 to 1977	

* Source: Statistics Canada, National Income and Expenditure Accounts, Third Quarter 1975, Statistics Canada Catalogue 13-001. Quarterly.

(No attempt was made to designate individual years as turning points.) The method used was fairly simple. If aggregate economic activity was on an uptrend into at least the middle of a particular year, then that year was identified as one of cyclical upswing. The converse was true for the identification of a downtrend. In Table 6 the 1953-77 period is presented divided into years of cyclical expansion and contraction.

As may be seen from Tables 6 and 7, there were five years in the 1953-77 period that could be pinpointed as years of downswing in aggregate activity. In both the forecast and the revised forecast stages of the P&PI survey, almost all of these years were typified by overestimations of investment. The main exception was the non-residential construction category where the growth rate in final actual investment was overestimated in only two of the years, although some two-thirds of the total absolute error was accounted for by these overestimation errors.

During fifteen of the twenty years that could be labelled as periods of expansion, underestimation errors were recorded fairly consistently in the forecast growth rates for the business excluding institutions, the machinery and equipment, and the non-

Table 7

FORECAST ERRORS OF THE PRIVATE AND PUBLIC INVESTMENT SURVEY DURING CYCLES IN AGGREGATE ACTIVITY
(Deviation between final actual and forecast growth rates)

Errors During Cyclical Contractions	Forecast			Revised Forecast			Preliminary Actual		
	Number	Mean absolute error (percentage points)	Percent of total absolute error	Number	Mean absolute error (percentage points)	Percent of total absolute error	Number	Mean absolute error (percentage points)	Percent of total absolute error
Total									
Business excluding institutions	5	4.53	20.91	5	4.96	34.56	5	1.81	16.37
Machinery and equipment	5	5.57	18.64	5	5.52	31.02	5	3.45	19.56
Non-residential construction	5	3.63	20.21	5	4.62	26.73	5	2.74	31.52
Manufacturing	5	4.41	15.06	5	6.10	22.67	5	2.10	16.03
Non-manufacturing	5	4.64	21.49	5	5.03	34.01	5	2.44	18.51
Energy*	2	8.41	36.10	2	5.60	18.81	2	2.52	18.48
Non-energy*	2	6.07	25.49	2	4.32	25.92	2	1.89	10.67
Overestimates									
Business excluding institutions	4	4.09	72.17	4	6.15	99.27	1	.10	1.10
Machinery and equipment	4	5.18	74.43	4	6.61	95.79	0	0	0
Non-residential construction	2	6.01	66.10	5	4.62	100.0	2	3.56	51.97
Manufacturing	4	3.84	69.68	5	6.10	100.0	2	.78	14.79
Non-manufacturing	4	4.26	73.41	4	6.03	95.86	1	1.59	13.04
Energy*	0	0	0	0	0	0	0	0	0
Non-energy*	1	5.33	43.90	2	4.32	100.0	0	0	0
Errors During Cyclical Expansions									
Total									
Business excluding institutions	20	4.29	79.09	20	2.35	65.44	20	2.32	83.63
Machinery and equipment	20	6.08	81.36	20	3.07	68.98	20	3.55	80.42
Non-residential construction	20	3.59	79.79	20	3.17	73.27	20	1.49	68.48
Manufacturing	20	6.21	84.94	20	5.21	77.33	20	2.74	83.97
Non-manufacturing	20	4.24	78.51	20	2.44	65.99	20	2.68	81.49
Energy*	9	2.13	63.90	9	5.37	81.19	9	2.47	81.52
Non-energy*	9	3.94	74.51	9	2.74	74.08	9	3.52	89.33
Underestimates									
Business excluding institutions	15	5.01	87.64	12	1.95	33.27	19	2.43	99.68
Machinery and equipment	15	7.01	86.57	12	2.87	56.24	19	3.70	98.94
Non-residential construction	11	4.94	75.81	7	1.46	16.17	15	1.64	82.74
Manufacturing	10	8.40	67.58	4	3.37	12.93	18	2.99	98.14
Non-manufacturing	15	5.20	92.03	9	2.45	45.16	20	2.68	100.0
Energy*	4	4.25	28.66	1	2.54	5.26	3	0.88	11.92
Non-energy*	6	4.85	82.07	4	2.46	39.83	8	3.91	98.93

* Energy series is only available in level form from 1966 on (thus from 1967 inclusive in percent change).

manufacturing categories. Moreover, it should be noted that although the number of years reporting underestimation errors for the non-residential construction and manufacturing disaggregations are fewer, the proportion of the total absolute error in these categories is relatively large.

In years of cyclical expansion, when the forecast and the revised forecast of investment intentions are compared, there is some indication that businessmen adjusted their views to a stronger outlook in the mid-year survey. The decline in the number of years recording underestimation errors, however, is not as dramatic as the decline in the mean absolute error.

Moving from the revised forecast to the preliminary actual figures, the number of years of cyclical expansion reported as having underestimation errors is even greater than at the forecast stage, but the magnitude of the mean absolute error is about the same as that in the revised forecast.

3.1(d) Forecast errors during cycles in aggregate investment

The methodology used to identify the cycles in aggregate business fixed investment is fairly simplistic. First, the actual series on constant (1971) dollar business fixed investment was examined.[13] Then, any year in which the growth rate in real business fixed investment changed sign and the level of investment differed by at least two percent from that in the previous year was identified as the initial year of either a contractionary or an expansionary period. The reason for the two percent significance level is that although investment may deviate from its near-term trend by a small amount in any one year, it may begin to move again in the original direction.

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13. The use of constant dollar investment is an attempt to be partially consistent with techniques of dating the cycle. The method used here is, for the most part, crude and only intended to be indicative in a general way of the survey performance during investment cycles.

Years designated as periods of either investment contraction or expansion are shown in Table 8. It should be noted that these periods have been identified on the basis of aggregate real business fixed investment and it is quite possible in any one year for the subcomponents being examined to be at a different stage of cyclical activity. Generally, the cycle in business investment is characterized as lagging that in aggregate economic activity. However, this relationship is only partly evident from a comparison of Tables 6 and 8 because the annual data and the unsophisticated approach used here are not conducive to the exact specification of lag lengths.

Table 8

CYCLES IN AGGREGATE BUSINESS FIXED INVESTMENT

Periods of Investment Contraction	Periods of Investment Expansion
	1951-1953
1954	1955-1957
1958-1962	1963-1966
1967-1968	1969-1977

From Tables 8 and 9 it may be seen that over twice as many years were identified as periods of investment expansion rather than contraction. For the forecast and preliminary actual growth rates, the mean absolute error during years of investment expansion was larger than during years of investment contraction, while the reverse proved to be the case during the mid-year stage of the survey.

As was the case when identified GNE cycles were used, contractionary periods in aggregate investment activity were typified by overestimation of the final actual growth rates in both the forecast and revised forecast stages of the survey. During periods of investment expansion, there seemed to be a bias

Table 9

FORECAST ERRORS OE THE PRIVATE AND PUBLIC INVESTMENT SURVEY DURING CYCLES IN AGGREGATE INVESTMENT
(Deviation between final actual and forecast growth rates)

Errors During Investment Contractions	Eorecast			Revised Forecast			Preliminary Actual		
	Number	Mean absolute error (percentage points)	Percent of total absolute error	Number	Mean absolute error (percentage points)	Percent of total absolute error	Number	Mean absolute error (percentage points)	Percent of total absolute error
Total									
Business excluding institutions	8	2.99	22.06	8	3.66	40.76	8	1.65	23.84
Machinery and equipment	8	4.77	25.52	8	4.76	42.78	8	3.29	29.85
Non-residential construction	8	2.59	23.01	8	3.52	32.58	8	1.11	20.53
Manufacturing	8	4.85	26.49	8	6.27	37.24	8	2.67	32.65
Non-manufacturing	8	2.62	19.43	8	3.02	32.70	8	2.65	32.17
Energy*	2	1.69	7.26	2	5.71	19.18	2	1.54	11.29
Non-energy*	2	2.53	10.60	2	4.39	26.31	2	2.32	13.10
Overestimates									
Business excluding institutions	5	3.80	79.51	8	3.66	100.0	1	.15	1.14
Machinery and equipment	6	4.52	71.14	7	4.97	91.46	1	.75	2.85
Non-residential construction	7	2.25	76.31	6	4.52	96.38	4	1.13	49.27
Manufacturing	6	4.97	76.99	6	6.88	82.37	2	.99	9.28
Non-manufacturing	4	4.09	77.98	8	3.02	100.0	0	0	0
Energy*	1	.64	18.93	2	5.71	100.0	1	2.59	84.09
Non-energy*	2	2.53	100.0	2	4.39	100.0	1	.34	7.33
Errors During Investment Expansions									
Total									
Business excluding institutions	17	4.97	77.94	17	2.50	59.24	17	2.48	76.16
Machinery and equipment	17	6.54	74.48	17	2.99	57.22	17	3.64	70.14
Non-residential construction	17	4.07	76.99	17	3.43	67.42	17	2.03	79.47
Manufacturing	17	6.33	73.51	17	4.97	62.76	17	2.59	67.35
Non-manufacturing	17	5.12	80.57	17	2.93	67.30	17	2.63	67.83
Energy*	9	4.80	92.74	9	5.34	80.82	9	2.69	88.71
Non-energy*	9	4.73	89.40	9	2.73	73.69	9	3.42	86.90
Underestimates									
Business excluding institutions	13	5.89	90.59	9	1.76	37.18	16	2.63	99.76
Machinery and equipment	14	7.24	91.08	12	2.70	63.69	17	3.64	100.0
Non-residential construction	12	4.64	80.38	5	1.84	15.82	14	1.91	77.62
Manufacturing	11	7.43	76.00	3	3.58	12.72	15	2.90	98.66
Non-manufacturing	12	6.63	91.46	10	2.31	46.37	16	2.69	96.44
Energy*	5	4.52	52.33	3	4.58	28.56	4	1.80	29.81
Non-energy*	7	5.13	84.40	4	2.46	40.07	9	3.42	100.0

* Energy and non-energy are available only from 1966 on (thus from 1967 inclusive in percent change).

in the forecast intentions data towards an underestimation of the final actual growth rate, while in the revised forecast of intentions, both the non-residential construction and manufacturing components registered a tendency to overestimate. These latter results also proved to be typical of periods of cyclical expansion in aggregate economic activity.

3.2 Some Regression Results

3.2(a) The predictive ability of the Private and Public Investment Survey

Another approach to summarizing the information content of the various stages of the P&PI survey done during a year would be to examine the results of regressions between the final actual and the relevant projected growth rates. These regressions were run over three time periods: 1953 to 1977, 1962 to 1977, and 1967 to 1977. The general form of the regressions was

$$I_t = A_0 + A_1 I_{it}$$

where I_t is the final actual growth rate from the P&PI survey, and

I_{it} is the growth rate predicted by one of: the forecast, revised forecast, or preliminary actual stages of the P&PI survey.

The results, summarized in Table 10, indicate that in terms of the growth rate shown by the forecast stage of the survey, the adjustment required to determine the final actual growth rate depends only upon the magnitude of the projected growth rate at the time of the forecast survey. This is the implication of the intercept terms being insignificantly different from zero. It should be noted that the slope parameters are not all necessarily significantly different (at the 5 percent level) from 1.

Table 10

FINAL ACTUAL GROWTH RATE AS THE DEPENDENT VARIABLE
Estimation Period: 1953 to 1977

Independent Variable	Constant	Slope	RHO	Durbin-Watson	Standard error	Mean	$\bar{R}^2$	F-Statistic	Critical value of F at the 5% level of significance
Forecast Growth Rate									
Business excluding institutions	.38 (.31)	1.24 (11.66)		1.69	4.62	9.55	.85	135.97	4.28
Machinery and equipment	.95 (.61)	1.32 (8.45)		1.95	6.00	9.39	.75	71.43	
Non-residential construction	- .04 (- .03)	1.15 (14.23)		1.64	4.24	9.88	.89	202.65	
Manufacturing	.30 (.18)	1.14 (10.84)		1.82	7.43	9.04	.83	117.59	
Non-manufacturing	.48 (.38)	1.26 (10.56)		1.74	4.57	9.89	.82	111.53	
Revised Forecast Growth Rate									
Business excluding institutions	-2.05 (-2.19)	1.04 (17.17)		1.90	3.27	9.55	.92	294.81	
Machinery and equipment	-2.06 (-1.73)	1.13 (13.33)		2.42	4.12	9.39	.88	177.81	
Non-residential construction	-2.08 (-1.97)	.96 (16.16)		2.24	3.77	9.88	.92	261.26	
Manufacturing	-4.31 (-3.90)	1.00 (19.61)		2.25	4.36	9.04	.94	384.70	
Non-manufacturing	-1.42 (-1.28)	1.03 (13.52)		2.14	3.69	9.89	.88	182.90	
Preliminary Actual Growth Rate									
Business excluding institutions	1.95 (6.41)	1.03 (45.63)		1.61	1.27	9.55	.99	2082.32	
Machinery and equipment	3.48 (7.53)	1.00 (27.99)		1.39	2.05	9.39	.97	783.67	
Non-residential construction	.48 (.88)	1.03 (28.74)		1.92	2.18	9.88	.97	825.71	
Manufacturing	2.27 (4.90)	1.02 (40.50)		2.74	2.16	9.04	.99	1640.51	
	2.25 (6.94)	1.02 (49.09)	-.38 (-1.98)	2.19	2.03	9.04	.99	926.65	
Non-manufacturing	2.64 (5.54)	.98 (26.64)		1.78	1.96	9.89	.98	709.75	

Table 10a

FINAL ACTUAL GROWTH RATE AS THE DEPENDENT VARIABLE
(Period-to-period percent change)
Estimation Period: 1962 to 1977

Independent Variable	Constant	Slope	RHO	Durbin-Watson	Standard error	Mean	$\bar{R}^2$	F-Statistic	Critical value of F at the 5% level of significance
Forecast Growth Rate									
Business excluding institutions	- .17 (- .06)	1.27 (7.23)	.66 (2.57)	1.38	3.59	12.06	.84	40.11	4.60
Machinery and equipment	.65 (.27)	1.39 (5.92)		1.07	5.02	12.56	.69	35.04	
Non-residential construction	-1.37 (- .53)	1.30 (7.57)	.40 (1.61)	1.82	4.26	11.59	.81	33.90	
Manufacturing	- .14 (- .05)	1.16 (6.88)		1.55	7.89	12.47	.76	47.28	
Non-manufacturing	.02 (.07)	1.31 (6.29)	.63 (2.47)	1.47	3.41	12.09	.82	35.55	
Revised Forecast Growth Rate									
Business excluding institutions	-2.98 (-1.51)	1.11 (11.03)	.62 (2.20)	1.70	2.28	12.06	.94	109.40	
Machinery and equipment	-3.24 (-1.59)	1.25 (8.72)		2.19	3.70	12.56	.83	76.12	
Non-residential construction	-2.80 (-1.53)	1.04 (9.27)		2.02	3.83	11.59	.85	83.85	
Manufacturing	-5.97 (-3.51)	1.08 (13.95)		2.12	4.28	12.47	.93	194.62	
Non-manufacturing	-2.30 (-1.10)	1.13 (7.56)	.18 (.59)	1.86	3.14	12.09	.85	43.06	
Preliminary Actual Growth Rate									
Business excluding institutions	1.37 (3.31)	1.06 (33.06)		1.90	1.04	12.06	.99	1093.22	
Machinery and equipment	1.88 (2.66)	1.08 (19.41)		2.34	1.78	12.56	.96	376.83	
Non-residential construction	.63 (1.17)	1.06 (26.89)		2.12	1.41	11.60	.98	723.20	
Manufacturing	1.66 (2.78)	1.04 (31.36)		2.59	1.96	12.47	.98	983.90	
Non-Manufacturing	3.22 (4.77)	.93 (17.33)		1.28	1.76	12.09	.95	300.25	

Table 10b

FINAL ACTUAL GROWTH RATE AS THE DEPENDENT VARIABLE
Estimation Period: 1967 to 1977

Independent Variable	Constant	Slope	RHO	Durbin-Watson	Standard error	Mean	$\bar{R}^2$	F-Statistic	Critical value of F at the 5% level of significance
Forecast Growth Rate									
Business excluding institutions	-1.17 (- .60)	1.31 (7.36)		.69	3.71	10.57	.84	54.24	5.12
	-2.24 (- .61)	1.27 (2.26)	.70 (2.26)	1.03	3.03	10.57	.89	43.33	
Machinery and equipment	-1.48 (- .66)	1.47 (6.47)		1.42	4.26	10.43	.80	41.85	
Non-residential construction	-1.14 (- .53)	1.19 (6.99)		1.31	4.26	10.84	.83	48.90	
	-2.15 (- .77)	1.25 (6.93)	.37 (1.10)	1.94	4.24	10.84	.83	25.25	
Manufacturing	-1.13 (- .42)	1.08 (6.17)		1.44	7.54	8.04	.79	38.03	
Non-manufacturing	-2.81 (-1.34)	1.54 (7.78)		1.28	3.21	11.65	.86	60.50	
	-2.11 (- .81)	1.42 (6.20)	.43 (1.10)	1.61	3.22	11.65	.86	30.62	
Energy	- .38 (- .11)	1.05 (4.97)		2.50	5.93	14.92	.70	24.73	
	- .29 (- .12)	1.06 (6.63)	-.47 (-1.24)	1.71	5.73	14.92	.72	14.06	
Non-energy	.02 (.01)	1.32 (5.64)		1.40	5.13	9.11	.75	31.81	
Revised Forecast Growth Rate									
Business excluding institutions	-4.41 (-2.60)	1.21 (10.16)		.96	2.78	10.57	.91	103.28	
	-3.54 (-1.59)	1.12 (9.45)	.60 (1.71)	1.66	2.52	10.57	.93	64.43	
Machinery and equipment	-3.83 (-1.59)	1.26 (6.87)		2.50	4.05	10.43	.82	47.22	
	-4.35 (-2.15)	1.31 (8.27)	-.40 (-1.07)	1.80	3.99	10.43	.83	24.91	
Non-residential construction	-4.05 (-1.52)	1.09 (6.52)		2.17	4.52	10.84	.81	42.47	
Manufacturing	-5.69 (-3.06)	1.06 (10.95)		1.79	4.55	8.04	.92	119.94	
Non-manufacturing	-4.54 (-2.55)	1.31 (10.09)		1.31	2.55	11.65	.91	101.75	
	-3.67 (-1.58)	1.23 (7.23)	.42 (1.03)	1.81	2.53	11.65	.91	52.15	
Energy	-2.39 (- .57)	.97 (4.63)		2.00	6.24	14.92	.67	21.47	
Non-energy	-2.55 (-1.36)	1.13 (7.92)		2.00	3.87	9.11	.86	62.77	
Preliminary Actual Growth Rate									
Business excluding institutions	1.63 (3.55)	1.04 (27.27)		2.38	1.07	10.57	.99	743.61	
Machinery and equipment	1.98 (2.38)	1.05 (14.82)		2.78	2.00	10.43	.96	219.62	
Non-residential construction	1.03 (1.65)	1.05 (21.97)		2.26	1.46	10.84	.98	482.85	
	.94 (2.09)	1.07 (28.91)	-.52 (-1.45)	1.86	1.38	10.84	.98	270.80	
Manufacturing	1.43 (2.32)	1.03 (27.29)		3.07	1.88	8.04	.99	744.48	
	1.49 (3.73)	1.04 (35.17)	-.48 (-1.75)	2.72	1.70	8.04	.99	458.60	
Non-manufacturing	1.75 (3.18)	1.04 (23.14)		1.83	1.15	11.65	.98	535.68	
Energy	-2.82 (-1.32)	1.11 (9.51)		2.07	3.45	14.92	.90	90.51	
Non-energy	3.03 (4.69)	1.02 (17.83)		3.21	1.81	9.11	.97	317.79	
	2.91 (9.27)	1.02 (34.24)	-.62 (-2.72)	2.10	1.38	9.11	.98	277.94	

For both the revised forecast and preliminary actual numbers, the evidence from the regressions run over the entire period suggests essentially that constant adjustments of about the same magnitude as reported in Table 4 should be made. With respect to the revised forecast, however, this conclusion is not supported by the regression results for the shorter time periods. These results also seem to imply that it is the magnitude of the projected growth rate at the time of the revised forecast that should be taken into account when determining the adjustment. For example, the slope parameter for aggregate business excluding institutions is equal to 1.11 over the 1962-77 estimation period.

The R-bar squared and the F-statistics for the regressions do, however, support the view that the growth rates shown by all the stages of the survey have strong indicator properties with respect to the final actual growth rate. Moreover, a comparison of these test statistics with reference to the various stages of the survey suggests that the predictive power improves as one moves closer in time to the final actual growth rate. Nevertheless, the use of these simple regression results to adjust the relevant projected growth rate toward the final growth rate is not recommended. The results presented in Section 3.1(c) indicate that other factors, such as an unanticipated change in the stage of the economic cycle, also influence the relationship between recorded investment intentions and realized expenditures. If there is such an additional effect to be taken into account, then the coefficients in the above equation may reflect specification bias. The role of cyclical variables is investigated empirically in the following section.

3.2(b) The influence of cyclical variables on the predictive ability of the forecast survey

In this section the focus is on the forecast survey because it is of prime interest in the formulation of expectations about the year ahead. Although various proxies for the deviation of the actual from the anticipated economic performance were tested,

results for selected estimations will be presented only for the business excluding institutions, the manufacturing, and the non-energy categories.

In this exercise, regressions were run over the 1962-77 and 1967-77 periods. The choice of the former time period reflects the availability of data on some of the cyclical variables. The form of the regressions was

$$I_t = A_0 + A_1 I_{Ft} + A_2 CV$$

where I_t is the final actual growth rate,
I_{Ft} is the forecast growth rate, and
CV is the cyclical variable.

The cyclical variables, or measures of excess demand, were based on available measures of the unemployment and capacity utilization rates. The hypothesis was that when formulating their plans, businessmen would assume that excess demand, as measured by the unemployment or capacity utilization rates, would remain unchanged from the level prevailing at the time of the survey. Thus, any difference between the forecast and final actual growth rates would reflect changes in excess demand subsequent to the time the survey was taken.

The relevant period for the change in excess demand was represented in the following two ways: the first approach was based upon the difference in the annual average, that is, from the preceding year to the year to which the survey applied, while the second focussed on changes over the year, from the fourth quarter of the preceding year to the fourth quarter of the year in question. For the labour market measure of excess demand, both the change in the actual unemployment rate and the change in the actual unemployment rate relative to the unemployment rate at trend output were tested. When capacity utilization was used as a measure of excess demand, one of the three following measures was included in the various regressions: (i) the change in the

ratio of actual gross private business product to its trend value (UGPP/UGPPD) as defined in the RDXF forecasting model used at the Bank of Canada; (ii) the change in the capacity utilization rate for non-farm goods-producing industries excluding energy, estimated in the Research Department at the Bank of Canada; and (iii) the change in the Bank of Canada's capacity utilization rate for manufacturing industries.[14]

The results shown in Tables 11, 11a and 11b suggest that cyclical variables do influence, to varying degrees, the relationship between the forecast and final actual growth rates thus supporting the above analysis. However, our earlier premise that the coefficients for the equations presented in Tables 10, 10a and 10b might reflect specification bias is not confirmed by the results presented in Tables 11, 11a and 11b. The constant terms in the regressions remain insignificantly different from zero and the slope coefficients on the forecast growth rate terms are insignificantly different - at the 5 percent level - from those in Tables 10, 10a and 10b for the relevant categories.

For business excluding institutions, stage-of-the-cycle variables improve the explanatory ability of the predicted growth rate for both the 1962-77 and the 1967-77 periods, although not very dramatically. Higher values for R-bar squared as well as smaller standard errors occurred most of the time.

The predictive accuracy of the initial estimates made by manufacturers improved substantially over both time periods with the addition of cyclical variables. Compared with the simple regressions presented in Section 3.2(a), the inclusion of some measure of the change in excess demand in the period subsequent

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14. For a description of the methodology used at the Bank of Canada, see "Measuring Capacity Utilization: A Technical Note" by Gordon Schaefer, Bank of Canada Review, May 1980, pp. 3-13.

Table 11

FINAL ACTUAL GROWTH RATE AS THE DEPENDENT VARIABLE
(Business excluding institutions)

			Unemployment Rate		(Differences)		Capacity Utilization (Differences)							
	Constant	Forecast survey	Relative to Unemployment Rate at Trend Output: Fourth-to-fourth	Annual	Fourth-to-fourth	Annual	Fourth-to-fourth	Annual	RHO	Durbin-Watson	Standard error	$\bar{R}^2$	F-Statistic	Critical value of F at 5% level of significance
Estimation Period: 1962 to 1977	.51 (.36)	1.36 (10.28)			-4.13 (-3.87)					2.19	3.08	.88	56.68	3.81
	-.74 (-.41)	1.42 (8.31)	-2.57 (-2.27)							1.68	3.82	.82	34.54	3.81
	-2.14 (-1.17)	1.55 (8.96)					.84** (2.88)			1.28	3.53	.84	41.67	3.81
	-1.15 (-.73)	1.43 (9.74)		-3.74 (-3.31)						1.80	3.33	.86	47.72	3.81
	-.85 (-.51)	1.42 (9.17)						.99* (2.93)		1.12	3.51	.85	42.32	3.81
	-1.09 (-.63)	1.43 (8.99)						.72** (2.79)		1.31	3.57	.84	40.53	3.81
	.34 (.23)	1.35 (9.66)				-3.85 (-3.48)				1.69	3.25	.87	50.26	3.81
	.30 (.16)	1.35 (8.58)				-3.77 (-1.58)		.02** (.04)		1.68	3.38	.86	30.93	3.49
Estimation Period: 1967 to 1977	.03 (.02)	1.34 (9.35)			-3.30 (-2.43)					1.57	2.98	.90	44.87	4.46
	-1.21 (-.64)	1.35 (7.70)						.42** (1.26)		.88	3.59	.85	29.68	4.46
	-2.26 (-.58)	1.29 (8.75)						.19** (.88)	.71 (2.11)	1.20	3.07	.89	28.37	4.46
	-1.83 (-.96)	1.43 (7.56)					.56** (1.42)			.89	3.51	.86	31.16	4.46
	-2.89 (-.70)	1.35 (8.38)					.30** (1.02)		.70 (2.06)	1.20	3.01	.90	29.54	4.46
	.98 (.53)	1.28 (8.61)				-5.35 (-2.17)		-.46** (-.94)		1.65	2.96	.90	30.54	4.35

* UGPP/UGPPD
** Bank of Canada capacity utilization series for goods excluding energy, agriculture and forestry.

Table 11a

FINAL ACTUAL GROWTH RATE AS THE DEPENDENT VARIABLE
(Non-energy)

	Constant	Beginning of year survey	Unemployment Rate: Relative to Unemployment Rate at Trend Output: Fourth-to-fourth	Unemployment Rate: Relative to Unemployment Rate at Trend Output: Annual	(Differences): Fourth-to-fourth	(Differences): Annual	Capacity Utilization (Differences): Fourth-to-fourth	Capacity Utilization (Differences): Annual	Durbin-Watson	Standard error	Mean	$\bar{R}^2$	F-Statistic	Critical value of F at 5% level of significance
Estimation Period: 1967 to 1977	2.25	1.33			-5.16				2.15	3.67	9.11	.87	35.89	4.46
	(1.28)	(7.99)			(-3.10)									
	-.27	1.43	-2.60						1.71	4.66	9.11	.80	20.72	4.46
	(-.13)	(6.43)	(-1.70)											
	-.79	1.56					1.11**		1.55	4.21	9.11	.84	26.31	4.46
	(-.43)	(7.15)					(2.32)							
	-1.32	1.58					.81**		1.46	4.32	9.11	.83	24.74	4.46
	(-.67)	(6.83)					(2.16)							
	.32	1.38		-4.14					1.81	3.89	9.11	.86	31.47	4.46
	(.19)	(7.71)		(-2.76)										
	2.56	1.27				-5.11			2.17	3.85	9.11	.86	31.89	4.46
	(1.34)	(7.21)				(-2.82)								
	.11	1.40						1.16*	1.95	3.77	9.11	.87	33.90	4.46
	(.07)	(8.07)						(2.95)						
	.37	1.35						.74**	1.69	4.63	9.11	.80	21.07	4.46
	(.18)	(6.41)						(1.75)						
	.05	1.38						.65**	1.64	4.51	9.11	.81	22.36	4.46
	(.03)	(6.63)						(1.90)						
	3.07	1.24		-6.43				-.31**	2.12	4.06	9.11	.85	19.39	4.35
	(1.33)	(6.30)		(-1.84)				(-.45)						
	2.99	1.25		-5.98				-.17**	2.16	4.10	9.11	.84	19.01	4.35
	(1.19)	(6.04)		(1.65)				(-.28)						

* UGPP/UGPPD
** Bank of Canada capacity utilization series.

Table 11b

FINAL ACTUAL GROWTH RATE AS THE DEPENDENT VARIABLE
(Manufacturing)

			Unemployment Rate (Differences)				Capacity Utilization (Differences)							
	Constant	Beginning of year survey	Relative to Unemployment Rate at Trend Output: Fourth-to-fourth	Relative to Unemployment Rate at Trend Output: Annual	Fourth-to-fourth	Annual	Fourth-to-fourth	Annual	RHO	Durbin-Watson	Standard error	$\bar{R}^2$	F-Statistic	Critical value of F at 5% level of significance
Estimation Period: 1962 to 1977	.82 (-.41)	1.19 (9.45)			-7.11 (-3.51)				-	2.42	5.87	.86	48.93	3.81
	-1.53 (-.63)	1.28 (8.17)	-4.81 (-2.30)						-	2.30	6.90	.81	33.56	3.81
	-1.72 (-.63)	1.29 (7.13)					.84** (1.57)		-	1.76	7.51	.78	27.32	3.81
	-1.48 (-.68)	1.26 (9.14)						1.83* (3.03)	-	1.68	6.27	.85	42.08	3.81
	-1.19 (-.54)	1.22 (8.82)						1.20** (2.88)	-	1.66	6.40	.84	40.11	3.81
	-1.28 (-.61)	1.22 (9.27)		-6.52 (-3.23)					-	2.21	6.10	.85	44.73	3.81
	1.07 (.53)	1.12 (8.97)				-7.08 (-3.57)			-	1.89	5.82	.87	49.83	3.81
	.83 (.34)	1.13 (7.94)				-6.41 (-1.60)		.15** (.19)	-	1.88	6.05	.86	30.77	3.49
Estimation Period: 1967 to 1977	2.11 (1.25)	1.17 (11.55)				-9.11 (-4.49)			-	1.91	4.26	.93	69.57	4.46
	-1.24 (-.57)	1.20 (8.07)						1.16** (2.45)	-	1.27	6.04	.86	32.59	4.46
	2.44 (1.15)	1.16 (10.31)				-9.99 (-2.69)		-.18** (-.29)	-	1.91	4.53	.92	41.11	4.35

* UGPP/UGPPD
** Bank of Canada capacity utilization series for manufacturing.

to the time of the survey corrects, to some extent, the difference between the forecast and the final actual growth rates. Most responsive to the cyclical variables were the equations in the non-energy category.[15]

Another possible way to assess the influence of cyclical variables would be to construct a sales series that would reflect businessmen's expectations at the time the survey was conducted. The next step would be to estimate variants of a realization function where the deviation in percentage points between the intended and actual growth rates for investment depends upon the percentage point deviation between the expected and actual growth rate in sales. However, time and resource availability precluded this option.

15. Adjustments to the forecast growth rates for the 1973-79 period were calculated using the coefficients presented in Table 11. In those years in which the forecast underestimated the final actual growth rate, the adjusted forecast rate was a much better predictor of the final actual numbers than was the forecast growth rate - especially for the business excluding institutions and non-energy categories. In contrast, when the forecast overestimated the final actual growth rate, the adjusted rate was usually not as close to the final actual numbers as the unadjusted forecast growth rate. This result is perhaps not surprising given that for the majority of the observations, the forecast growth rate underestimated the final actual growth rate.

4 THE FORECAST PERFORMANCE OF THE INDUSTRY, TRADE AND COMMERCE SURVEY

The final actual growth rates shown by the Industry, Trade and Commerce large corporate investment survey results for the aggregations[16] considered here might differ from those forecast - for the same reasons outlined at the beginning of Section 3. In summary form these are: (a) not all businesses plan in advance, although some do owing to the length of the investment period or for seasonality considerations; and (b) not all intentions are realized, owing to such factors as a change in the general business outlook, labour disputes etc.

The remainder of this section begins with a brief discussion of the background of the IT&C survey. Summary statistics on the error performance of the survey are then presented, followed by a brief section devoted to regression analysis of the predictive performances of the various observations for any one year.

4.1 Background to the IT&C Survey

Survey data are available annually from 1969 onward in level form, and from 1970 onward for growth rates.[17] As a detailed report of intended expenditures, the IT&C survey is fairly broad - for example, in recent years some 300 large corporations have been surveyed annually. Several observations, beginning with a

16. All industries, manufacturing, non-manufacturing, energy, and non-energy.
17. The base figure used for calculation of the growth rates shown is taken from the matched sample for the survey point under consideration. That is, if 50 out of 100 companies reported investment expenditures for 1978 and 1979 at the time of the October 1978 survey, then the one-year-ahead forecast growth rate would be calculated using the 1978 and 1979 investment figures reported in October 1978 by these companies.

Table 12

THE SEVEN I, T & C OBSERVATIONS USED AND AVAILABILITY OF THE COMPARABLE OBSERVATIONS FROM THE P & PI SURVEY

	Year in Question -2	Year in Question -1		Year in Question		Year in Question +1	
	Fall	Spring	Fall	Spring	Fall	Spring	Fall
I, T and C Survey	2YF	2YRF	F	RF	PA	PFA	FA
Availability	November	May	November	May	November	May	November
P and PI Survey							
Availability	N.A.	N.A.					
			February	July	February		February

five-year-ahead forecast, are collected for any one year. Here, we focus on seven observations for each year, derived on a two-year matched sample basis (i.e., only data from those companies that reported in every one of the relevant surveys during each of the two years are used). The observations (see Table 12) examined are: (i) The two-year-ahead forecast (2YF), surveyed in the fall two years prior to the year in question. (ii) The revised two-year-ahead forecast (2YRF), taken in the spring of the following year. (iii) The one-year-ahead forecast (F) collected in the fall of that year and treated as a leading indicator of the forecast (beginning of the year) P&PI survey. (iv) The revised one-year-ahead forecast (RF) done in April of the year in question and considered to be a preview of the revised forecast (mid-year survey) from the P&PI survey. (v) The preliminary actual (PA) numbers are reported in October of the year in question. (vi) A sixth survey, the preliminary final actual (PFA), is carried out in April of the following year. (vii) Finally, revised final actual (FA) figures (called 'final actual' in this paper) are reported in the fall of the year following the year in question.

In this analysis, emphasis is placed on the ability of the various IT&C intentions and preliminary actual current dollar data in growth rate form, to explain the final actual growth rate data shown by the IT&C survey. The reason for this is very straightforward. The reported growth rate from the IT&C survey (whether for nominal or constant dollar expenditures), particularly that for the forecast and revised forecast stages, is the number that forecasters focus upon in discussions about the outlook for business fixed investment in the upcoming year. This paper incorporates only current dollar data since there is a lack of consistency over the sample period in the calculation of the constant dollar estimates.

4.2 The Performance of the IT&C Survey With Respect to Its Own Final Actual Growth Rate

4.2(a) Descriptive statistics

Shown in Table 13 are summary statistics such as the squared correlation coefficient, Theil's inequality coefficient, the mean absolute error and the mean error, for the 1970-77 sample period. Compared with the ideal values of one for the squared correlation coefficient and zero for Theil's inequality coefficient, the mean absolute error and the mean error, none of the forecast observations performs well with respect to the final actual growth rate. Over-all, the forecast growth rates exhibit relatively low values for the R-squared statistic and high values for Theil's inequality coefficient and the error statistics. If the descriptive statistics on the forecast performance of the IT&C survey from Table 13 are compared with those from Table 4 for the relevant stage of the forecast for the 1970-77 period and for the comparable categories, it appears that the forecast stages of the IT&C survey are relatively poorer at predicting the final outturn from that survey than are the forecast stages of the P&PI survey in predicting the final outturn from the P&PI survey. The descriptive statistics on the forecast performance for the energy category in both surveys are the most similar at each comparable stage of the survey.

The mean errors suggest underestimation of investment growth in the two-year-ahead forecast data. Conversely, an overly optimistic estimate of future expenditures is evident in the one-year-ahead forecast, the revised one-year-ahead forecast, and the preliminary actual survey. (As can be seen in Table 13, a negative mean error reflects the tendency to overestimate.) This holds true for investment at the aggregate level as well as for investment by sector. Unusually large mean and mean absolute errors occurred for the manufacturing sector, particularly in the one-year-ahead and revised one-year-ahead forecasts. Indeed, in

Table 13

SOME DESCRIPTIVE STATISTICS ON THE I T & C SURVEY
(For period-to-period percentage change)

1970-77 Inclusive	Two-Year-Ahead Intentions					Revised Two-Year-Ahead Intentions					One-Year-Ahead Forecast				
	All industries	Manu-facturing	Non-manu-facturing	Energy	Non-energy	All industries	Manu-facturing	Non-manu-facturing	Energy	Non-Energy	All industries	Manu-facturing	Non-manu-facturing	Energy	Non-Energy
Arithmetic mean	2.67	-.76	3.82	3.37	2.15	7.55	9.43	7.10	7.59	7.61	19.75	32.20	16.63	19.61	19.92
Standard deviation	4.22	8.26	4.22	7.00	6.18	5.86	11.94	5.17	9.12	5.70	8.92	18.40	9.00	10.99	9.43
Coefficient of variation	1.58	-10.94	1.11	2.08	2.87	.78	1.27	.73	1.20	.75	.45	.57	.54	.56	.47
R-Squared	.02	.28	.00	.39	.00	.13	.51	.06	.47	.03	.24	.73	.19	.36	.31
Root mean square	13.36	19.21	12.90	16.47	13.21	9.55	12.89	10.11	12.78	10.31	10.18	23.71	8.30	8.41	13.89
Theil's inequality coefficient	.87	.91	.82	.82	1.00	.62	.61	.64	.63	.78	.66	1.13	.53	.42	1.05
Mean absolute error	10.84	15.49	10.64	15.24	9.50	8.15	10.57	8.76	11.83	8.27	7.65	21.70	6.18	5.79	11.59
Mean error	10.81	11.25	10.64	15.24	6.94	5.94	1.06	7.36	11.02	1.48	-6.27	-21.70	-2.17	-1.00	-10.82

1970-77 Inclusive	Revised One-Year-Ahead Forecast					Preliminary Actual					Preliminary Final Actual				
	All industries	Manu-facturing	Non-manu-facturing	Energy	Non-energy	All industries	Manu-facturing	Non-manu-facturing	Energy	Non-Energy	All industries	Manu-facturing	Non-manu-facturing	Energy	Non-Energy
Arithmetic mean	22.75	31.98	20.60	24.56	21.28	16.65	16.08	17.02	22.36	11.83	13.28	10.91	14.10	18.76	8.64
Standard deviation	7.71	22.58	7.10	9.16	10.27	7.18	20.35	6.16	8.84	8.99	7.78	20.17	6.30	8.35	10.13
Coefficient of variation	.34	.71	.34	.37	.48	.43	1.27	.36	.40	.76	.59	1.85	.45	.44	1.17
R-Squared	.67	.95	.46	.70	.74	.93	.97	.82	.87	.94	.98	1.00	.96	.96	.99
Root mean square	10.27	22.12	8.04	7.61	13.21	3.78	6.49	3.71	4.81	3.74	1.00	.87	1.28	1.61	1.23
Theil's inequality coefficient	.67	1.05	.51	.38	1.00	.25	.31	.24	.24	.27	.06	.04	.08	.08	.09
Mean absolute error	9.27	21.48	6.19	5.98	12.19	3.17	5.83	3.00	3.75	2.80	.88	.60	1.12	1.32	.25
Mean error	-9.27	-21.48	-6.14	-5.98	-12.19	-3.17	-5.58	-2.56	-3.75	-2.74	.20	-.41	.36	-.15	.46

both of these surveys, the final actual growth rate for manufacturing was overestimated by over 20 percent (e.g., a realized average growth rate of 11 percent versus 32 percent predicted by the forecast survey).

These measures of the IT&C survey's explanatory ability do appear to improve, however, as one moves from the two-year-ahead forecast of intentions to the preliminary actual data.

4.2(b) Estimation errors

An analysis of the estimation errors (the difference between the final actual growth rate and that predicted by each forecast), provides the user of the survey with additional information regarding the biases of each forecast. In Table 14 a summary of these estimation errors is supplied. This summary includes the number and type of error (i.e., under- or overestimation), the mean absolute error, and the percentage of total absolute error accounted for by each type.

Underestimation errors comprised the greatest proportion of error in the two-year-ahead and revised two-year-ahead forecasts for the all-industries category and on average, accounted for over three-quarters of the total error. The growth rates projected by these surveys underestimated actual growth rates by 12 and 8 percent, respectively. Conversely, for the one-year-ahead (forecast and revised forecast) and preliminary actual data, overestimation errors predominated.

The above general observations hold true on a disaggregated basis as well. The manufacturing category produced the largest errors (indicated by the mean absolute error) of all the surveys, being almost double the size recorded by the other sectors for the one-year-ahead forecast, revised one-year-ahead forecast, and the preliminary actual estimates. Given the greater coverage and the long-term nature of the projects, one might expect energy-related investment forecasts to be more accurate than those for all industries. The Industry, Trade and Commerce survey suggests that this is the case beginning with the one-year-ahead forecast

Table 14

ESTIMATION ERRORS OF THE INDUSTRY, TRADE AND COMMERCE SURVEY
(Deviation between final actual and forecast growth rates)

	Two-Year-Ahead Intentions			Revised Two-Year-Ahead Intentions			One-Year-Ahead Forecast			Revised One-Year-Ahead Forecast			Preliminary Actual		
	Number	Mean absolute error %	Percent of total absolute error	Number	Mean absolute error %	Percent of total absolute error	Number	Mean absolute error %	Percent of total absolute error	Number	Mean absolute error %	Percent of total absolute error	Number	Mean absolute error %	Percent of total absolute error
Underestimation Errors															
All industries	7	12.37	99.82	7	8.05	86.40	2	2.77	9.03	0	0	0	0	0	0
Manufacturing	6	17.83	86.32	4	11.64	55.03	0	0	0	0	0	0	1	1.01	2.17
Non-manufacturing	8	10.64	100.00	7	9.21	92.02	3	5.35	32.46	1	.21	.42	1	1.75	7.29
Energy	8	15.24	100.00	7	13.05	96.56	5	3.84	41.39	1	.11	.23	0	0	0
Non-energy	6	10.96	86.51	4	9.75	58.95	1	3.06	3.32	0	0	0	1	.24	1.07
Overestimation Errors															
All industries	1	.16	.18	1	8.87	13.60	6	9.28	90.97	8	9.27	100.00	8	3.17	100.00
Manufacturing	2	8.48	13.68	4	9.51	44.97	8	21.70	100.00	8	21.48	100.00	7	6.52	97.83
Non-manufacturing	0	0	0	1	5.59	7.98	5	6.68	67.54	7	7.05	99.58	7	3.18	92.71
Energy	0	0	0	1	3.26	3.45	3	9.05	58.61	7	6.82	99.77	8	3.75	100.00
Non-energy	2	5.13	13.49	4	6.79	41.05	7	12.75	96.68	8	12.19	100.00	7	3.16	98.93

survey. Indeed, further examination indicates a major decrease in the size of errors, particularly the mean error, at the time of the one-year-ahead forecast. Most of the descriptive statistics show continued improvement up to and including the release of the preliminary actual report in October of the year under consideration.

4.2(c) Estimation errors during cycles in aggregate activity

As a further exercise, the forecast errors of the IT&C survey were examined with respect to cycles in business activity. Years of cyclical expansion and contraction were again determined on the basis of the business cycles identified by Statistics Canada (see Table 6).

The fact that the figures presented in Table 15 are not very helpful in revealing systematic biases in surveyed investment intentions at various stages of the economic cycle, can be attributed to the short sample period. During the six years of cyclical expansion, underestimation errors occurred most frequently in the two-year-ahead intentions data and the revised estimates, while overestimation errors prevailed in the two contraction years - but only for the one-year-ahead and revised one-year-ahead forecasts, and the preliminary actual figures. The numbers show essentially the same pattern as the table of under- and overestimation errors (Table 13), rather than a trend towards underestimation during cyclical expansions and overestimation in periods of contraction as seems to be the case with the P&PI survey.

4.2(d) Regression analysis of the intentions data from the IT&C Survey

A limited number of regressions were run over the short sample period in order to test the predictive ability of the early surveys. These were of the form:

Table 1S

ESTIMATION ERRORS DURING CYCLES IN AGGREGATE ACTIVITY
(Deviation between final actual and forecast growth rates)

	Two-Year-Ahead Intentions			Revised Two-Year-Ahead Forecast			One-Year-Ahead Forecast			Revised One-Year-Ahead Forecast			Preliminary Actual		
	Number	Mean absolute error	Percent of total absolute error	Number	Mean absolute error	Percent of total absolute error	Number	Mean absolute error	Percent of total absolute error	Number	Mean absolute error	Percent of total absolute error	Number	Mean absolute error	Percent of total absolute error
Cyclical Expansions															
Total															
All industries	6	9.52	65.86	6	6.89	63.33	6	9.49	93.02	6	10.04	81.25	6	3.72	87.93
Manufacturing	6	10.71	51.87	6	8.84	62.67	6	22.94	79.28	6	19.89	69.44	6	5.52	70.97
Non-manufacturing	6	10.46	73.68	6	7.93	67.92	6	6.49	78.71	6	7.53	91.18	6	3.33	83.24
Energy	6	14.99	73.79	6	10.81	68.52	6	5.30	68.58	6	7.75	97.16	6	4.63	92.57
Non-energy	6	8.22	64.86	6	8.03	72.84	6	13.62	8.55	6	12.07	74.23	6	3.10	83.16
Underestimation Errors															
All industries	5	11.40	99.72	5	6.49	78.53	1	2.61	4.58	0	0	0	0	0	0
Manufacturing	4	11.83	73.63	2	7.49	28.23	0	0	0	0	0	0	1	1.01	3.05
Non-manufacturing	6	10.46	100.00	5	8.40	88.25	1	5.33	13.69	1	.21	4.65	0	0	0
Energy	6	14.99	100.00	5	12.32	94.97	3	1.54	14.54	0	0	0	0	0	0
Non-energy	4	9.76	79.21	2	10.52	43.65	1	3.06	3.74	0	0	0	1	.24	1.31
Cyclical Contractions															
Total															
All industries	2	14.81	34.14	2	11.96	36.67	2	2.14	6.98	2	6.95	18.75	2	1.53	12.07
Manufacturing	2	29.82	48.13	2	15.80	37.34	2	17.99	20.72	2	26.25	30.56	2	6.77	29.03
Non-manufacturing	2	11.21	26.32	2	11.24	32.08	2	5.37	21.69	2	2.19	8.82	2	2.01	16.76
Energy	2	15.98	26.21	2	14.90	31.48	2	7.28	31.42	2	.68	2.84	2	1.37	7.43
Non-energy	2	13.36	35.14	2	8.99	27.16	2	5.29	11.45	2	12.57	25.77	2	1.89	16.84
Overestimation Errors															
All industries	0	0	0	0	0	0	1	1.28	33.42	2	6.38	100.00	2	1.24	100.00
Manufacturing	0	0	0	0	0	0	2	17.99	100.00	2	26.25	100.00	2	7.17	100.00
Non-manufacturing	0	0	0	0	0	0	0	0	0	2	2.19	100.00	1	2.27	56.47
Energy	0	0	0	0	0	0	0	0	0	1	1.25	91.91	2	1.37	100.00
Non-energy	0	0	0	0	0	0	2	5.29	100.00	2	12.57	100.00	1	1.31	84.52

$$I_a = A_0 + A_1 * I_i$$

where I_a is the final actual growth rate of the IT&C survey, and

I_i is the growth rate predicted by the forecast surveys.

Again, it appears that the explanatory ability of the early intentions surveys, in terms of the realized growth rates in investment spending, is poor. Very low values of R-bar squared combined with insignificant results for the first three stages of the survey confirm this observation. However, the predictive properties of the survey do improve with time, as the test statistics of the revised one-year-ahead and preliminary actual figures show. Shown in Table 16 are the results for all industries for the 1970-77 period.

Table 16

FINAL ACTUAL GROWTH RATE AS THE DEPENDENT VARIABLE
(For period-to-period percentage change)

Estimation Period: 1970 to 1977	Constant	Forecast growth rate	RHO	Durbin-Watson	Standard error	Mean	$\bar{R}^2$	F-Statistic	Critical value of F at 5% level of significance
All Industries									
Two-year-ahead intentions	12.53 (2.77)	.44 (.54)	.17 (.44)	1.65	9.11	13.48	-.33	.14	5.99
Revised two-year-ahead intentions	9.85 (2.05)	.48 (.93)		1.49	7.99	13.48	-.02	.87	5.99
One-year-ahead forecast	4.97 (.73)	.43 (1.36)		1.47	7.47	13.48	.11	1.85	5.99
Revised one-year-ahead forecast	-5.61 (- .97)	.84 (3.48)		1.06	4.92	13.48	.61	12.12	5.99
Preliminary actual	-4.44 (-1.13)	1.00 (9.65)	.56 (.94)	1.29	2.41	13.48	.91	35.40	5.99

5 SUMMARY AND CONCLUSIONS

Initially, the relationship of the P&PI and IT&C surveys with each other and with the NIA measure of business fixed investment was discussed. Next, the question of the forecast performances of these surveys in terms of growth rates was addressed. In this exercise, the focus was on the difference between the forecast growth rate from either the P&PI or the IT&C survey (taken at a certain point in time), and the appropriate final actual growth rate. The information was summarized using such statistics as the root mean square error, Theil's inequality coefficient and the mean absolute error. Next, descriptive statistics on the 1953-77 and 1970-77 time periods were presented for the aggregations considered. In addition, the sample data were divided according to years of cyclical contraction and cyclical expansion in aggregate economic activity. Finally, regressions were run between the forecast surveys and final actual growth rates in order to assess the effects of economic cycles. For the P&PI survey some attempt was made to introduce a variable to capture this stage-of-the-cycle effect.

The main conclusion was that the P&PI forecast surveys, while apparently subject to systematic biases, generally provide a good indication of the final outturn for both the P&PI actuals figures and, by implication, for investment on a NIA basis. Admittedly, the forecast or beginning-of-the-year survey results tended to underestimate the final actual growth rate, while the revised forecast or mid-year survey results overestimated the final outturn. Moreover, it seems that the stage of the economic cycle influences the P&PI survey's predictive performance in that the greatest proportion of underestimation errors shown by the forecast survey occurred in years of cyclical expansion. In the case of the revised forecast survey, the mean absolute overestimation error during years of cyclical expansion is less

than is otherwise the case. With respect to the Industry, Trade and Commerce survey, the descriptive statistics suggest that the various forecast surveys on any one year are not very helpful in forecasting the final outturn in terms of the actual realized growth rates that are ultimately shown by that survey.[18] The results based on the matched sample data used here show that underestimation errors predominated in the two-year-ahead and revised two-year-ahead forecasts while in the one-year-ahead and revised one-year-ahead surveys, overestimation errors generally proved to be the case. No improvement in all the descriptive statistics on the forecast performance of the IT&C survey was manifested until the release of the preliminary actual numbers in October of the year under consideration. However, regression analysis of the few observations available did show a reduction of nearly 35% in the standard error between estimations that used the forecast survey and those that used the revised forecast survey.

There are several implications for the interpretation of the results presented in this paper. The tentative evidence suggests that any adjustments to the beginning-of-the-year (forecast) P&PI survey for apparent systematic biases should attempt to take account of anticipated cyclical movements in aggregate economic activity, particularly for the manufacturing and non-energy categories. Similarly, the descriptive statistics indicate that the degree of overestimation bias to be allowed for in the revised forecast survey might also depend upon the cyclical phase of the economy. With respect to the final outturn in investment growth for any year, the summary figures in this paper imply that the preliminary actual numbers should be adjusted upward. The

18. Daub (1980), in an early discussion paper on his evaluation of the IT&C survey for the 1970-76 period, uses a different data base and seems to suggest that the forecast errors of the IT&C survey compare favourably with those reported in some U.S. studies on their investment intentions surveys.

results for the IT&C survey imply that a good deal of care must be exercised in using the growth rates for estimated nominal expenditures. However, users of this survey do benefit from the analysis by the Capital Expenditures Group[19] at IT&C of the implications of their survey results for growth in the volume of business fixed investment on a National Accounts basis.

At this point, it should be noted that there are several possibilities for future study in this area. Rigorous statistical tests might be designed to see if there is a statistically significant improvement in the P&PI survey results as the survey stages move closer to the final actual results. As well, an expected sales series could be constructed and the performance of each of the various stages of the survey assessed in a realization function context using growth rates. Finally, the cyclical performance of the surveys could be examined from the viewpoint of growth cycles (see Murphy et al (1977)) to determine if the conclusions presented here are valid in that context.

19. Conversations with members of this group suggest that both the quantitative and qualitative aspects of their survey results and other quantitative and qualitative information, both direct (shipments of machinery and equipment) and indirect, as summarized in various forecasts of business investment and general economic activity, are judgmentally evaluated to arrive at this estimate.

APPENDIX 1

THE PRIVATE AND PUBLIC INVESTMENT SURVEY: DEFINITIONS, REVISIONS, BREAKS IN SERIES, SOURCES

A.1(i) Definitions

The basic data relate to new capital expenditures (in millions of dollars) on plant and/or equipment.

Aggregate investment by business excluding institutions is equal to total intended or actual expenditures reported by survey participants less investment outlays by government departments, by institutions, and on housing (all from Summary Table 1 in Sources [1] referred to below). Investment outlays by business excluding institutions for the machinery and equipment and non-residential construction subcomponents are derived in the same manner from the same source.

Manufacturers' investment outlays are taken directly from the publications (Summary Table 1 in Sources [1]), while non-manufacturing outlays are the residual category between expenditures by business excluding institutions and by manufacturers. Energy investment outlays, both intended and actual, encompass the six industries identified in an article published by the Bank of Canada in its monthly Review.[1] These industries are: (i) petroleum and gas mining, (ii) petroleum and coal refining, (iii) electric power, (iv) gas distribution, (v) gas pipelines, and (vi) industrial chemicals. The requisite four observations on each year for every category are available from 1966 forward. Non-energy investment is the residual between expenditures by business excluding institutions and by industries comprising the energy category.

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1. See "Investment surveys and recent trends in business investment", Bank of Canada Review, September 1975, p. 10.

A.1(ii) Revisions

For consistency purposes in assessing the forecast performances of the various surveys, data from the original publications, (Sources [1]) were used for most of the calculations in this paper. However, the final actual numbers in [2] differ, owing to conceptual and classification changes and the incorporation of more recent information. As may be seen from Appendix Table 1, the implication of these changes for the originally published final actual figures is rather minor. Moreover, although it can be argued that these revisions are equally applicable to the forecast numbers, Statistics Canada did not apply them since the forecast is not relevant once the final actual numbers are available.

Appendix Table 1

COMPARISON BETWEEN REVISED AND ORIGINALLY PUBLISHED FINAL ACTUAL INVESTMENT FIGURES
(Revised minus original level as percent of original level)

	Business Excluding Institutions			Non-manufacturing		
	Total	Machinery and equipment	Non-residential construction	Total	Machinery and equipment	Non-residential construction
1952	1.0	1.8	-	1.5	2.8	-
1953	1.4	1.9	0.8	2.0	3.7	-
1954	1.6	2.2	0.8	2.1	4.0	-
1955	1.0	1.9	-	1.4	2.8	-
1956	1.0	-	2.0	1.3	-	2.5
1957	0.8	0.2	1.4	1.1	0.3	1.7
1958	1.0	0.1	1.8	1.3	0.1	2.2
1959	1.2	-	2.4	1.5	-	2.9
1960	1.1	-0.1	2.6	1.5	-0.2	3.0
1961	1.9	0.3	3.4	2.4	0.5	3.9
1962	1.7	0.3	3.4	2.3	0.4	4.0
1963	1.2	0.2	2.4	1.6	0.3	2.8
1964	1.1	0.2	2.2	1.5	0.4	2.6
1965	-0.2	0.2	-0.7	-0.3	0.4	-0.8
1966	-	-	-	-	-	-
1967	-	-	-	-	-	-
1968	-	-	-	-	-	-

A.1(iii) Breaks in series

The major breaks in series for the aggregates shown reflected the 1960 revision to the Standard Industrial Classification. The aggregations most affected were those for manufacturing and non-manufacturing. For instance, gas processing plants were moved from the manufacturing category - products of petroleum and coal - to mining. Similarly, salt producers were moved from the manufacturing category - non-metallic mineral products - to mining. The result of these shifts was a 1.9 percent lower level of manufacturing investment and a 0.6 percent higher level of non-manufacturing investment. Adjustment of the descriptive statistics for this change, however, does not alter to any extent the results presented in the body of the text.

The implications of the 1970 revision to the Standard Industrial Classification were insignificant for our analysis.

Sources

[1] Department of Trade and Commerce (assisted by Dominion Bureau of Statistics). Private and Public Investment in Canada, Outlook and Mid-Year Survey. Annual publications 1952 to 1965 inclusive.
Department of Trade and Commerce and Dominion Bureau of Statistics. Private and Public Investment in Canada, Outlook and Mid-Year Survey, Dominion Bureau of Statistics, Catalogue Nos. 61-205 and 61-206. Annual publications 1966 to 1974 inclusive.

Statistics Canada. Private and Public Investment in Canada, Outlook and Mid-Year Survey, Statistics Canada, Catalogue Nos. 61-205 and 61-206. Annual publications 1975 to 1979 inclusive.

[2] Cansim, (Matrix 1190), Final Actual Data for Aggregate Investment, The Machinery and Equipment, and Non-residential Structures Subcomponents and for Major Industry Groupings, Statistics Canada, annually 1956 forward.

Dominion Bureau of Statistics. Private and Public Investment in Canada 1946-1957, Dominion Bureau of Statistics, Catalogue No. 61-504 (occasional).

APPENDIX 2

BACKGROUND TO THE PRIVATE AND PUBLIC INVESTMENT SURVEY[1]

A.2(i) Historical background

Prior to World War II, a number of government departments as well as the Bank of Canada surveyed the economic situation as a means of aiding in the formulation of economic policy. In 1944, towards the end of the war, the Department of Reconstruction was created, and the department, in co-operation with the Dominion Bureau of Statistics, organized a survey of business investment intentions. The initial report was for government use only and was presented to Parliament in 1945. The first report for publication was produced the following year and included data on manufacturing, mining, central electric stations and telephone systems. By 1951 most sectors had been included in the survey. Selected copies of the questionnaires currently used in the various stages of the P&PI survey appear in Appendix 4.

A.2(ii) Definitions[2]

Capital expenditure is defined as the total spent on new physical assets or installations including additions, replacements, major alterations, and all capitalized costs and work done by a company's own labour force, such assets to be used in the operations of an organization, or to be sold or leased to others. No deduction is made for receipts from insurance claims,

1. The source for this section is Private and Public Investment in Canada: 1926-1951, by Dr. O.J. Firestone (Department of Trade and Commerce, November 1951).
2. Sources for the following sections include: Private and Public Investment in Canada, Outlook and Regional Estimates, (Catalogue 61-205), and the definitions, concepts and methodology provided in the questionnaires from the sample surveys by the Construction Division of Statistics Canada.

the rate of depreciation of fixed assets, the scrap or trade-in value of an asset, or for capital grants from federal, provincial or municipal aid programs.

New construction includes the cost of new construction carried out during the year plus the cost of elevators, heating systems, air conditioning and similar components that are considered to be an integral part of the structure. Also included are the cost of land servicing and on-site preparation; leasehold and land improvements; and finally, townsite facilities such as sewers, streets, and schools. However, expenditures for the acquisition of existing assets and the cost of all land acquired are not included as these transactions are considered a transfer of ownership and not the creation of an asset.

New machinery and equipment includes the total delivered and installed cost of all new machinery and also includes imported used machinery and equipment. Progress payments are assigned to the year payment is made and any balance owing or holdbacks, to the year of acquisition. Excluded are used machinery and equipment purchased in Canada.

A.2(iii) Concepts and methodology

The main emphasis of the Private and Public Investment survey is on new capital expenditures rather than on non-capitalized repair expenditures.[3] For this reason expenditures made for the acquisition of previously existing structures, used (unless imported) machinery and equipment, and land, are excluded because these involve the transfer of domestic ownership and not the creation of a new asset. All companies surveyed are asked to report capital expenditure purchases charged to fixed asset accounts and adjustments are then made to account for the omission of equipment bought out of ordinary revenue and charged to current account. This adjustment is grouped under the "capital items

3. Private and Public Investment in Canda: Outlook 1979, Statistics Canada Catalogue 61-205, p. 47.

charged to operating expenses" account. Although technically housing is not a capital expenditure, it has been included in the survey because it constitutes a large proportion of construction expenditures and undergoes "cyclical fluctuations similar to those which characterize business, institutional and government capital expenditures."[4]

In the estimation of capital expenditures, adjustments are made to allow for the smaller organizations not surveyed in any of the reports and those large respondents that fail to report. In areas where the survey method is not feasible, "estimates are arrived at independently on the basis of current trends and expert opinion in these fields."[5] Finally, since the survey is conducted by establishment and not by company, firms dealing in more than one line of business report separately for each. The exception to this rule occurs when a company builds a multi-use structure that normally might be coded to more than one industry classification but because of reporting problems, the combined total is submitted as one reporting unit.

4. Private and Public Investment in Canada: Outlook 1979, Statistics Canada Catalogue 61-205, p. 47. Although included in the Private and Public Investment survey, housing has been excluded from this study.
5. Private and Public Investment in Canada: Outlook 1979, Statistics Canada Catalogue 61-205, page 48.

APPENDIX 3[1]

CONCEPTS AND DEFINITIONS OF THE "CAPITAL INVESTMENT INTENTIONS AND OUTLAYS SURVEY"

In the IT&C survey, capital expenditures are defined as equal to actual and intended gross expenditures in Canada on new physical assets or facilities including additions, replacements and major alterations. Also included are: all related costs as well as any work done by a company's own labour force; expenditures of a capital nature charged to the operating account; expenditures for development and exploratory drilling; and the acquisition of imported machinery and equipment. Excluded are charges for rented or leased buildings, and machinery and equipment. Also excluded are costs of geological and geophysical work by oil companies, offsite exploration and the acquisition of existing structures, as these outlays involve the transfer of ownership and not the creation of new assets. There is no division of expenditures into machinery and equipment and non-residential construction in this report although the survey does allow for such a breakdown.

Owing to the problem of a constantly changing number of firms, capital expenditures are given on a one- and two-year basis. This facilitates the calculation of year-to-year growth rates and allows reliable conclusions to be made based on these growth rates. Examples of survey questionnaires follow in Appendix 4.

1. Sources for this section include: Capital Investment Intentions for the next 4 years: 1975-79, Department of Industry, Trade and Commerce (February, 1975).

APPENDIX 4

EXAMPLES OF SURVEY QUESTIONNAIRES

P&PI SAMPLE QUESTIONNAIRES

Statistics Canada Statistique Canada

Construction Division (Ottawa, Ont. K1A 0T6)
For information – Phone 613-995-9013

FORM F8
FORECAST – 1979

Target Date for Receipt – December 28, 1978

Confidential Report

CAPITAL AND REPAIR EXPENDITURES

Preliminary Estimate for 1978

and

Forecast for 1979

Make any NECESSARY changes in the above identification etc. below

Si vous préférez recevoir ce questionnaire en français, veuillez cocher ☐

(Note: All items may not be applicable)

Identification _____

Organization name _____

Attention of: _____

Address _____ Postal code _____

If this report is for operations in Newfoundland, Nova Scotia, Quebec, Ontario, Manitoba, Saskatchewan, Alberta or British Columbia, please refer to special note on page 4 about arrangements for sharing of data with the statistical agencies of those provinces.

REPORTS REQUIRED:

Report ALL of your organization's capital and repair expenditures made for establishments and properties LOCATED IN CANADA. Separate questionnaires should be completed for each type of operation (examples: leasing, wholesaling, hospitals, specific manufacturing industry, etc.) in which your organization is engaged.

– Firms in manufacturing should submit a separate report for each establishment.

– Other organizations not in manufacturing should submit a report for each province or territory in which such activities take place.

NOTES:

1. Individual reports are CONFIDENTIAL and used only for arriving at group totals for the publication "Private and Public Investment in Canada" (Catalogue 61-205).
2. In leasing arrangements, e.g. lease-back and net lease, for the construction of "revenue" or "leasehold" buildings, the firm paying for the work should report the total expenditures made.
3. Capital expenditures on residential construction should be included only in question 5. (See definitions on page 4)
4. If you report expenditures in Section A, questions 1 and/or 3, please complete Section B on pages 2 and 3.

(Please print or type)

1. Principal operations, type of business or type of institution _____
2. Part of operations covered by this report _____
3. Location of operations, or institution, for which this report is made _____
4. Name under which operation is carried on _____

Check type of organization: ☐ Individual ☐ Partnership ☐ Incorporated Company ☐ Incorporated Co-operative ☐ Other (specify) _____

If government-owned, state whether Federal, Provincial or Municipal _____

REPORTING PERIODS for this report

(1978) _____ 19____ to _____ 19____ (1979) _____ 19____ to _____ 19____

NOTE:

1. Please report using the same twelve month period on each of our capital expenditures surveys for a particular year (Forecast, Mid-Year Forecast, Preliminary Estimate and Actual).
2. Calendar year figures are preferred. However, if your accounts are for a non-calendar year, report for the fiscal years ending between June 1, 1978 and May 31, 1979, and between June 1, 1979 and May 31, 1980.

CAPITAL AND REPAIR EXPENDITURES (For Definitions of Items 1 to 5 See page 4)	1978 Preliminary estimates of expenditures	1979 Forecast of expenditures expected
SECTION A	(Thousands of dollars)	
1. Capital expenditures on NEW buildings and all other types of construction	050	051
2. (a) Capital expenditures on NEW machinery and equipment	052	053
(b) Capital expenditures on NEW machinery and equipment acquired by your firm for the purpose of leasing to others, not included in 2 (a) above	054	055
3. Non-capitalized repair expenditures on buildings and on all other types of construction	056	057
4. Non-capitalized repair expenditures on machinery and equipment	058	059
TOTAL 1, 2, 3 and 4	060	061
EXPENDITURES ENTERED IN QUESTIONS 5 AND 6 ARE NOT TO BE INCLUDED IN QUESTIONS 1 TO 4 ABOVE		
5. Estimated capital expenditures on New Residential Construction	062	063
6. Estimated expenditures for the purchase of land, used buildings and used machinery and equipment. (Include imported used machinery and equipment in Question 2 above)	064	065

LEASE INFORMATION

If you are or will be a lessee of a building under construction or recently completed, give the name and address of lessor:

Name . . . . . .

(Please print)

Address . . . . . .

5–3203–6.1: 24-7-78

Section B. Construction Expenditures – By Type of Structure

INSTRUCTIONS:

1. Split the expenditures reported in Section A, Question 1 and/or 3 into the different types of structures listed below for both "Building" and "Engineering" construction. The "Grand Total" of Section B, page 3, should equal the amounts shown in Section A, Question 1 and 3.
If none of the specified structures are appropriate please enter the value along with a description in either the "other building" category (item 35) or the "other engineering" category (item 87A).

I – BUILDING CONSTRUCTION	Catalogue 64-201 Item Numbers	CONSTRUCTION EXPENDITURES			
		PRELIMINARY 1978		FORECAST 1979	
		Capital	Non-capitalized Repair	Capital	Non-capitalized Repair
		(Thousands of dollars)			
INDUSTRIAL TYPE BUILDINGS		100	101	102	103
Factories, plants, workshops, food canneries, smelters	9	104	105	106	107
Mine and mine mill buildings	10	108	109	110	111
Railway stations, roadway buildings	11	112	113	114	115
Railway shops, engine houses	12	116	117	118	119
COMMERCIAL TYPE BUILDINGS					
Warehouses, storehouses, refrigerated storage, etc.	14	120	121	122	123
Grain elevators	15	124	125	126	127
Hotels, clubs, restaurants, cafeterias, tourist cabins	16	128	129	130	131
Office buildings	17	132	133	134	135
Stores, retail and wholesale	18	136	137	138	139
Garages and service stations	19	140	141	142	143
Theatres, arenas, amusement and recreational buildings	20	144	145	146	147
Laundries and dry cleaning establishments	21	148	149	150	151
INSTITUTOINAL TYPE BUILDINGS					
Schools and other educational buildings	23	152	153	154	155
Churches and other religious buildings	24	156	157	158	159
Hospitals, sanatoria, clinics, first-aid stations, etc.	25	160	161	162	163
Other institutional buildings	26	164	165	166	167
OTHER BUILDING CONSTRUCTION					
Farm buildings (excluding dwellings)	28	168	169	170	171
Broadcasting, radio & television relay and booster stations, telephone exchanges	29	172	173	174	175
Aircraft hangars	30	176	177	178	179
Passenger terminals, bus, boat, air and other	31	180	181	182	183
Armouries, barracks, drill halls, etc.	32	184	185	186	187
Bunkhouses, dormitories, camp cookeries, bush depots and camps	33	188	189	190	191
Laboratories	34	192	193	194	195
Other building construction, please specify below	35	196	197	198	199
I. TOTAL – Value of all building construction		220	221	222	223
II – ENGINEERING CONSTRUCTION		300	301	302	303
MARINE CONSTRUCTION					
Docks, wharves, piers, breakwaters	38	304	305	306	307
Retaining walls, embankments, riprapping	39	308	309	310	311
Canals and waterways	40	312	313	314	315
Dredging and pile driving	41	316	317	318	319
Dyke construction	42	320	321	322	323
Logging booms	43	324	325	326	327
Other marine construction	44	328	329	330	331
ROAD, HIGHWAY AND AIRPORT RUNWAYS					
Highway, road and street construction (including grading, scraping, oiling, filling)	46	332	333	334	335
Parking lots	47	336	337	338	339
Sidewalks, paths	48				
Runways, landing fields, tarmac	49	340	341	342	343

ENGINEERING CONSTRUCTION CONTINUED ON NEXT PAGE

Section B. Construction Expenditures – By Type of structure

INSTRUCTIONS – concluded

2. DO NOT report a single value for a combination of structures when it is possible to provide a breakdown into different type of structure, e.g. a "townsite" or a "multi purpose commercial development".

3. Statistics reported in this section will be aggregated into totals for the publication "Construction in Canada" (Catalogue 64-201).

II – ENGINEERING CONSTRUCTION – Concluded	Catalogue 64-201 Item Numbers	CONSTRUCTION EXPENDITURES			
		PRELIMINARY 1978		FORECAST 1979	
		Capital	Non-capitalized Repair	Capital	Non-capitalized Repair
		(Thousands of dollars)			
WATERWORKS AND SEWAGE SYSTEMS		344	345	346	347
Tile drains, drainage ditches, storm sewers	51	348	349	350	351
Water mains, hydrants and services	52	352	353	354	355
Sewage systems, disposal plants and connections	53	356	357	358	359
Water pumping stations and filtration plants	54	360	361	362	363
Water storage tanks	55	364	365	366	367
DAMS AND IRRIGATION					
Dams and reservoirs	57	368	369	370	371
Irrigation and land reclamation projects	58	372	373	374	375
ELECTRIC POWER CONSTRUCTION					
Electric power generating plants, including water conveying and controlling structures	60	376	377	378	379
Electric transformer stations	61	380	381	382	383
Power transmission and distribution lines, trolley wires	62	384	385	386	387
Street lighting (standards, brackets and luminaires)	63	388	389	390	391
RAILWAY, TELEPHONE AND TELEGRAPH					
Railway tracks and roadbeds	65	392	393	394	395
Signals and interlockers	66	396	397	398	399
Telegraph, telephone and cablevision lines, underground and marine cables and micro-wave	67	400	401	402	403
GAS AND OIL FACILITIES					
Gas mains and services	69	404	405	406	407
Pumping stations, oil	70	408	409	410	411
Pumping stations, gas	71	412	413	414	415
Oil storage tanks	72	416	417	418	419
Gas storage tanks	73	420	421	422	423
Oil pipe lines	74	424	425	426	427
Gas pipe lines	75	428	429	430	431
Oil and gas wells	76	432	433	434	435
Oil refinery – processing units	77	436	437	438	439
Natural gas processing plants	78	440	441	442	443
OTHER ENGINEERING CONSTRUCTION					
Bridges, trestles, culverts, overpasses, viaducts	80	444	445	446	447
Tunnels and subways	81	448	449	450	451
Incinerators	82	452	453	454	455
Park systems, landscaping, sodding, etc.	83	456	457	458	459
Swimming pools, tennis courts, outdoor recreation facilities	84	460	461	462	463
Mine shafts and other below surface workings	85	464	465	466	467
Fences, snowsheds, signs, guard rails	86	468	469	470	471
Central heating plants	87	472	473	474	475
Other engineering construction, please specify below (Not to include machinery or repairs to machinery)	87A	476	477	478	479
		480	481	482	483
		484	485	486	487
II. TOTAL – Value of All Engineering Construction (from page 2, items 38-49 plus page 3, all items)		496	497	498	499
GRAND TOTAL – Sum of totals, I and II		500	501	502	503

AUTHORITY: Statistics Act, Statutes of Canada 1970-71-72, Chapter 15, and applicable provincial statutes and regulations.

FEDERAL PROVINCIAL AGREEMENTS TO SHARE INFORMATION: To avoid duplication of enquiry and to provide consistent statistics, this survey is being conducted under cooperative agreements, made in accordance with the Statistics Act, Statutes of Canada, 1970-71-72, Chapter 15, under Section 10 for the exchange of information with: The Quebec Bureau of Statistics, The Saskatchewan Bureau of Statistics, The British Columbia Statistical Agency, for respondents in each of the respective provinces; and under Section 11 for joint collection and sharing of information with: The Newfoundland Central Statistical Services, The Nova Scotia Statistical Services, The Ontario Central Statistical Services, The Manitoba Bureau of Statistics, The Alberta Bureau of Statistics for respondents in each of the respective provinces.

Agreements coming under Section 11 of the Canada Statistics Act shall not apply to any respondent who gives notice in writing to the Chief Statistician that he objects to the sharing of the information. IF YOU CHOOSE TO OBJECT, the provincial agency concerned will be notified and subsequently may contact you to explain its need for the information and its rights under provincial legislation.

REASONS FOR CHANGES IN CAPITAL EXPENDITURES PLANS FOR 1978

[Specify reasons for changes in the figures reported on this questionnaire for the 1978 preliminary estimates and the figures supplied on the 1978 mid-year report (yellow form)]

OTHER EXPLANATORY NOTES

(Please mention here any tentative plans being considered which are not covered in the data reported for the year 1979)

DEFINITIONS

Capital expenditures

Report the gross capital expenditures on new physical assets or installations for use in the operation of your organization, to be sold or leased to others and also including additions, replacements and major alterations. include all capitalized costs such as architectural, legal and engineering fees as well as work done by your own labour force. Do not deduct receipts from insurance claims or from the sale of own fixed assets or allowances for scrap or trade-in. Also do not deduct capital grants from federal, provincial or municipal aid programs.

1. New construction

   In question 1, report the total cost of new construction carried out during the year, irrespective of the time final payment is made. Include also: (1) the cost of elevators, heating systems, air conditioning, etc. which may be considered an integral part of the building or structure, (2) the cost of land servicing and of site preparation, (3) leasehold and land improvements, (4) "townsite" facilities, such as streets, sewers, stores, schools, etc. Exclude expenditures for new residential construction, for the acquisition of existing assets and for the cost of land acquired, all of which should be reported separately in questions 5 and 6.

2. New machinery and equipment

   In question 2, report total delivered and installed cost af all new machinery and equipment, such as motors, generators, transformers, etc., and the delivered cost of movable equipment, such as ships, airplanes, cars, trucks, office furniture and appliances etc., whether for your own use or rent to others. Include progress payments in the year payment is made and any balance owing, or hold-backs, in the year of acquisition. Imported used machinery and equipment is also to be included since it is an addition to the Canadian economy. However, the expenditures on used machinery and equipment purchased in Canada should be reported separately in question 6.

3, 4. Non-capitalized repair expenditures

   Report the gross non-capitalized repair expenditures on non-residential buildings and other structures; that is including all material and labour costs. Include the value of repair work done by your own employees, as well as payments to persons outside your employ. Do not include here major replacement of fixed assets; these should be shown as capital expenditures in item 1 or 2 of section A. Exclude routine maintenance costs, such as char service, oiling or cleaning of machinery, sanding and snow removal. Where such routine maintenance costs are not readily identifiable in repair accounts, an estimated amount for such items may be subtracted from the account balances to arrive at the repair costs as defined here.

5. New residential construction

   In question 5, report the value of residential structures including the housing portion of multi-purpose projects and of townsites with the following EXCEPTIONS: – (1) buildings that have accommodation units without self-contained or exclusive use of bathroom and kitchen facilities (e.g. some student and senior citizen residences, etc.), (2) the non-residential portion of multi-purpose projects and of townsites. The exceptions should be reported in question 1. Also the value of any land purchased should be included in question 6.

Name and address of person responsible for this report

(Name) _____ (Official position) _____

(Business address) _____ (Telephone number) _____

Date of this report _____ 19 ____

Office Use

Edited _____

Checked _____

Entered _____

Statistics Canada Statistique Canada

Construction Division (Ottawa, Ont. K1A 0T6)

For information - Phone 613-995-9013

Telex Stat. Can. Ott. 053-3585

Form M2

Target Date for Receipt June 7, 1979

Confidential Report

CAPITAL EXPENDITURES

Mid-Year Forecast

1979

(Twelve month period)

Si vous préférez recevoir ce questionnaire en français, veuillez cocher ☐

Make any NECESSARY changes in the above identification etc. below

Authority – Statistics Act, Chapter 15, Statutes of Canada 1970-71-72.

(Note: All items may not be applicable)

Identification _____

Organization name _____

Attention of: _____

Address _____

Postal Code _____

If this report is for operations in Newfoundland, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta or British Columbia, please refer to special note on reverse side of this page about arrangements for sharing of data with the statistical agencies of those provinces.

REPORTS REQUIRED:

Report ALL of your organization's capital expenditures made for establishments and properties LOCATED IN CANADA. Separate questionnaires should be completed for each type of operation (examples: leasing, wholesaling, hospitals, specific manufacturing industry, etc.) in which your organization is engaged.

Firms in manufacturing should submit a separate report for each establishment.

Other organizations not in manufacturing should submit a report for each province or territory in which such activities take place.

NOTES:

1. Individual reports are CONFIDENTIAL and used only for arriving at group totals for the publication "Private and Public Investment in Canada" (Catalogue 61-206).
2. In leasing arrangements, e.g. lease-back and net lease, for the construction of "revenue" or "leasehold" buildings, the firm paying for the work should report the total expenditure made.
3. Capital expenditures on residential construction should be included only in question 3. (See definitions on page 2).

REPORTING PERIOD for this report

_____ 19 _____ to _____ 19 _____

NOTE:

1. Please report using the same twelve month period on each of our capital expenditures surveys for a particular year (Forecast, Mid-Year Forecast, Preliminary Estimate and Actual).
2. Calendar year figures are preferred. However, if your accounts are for a non-calendar year, report for the fiscal year ending between June 1, 1979 and May 31, 1980.

SECTION A – MID-YEAR FORECAST OF CAPITAL EXPENDITURES for the year 1979: (For Definitions see back of page)	Thousands of dollars	For department use
1. Estimated capital expenditures on NEW buildings and all other types of construction	051	
2. (a) Estimated capital expenditures on NEW machinery and equipment	053	
2. (b) Estimated capital expenditures on NEW machinery and equipment acquired by your firm for the purpose of leasing to others not included in 2(a) above	055	
TOTAL OF 1 AND 2	071	
3. Estimated capital expenditures on New Residential Construction	063	
4. Estimated expenditures for the purchase of land, used buildings and used machinery and equipment. (Include imported used machinery and equipment in Question 2)	065	

SECTION B – REASONS FOR CHANGES IN CAPITAL EXPENDITURES PLANS FOR 1979 [Between this report and the 1979 forecast (green questionnaire)]

Name and address of person responsible for this report

(Name) (Official position)

(Name under which operation is carried on) (Business address)

Date of this report _____ Telephone number _____

5-3203-2.1: 8-2-79

RETURN ONE COMPLETED QUESTIONNAIRE IN ENCLOSED ENVELOPE

DEFINITIONS

Capital Expenditures

Report the gross capital expenditures on new physical assets or installations for use in the operation of your organization, to be sold or leased to others and also including additions, replacements and major alterations. Include all capitalized costs such as architectural, legal and engineering fees as well as work done by your own labour force. Do not deduct receipts from insurance claims or from the sale of own fixed assets or allowances for scrap or trade-in. Also do not deduct capital grants from federal, provincial or municipal aid programs.

1. New Construction

In question 1, report the total cost of new construction carried out during the year, irrespective of the time final payment is made. Include also: (1) the cost of elevators, heating systems, air conditioning, etc. which may be considered an integral part of the building or structure, (2) the cost of land servicing and of site preparation, (3) leasehold and land improvements, (4) "townsite" facilities, such as streets, sewers, stores, schools, etc. Exclude expenditures for new residential construction, for the acquisition of existing assets and for the cost of land acquired, all of which should be reported separately in questions 3 and 4.

2. New machinery and equipment

In question 2, report total delivered and installed cost of all new machinery and equipment, such as motors, generators, transformers, etc., and the delivered cost of movable equipment, such as ships, airplanes, cars, trucks, office furniture and appliances etc., whether for your own use or rent to others. Include progress payments in the year payment is made and any balance owing, or hold-backs, in the year of acquisition. Imported used machinery and equipment is also to be included since it is an addition to the Canadian economy. However, the expenditures on used machinery and equipment purchased in Canada should be reported separately in question 4.

3. New residential construction

In question 3, report the value of residential structures including the housing portion of multi-purpose projects and of townsites with the following EXCEPTIONS: – (1) buildings that have accommodation units without self-contained or exclusive use of bathroom and kitchen facilities (e.g. some student and senior citizen residences, etc.), (2) the non-residential portion of multi-purpose projects and of townsites. The exceptions should be reported in question 1. Also the value of any land purchased should be included in question 4.

AUTHORITY: Statistics Act, Statutes of Canada 1970-71-72, Chapter 15, and applicable provincial statutes and regulations.

FEDERAL PROVINCIAL AGREEMENTS TO SHARE INFORMATION: To avoid duplication of enquiry and to provide consistent statistics, this survey is being conducted under cooperative agreements, made in accordance with the Statistics Act, Statutes of Canada, 1970-71-72, Chapter 15, under Section 10 for the exchange of information with: The Quebec Bureau of Statistics, The Saskatchewan Bureau of Statistics, The British Columbia Statistical Agency, for respondents in each of the respective provinces; and under Section 11 for joint collection and sharing of information with: The Newfoundland Central Statistical Services, the Nova Scotia Statistical Services, The Office of the Economic Advisor in the New Brunswick Department of Finance, The Ontario Central Statistical Services, The Manitoba Bureau of Statistics for respondents in each of the respective provinces.

Agreements coming under Section 11 of the Canada Statistics Act shall not apply to any respondent who gives notice in writing to the Chief Statistician that he objects to the sharing of the information. IF YOU CHOOSE TO OBJECT, the provincial agency concerned will be notified and subsequently may contact you to explain its need for the information and its rights under provincial legislation.

Statistics Canada Statistique Canada

Construction Division (Ottawa, Ont. K1A 0T6)
For information – Phone 613-995-9013
TELEX STAT CAN OTT 053-3585

Form A8

Complete after your fiscal year-end

Confidential Report

CAPITAL AND REPAIR EXPENDITURES ACTUAL 1978

Si vous préférez recevoir ce questionnaire en français veuillez cocher ☐

Make any NECESSARY changes in the above identification etc. below

(Note: All items may not be applicable)

Identification

Organization name

Attention of

Address Postal code

If this report is for operations in Newfoundland, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta or British Columbia, please refer to special note on page 4 about arrangements for sharing of data with the statistical agencies of those provinces.

REPORTS REQUIRED:

Report ALL of your organization's capital and repair expenditures made for establishments and properties LOCATED IN CANADA. Separate questionnaires should be completed for each type of operation (examples: leasing, wholesaling, hospitals, specific manufacturing industry, etc.) in which your organization is engaged.

Firms in manufacturing should submit a separate report for each establishment.

Other organizations not in manufacturing should submit a report for each province or territory in which such activities take place.

NOTES:

1. Individual reports are CONFIDENTIAL and used only for arriving at group totals for the publication "Private and Public Investment in Canada" (Catalogue 61-205).
2. In leasing arrangements, e.g. lease-back and net lease, for the construction of "revenue" or "leasehold" buildings, the firm paying for the work should report the total expenditure made.
3. Capital expenditures on residential construction should be included only in question 5. (See definitions on page 4)
4. If you report expenditures in Section A, questions 1 and/or 3 please complete both Section B and C on page 2, 3 and 4.

(Please print or type)

1. Principal operations, type of business or type of institution
2. Part of operations covered by this report
3. Location of operations, or institution, for which this report is made
4. Name under which operation is carried on

Check type of organization: ☐ Individual ☐ Partnership ☐ Incorporated Company ☐ Incorporated Co-operative ☐ Other (specify)

If government-owned, state whether Federal, Provincial or Municipal

REPORTING PERIOD for this report

_____ 19____ to _____ 19____

NOTE:

1. Please report using the same twelve month period on each of our capital expenditures surveys for a particular year (Forecast, Mid-Year Forecast, Preliminary Estimate and Actual).
2. Calendar year figures are preferred. However, if your accounts are for a non-calendar year, report for the fiscal year ending between June 1, 1978 and May 31, 1979.

CAPITAL AND REPAIR EXPENDITURES (For Definitions of Items 1 to 5 See page 4)	Actual Expenditures 1978	Department Use
SECTION A	$'000	
1. Capital expenditures on NEW buildings and all other types of construction		050
2. (a) Capital expenditures on NEW machinery and equipment		052
(b) Capital expenditures on NEW machinery and equipment acquired by your firm for the purpose of leasing to others not included in 2 (a) above		054
3. Non-capitalized repair expenditures on buildings and on all other types of construction		056
4. Non-capitalized repair expenditures on machinery and equipment		058
TOTAL 1, 2, 3 and 4		060

EXPENDITURES ENTERED IN QUESTIONS 5, 6 AND 7 ARE NOT TO BE INCLUDED IN QUESTIONS 1 TO 4 ABOVE	Buildings, Engineering Structures and land	Machinery and Equipment
5. Capital Expenditures on New Residential Construction	062	
6. Expenditures for the Purchase of USED and EXISTING assets in Canada (Include imported used machinery and equipment in Question 2) (a) Purchase of used fixed assets	063	064
(b) Purchase of land	065	
7. Receipts from the sale of used or existing assets: (a) Receipts from the sale of used or existing buildings, engineering structures, machinery and equipment	066	067
(b) Receipts from the sale of land	068	

RETURN ONE COMPLETED QUESTIONNAIRE IN ENCLOSED ENVELOPE

Section B. Construction Expenditures – By Type of Structure

INSTRUCTIONS:
1. Split the expenditures reported in Section A, Question 1 and/or 3 into the different types of structures listed below for both "Building" and "Engineering" construction. The "Grand Total" of Section B, page 3, should equal the amounts shown in Section A, Question 1 and 3.
If none of the specified structures are appropriate please enter the value along with a description in either the "other building" category (item 35) or the "other engineering" category (item 87A).

I – BUILDING CONSTRUCTION	Catalogue 64-201 Item Numbers	CONSTRUCTION EXPENDITURES Actual 1978	
		Capital	Non-capitalized Repair
		(thousands of dollars)	
INDUSTRIAL TYPE BUILDINGS		100	101
Factories, plants, workshops, food canneries, smelters	9	104	105
Mine and mine mill buildings	10	108	109
Railway stations, roadway buildings	11	112	113
Railway shops, engine houses, water and fuel stations	12	116	117
COMMERCIAL TYPE BUILDINGS			
Warehouses, storehouses, refrigerated storage, etc.	14	120	121
Grain elevators	15	124	125
Hotels, clubs, restaurants, cafeterias, tourist cabins	16	128	129
Office buildings	17	132	133
Stores, retail and wholesale	18	136	137
Garages and service stations	19	140	141
Theatres, arenas, amusement and recreational buildings	20	144	145
Laundries and dry cleaning establishments	21	148	149
INSTITUTIONAL TYPE BUILDINGS			
Schools and other educational buildings	23	152	153
Churches and other religious buildings	24	156	157
Hospitals, sanatoria, clinics, first-aid stations, etc.	25	160	161
Other institutional buildings	26	164	165
OTHER BUILDING CONSTRUCTION			
Farm buildings (excluding dwellings)	28	168	169
Broadcasting, radio & television relay and booster stations, telephone exchanges	29	172	173
Aircraft hangars	30	176	177
Passenger terminals, bus, boat, air and other	31	180	181
Armouries, barracks, drill halls, etc.	32	184	185
Bunkhouses, dormitories, camp cookeries, bush depots and camps	33	188	189
Laboratories	34	192	193
Other building construction, please specify below	35	196	197
		220	221
I. TOTAL – Value of all building construction			
II – ENGINEERING CONSTRUCTION		300	301
MARINE CONSTRUCTION			
Docks, wharves, piers, breakwaters	38	304	305
Retaining walls, embankments, riprapping	39	308	309
Canals and waterways	40	312	313
Dredging and pile driving	41	316	317
Dyke construction	42	320	321
Logging booms	43	324	325
Other marine construction	44	328	329
ROAD, HIGHWAY AND AIRPORT RUNWAYS			
Highway, road and street construction (including grading, scraping, oiling, filling)	46	332	333
Parking lots	47	336	337
Sidewalks, paths	48	340	341
Runways, landing fields, tarmac	49		

Engineering Construction continued on next page

Section B. Construction Expenditures — By Type of Structure

INSTRUCTIONS — concluded

2. DO NOT report a single value for a combination of structures when it is possible to provide a breakdown into different type of structure, e.g. a "townsite" or a "multi purpose commercial development".
3. Statistics reported in this section will be aggregated into totals for the publication "Construction in Canada" (Catalogue 64-201).

II – ENGINEERING CONSTRUCTION Concluded	Catalogue 64-201 Item Numbers	Construction Expenditures Actual 1978	
		Capital	Non-capitalized Repair
		(thousands of dollars)	
WATERWORKS AND SEWAGE SYSTEMS			
Tile drains, drainage ditches, storm sewers	51	344	345
Water mains, hydrants and services	52	348	349
Sewage systems, disposal plants and connections	53	352	353
Water pumping stations and filtration plants	54	356	357
Water storage tanks	55	360	361
DAMS AND IRRIGATION			
Dams and reservoirs	57	364	365
Irrigation and land reclamation projects	58	368	369
ELECTRIC POWER CONSTRUCTION			
Electric power generating plants, including water conveying and controlling structures	60	372	373
Electric transformer stations	61	376	377
Power transmission and distribution lines, trolley wires	62	380	381
Street lighting (standards, brackets and luminaires)	63	384	385
RAILWAY, TELEPHONE AND TELEGRAPH			
Railway tracks and roadbeds	65	388	389
Signals and interlockers	66	392	393
Telegraph, telephone and cablevision lines, underground and marine cables and micro-wave	67	396	397
GAS AND OIL FACILITIES			
Gas mains and services	69	400	401
Pumping stations, oil	70	404	405
Pumping stations, gas	71	408	409
Oil storage tanks	72	412	413
Gas storage tanks	73	416	417
Oil pipe lines	74	420	421
Gas pipe lines	75	424	425
Oil and gas wells	76	428	429
Oil refinery – processing units	77	432	433
Natural gas processing plants	78	436	437
OTHER ENGINEERING CONSTRUCTION			
Bridges, trestles, culverts, overpasses, viaducts	80	440	441
Tunnels and subways	81	444	445
Incinerators	82	448	449
Park systems, landscaping, sodding, etc.	83	452	453
Swimming pools, tennis courts and other outdoor recreation facilities	84	456	457
Mine shafts and other below surface workings	85	460	461
Fences, snowsheds, signs, guard rails	86	464	465
Central heating plants	87	468	469
Other engineering construction, please specify below (Not to include machinery or repairs to machinery)	87A	472	473
. . . . .		476	477
. . . . .		480	481
. . . . .		484	485
		496	497
II. TOTAL – Value of All Engineering Construction (from page 2, items 38-49 plus page 3, all items)		500	501
GRAND TOTAL – Sum of totals, I and II			

BE SURE TO COMPLETE SECTION C ON PAGE 4

SECTION C – OWN ACCOUNT AND CONTRACT CONSTRUCTION WORK

Note: If dollar amounts not available enter estimated value or percentages for these questions.	New (thousands of dollars)	Non-capitalized repair (thousands of dollars)
1. Value of all construction work as reported in Section A, Items 1 and 3	600	601
1A. Contract billings or equivalent for above construction – including holdbacks	602	603
1B. Own Account work on construction (1 less 1A) – including all materials and supplies provided free to contractors and all architects, engineering and consultants fees and other similar services. Divide 1B by structure and cost below	604	605
Own Account (1B) Breakdown by Structure	606	607
B1. Building construction	608	609
B2. Engineering construction		
Own Account (1B) Breakdown by Cost		
B(a) Salaries and wages paid on new and repair construction – Show the total value of salaries and wages paid to your employees engaged in construction work. In the case of an employee engaged in both construction and some other type of work, include only that portion of his salary or wages paid for construction work. Report gross earnings before deductions such as income tax, etc. Include holiday pay and other allowances. Please note that separate amounts are required for new and repair	610	611
B(b) Cost of construction materials used by your own employees and also materials and supplies provided free to contractors for new and repair construction – Report total cost, delivered at the job, of all materials and supplies used by your own employees and also include the cost of materials supplied by you to contractors, since they are not included in contract billings. Please note that separate amounts are required for new and repair	612	613
B(c) Overhead expenses – This total should exclude expenditures reported in B(a) and B(b) above. Examples of overhead items are insurance, power, telephone and also architectural, legal and engineering fees considered to be applicable to construction and other indirect costs	614	615
TOTALS – The sum of items B(a) + B(b) + B(c) should equal 1B above	616	617

DEFINITIONS

Capital expenditures

Report the gross capital expenditures on new physical assets or installations for use in the operation of your organization, to be sold or leased to others and also including additions, replacements and major alterations. Include all capitalized costs such as architectural, legal and engineering fees as well as work done by your own labour force. Do not deduct receipts from insurance claims or from the sale of own fixed assets or allowances for scrap or trade-in. Also do not deduct capital grants from federal, provincial or municipal aid programs.

1. New construction

In question 1, report the total cost of new construction carried out during the year, irrespective of the time final payment is made. Include also: (1) the cost of elevators, heating systems, air conditioning, etc. which may be considered an integral part of the building or structure, (2) the cost of land servicing and of site preparation, (3) leasehold and land improvements, (4) "townsite" facilities, such as streets, sewers, stores, schools, etc. Exclude expenditures for new residential construction, for the acquisition of existing assets and for the cost of land acquired, all of which should be reported separately in questions 5 and 6.

2. New machinery and equipment

In question 2, report total delivered and installed cost of all new machinery and equipment, such as motor, generators, transformers, etc., and the delivered cost of movable equipment, such as ships, airplanes, cars, trucks, office furniture and appliances etc., whether for your own use or rent to others. Include progress payments in the year payment is made and any balance owing, or hold-backs, in the year of acquisition. Imported used machinery and equipment is also to be included since it is an addition to the Canadian economy. However, the expenditures on used machinery and equipment purchased in Canada should be reported separately in question 6.

3, 4. Non-capitalized repair expenditures

Report the gross non-capitalized repair expenditures on non-residential buildings and other structures; that is including all material and labour costs. Include the value of repair work done by your own employees, as well as payments to persons outside your employ. Do not include here major replacement of fixed assets, these should be shown as capital expenditures in item 1 or 2 of section A. Exclude routine maintenance costs, such as char service, oiling or cleaning of machinery, sanding and snow removal. Where such routine maintenance costs are not readily identifiable in repair accounts, an estimated amount for such items may be subtracted from the account balances to arrive at the repair costs as defined here.

5. New residential construction

In question 5, report the value of residential structures including the housing portion of multi-purpose projects and of townsites with the following EXCEPTIONS: – (1) buildings that have accommodation units without self-contained or exclusive use of bathroom and kitchen facilities (e.g. some student and senior citizen residences, etc.), (2) the non-residential portion of multi-purpose projects and of townsites. The exceptions should be reported in question 1. Also the value of any land purchased should be included in question 6.

AUTHORITY: Statistics Act, Statutes of Canada 1970-71-72, Chapter 15, and applicable provincial statutes and regulations.

FEDERAL PROVINCIAL AGREEMENTS TO SHARE INFORMATION: To avoid duplication of enquiry and to provide consistent statistics, this survey is being conducted under cooperative agreements, made in accordance with the Statistics Act, Statutes of Canada, 1970-71-72, Chapter 15, under Section 10 for the exchange of information with: The Quebec Bureau of Statistics, The Saskatchewan Bureau of Statistics, The British Columbia Statistical Agency, for respondents in each of the respective provinces; and under Section 11 for joint collection and sharing of information with: The Newfoundland Central Statistical Services, the Nova Scotia Statistical Services, The Office of the Economic Advisor in the New Brunswick Department of Finance, The Ontario Central Statistical Services, The Manitoba Bureau of Statistics for respondents in each of the respective provinces.

Agreements coming under Section 11 of the Canada Statistics Act shall not apply to any respondent who gives notice in writing to the Chief Statistician that he objects to the sharing of the information. IF YOU CHOOSE TO OBJECT, the provincial agency concerned will be notified and subsequently may contact you to explain its need for the information and its rights under provincial legislation.

RESPONDENTS EXPLANATORY NOTES.

Name of person responsible for this report (print or type)	Official position	Date of this report
Business address		Telephone number

IT&C SAMPLE QUESTIONNAIRE

Government of Canada / Gouvernement du Canada

Industry, Trade and Commerce / Industrie et Commerce

Ottawa, Canada K1A 0H5 / Ottawa, Canada K1A 0H5

CAPITAL INVESTMENT INTENTIONS AND OUTLAYS 1978 to 1983

INVESTISSEMENTS PROJETÉS ET RÉELS 1978 à 1983

CONFIDENTIAL (When Completed) / **CONFIDENTIEL** (une fois rempli)

*Over for definitions – *Au verso pour définitions*

Survey *Enquête* S79 | Date D-*J* – M-*M* – Y-*A*

Company *Société* (1–9)

In millions of dollars (round to the nearest 1/10 of a million)
En millions de dollars (arrondir au plus près dixième de millions)

PART SECTION A CAPITAL INVESTMENTS* INVESTISSEMENTS	Code (10–12)	Outlays – *Dépenses* Actual *Réel* 1978 (18–22)	Intentions 1979 (23–27)	1980 (28–32)	1981 (33–37)	1982 (38–42)	1983 (43–47)
Construction*	101						
Machinery/Equipment* *Machines/Equipement*	102						
	103						
Total Canada	199						
Total – abroad* *Total – à l'étranger*	200						
ALLOCATION BY PROVINCE – *RÉPARTITION PAR PROVINCE*							
Newfoundland *Terre-Neuve*	310						
Prince Edward Island *Ile-du-Prince-Edouard*	311						
Nova Scotia *Nouvelle-Ecosse*	312						
New Brunswick *Nouveau Brunswick*	313						
Atlantic region *Région atlantique*	301						
Quebec *Québec*	324						
Ontario	335						
Manitoba	346						
Saskatchewan	347						
Alberta	348						
Prairie region *Région des prairies*	304						
British Columbia *Colombie-Britannique*	359						
Yukon	360						
N.W.T. *T.N.O.*	361						
B.C. and Northern region *Région de la C.B. et du Nord*	305						
	370						

PART B CHANGES IN COSTS – *SECTION B ÉVOLUTION DES COUTS*

If expected changes in costs are included in the above budget figures for Canada (current dollars)*, please report the yearly percent changes in costs incorporated.

Si les chiffres ci-dessus pour le Canada tiennent compte de l'évolution des coûts (dollars courants), indiquer les hausses ou les baisses incorporées (en pourcentages)*

Code (10–12)	1978 (13–15)	1979 (16–18)	1980 (19–21)	1981 (22–24)	1982 (25–27)	1983 (28–30)
501						

If no changes in costs are included in the above budget figures for Canada (constant dollars)*, please report the base year used.

Si ces chiffres ne tiennent pas compte d'une hausse (ou d'une baisse) éventuelle des coûts, (dollars constants) indiquer l'année de base utilisée.*

Code (10–12)	(13–16)
502	1971

PART SECTION C ALLOCATION OF CAPITAL EXPENDITURES IN CANADA BY EXPENDITURE CATEGORY (1 to 7 below)
REPARTITION DES INVESTISSEMENTS AU CANADA PAR CATÉGORIE DES MISES DE FONDS (1 à 7 ci-dessous)

Please allocate your capital expenditures in Canada to the seven categories below. *Veuillez ranger vos investissements au Canada dans les sept catégories ci-dessous.*		Code (10–12)	$ Millions 1978 (13–17)	1979 (21–25)
Research and development	1. *Recherche et développement*	601		
Pollution abatement	2. *Assainissement de l'environnement*	602		
Working environment (health, safety, etc.)	3. *Milieu de travail (santé, sécurité, etc.)*	603		
Expansion of facilities (see note A below) – existing sites	4. *Expansion des installations (voir note A ci-dessous) – emplacement(s) actuel(s)*	604		
– new sites	5. *– nouvel(eaux) emplacement(s)*	606		
Replacement or modernization of facilities (see note B below)	6. *Remplacement ou modernisation d'installations (voir note B ci-dessous)*	605		
Other (specify e.g. energy related expenditures) *Autres (exemple, dépenses consacrés à l'énergie)*	7.	607		
		608		
		609		
TOTAL				

NOTES A: Expenditures undertaken in anticipation of expected demand. – *Dépenses faites pour satisfaire à la demande prévue*

B: Includes capital expenditures undertaken to improve productivity or offset rising costs. – *Comprend les investissements visant à améliorer la productivité ou à compenser les hausses des coûts.*

1002-17

CAPITAL AND REPAIR EXPENDITURES

"DEFINITIONS"

CAPITAL EXPENDITURES:

Report actual and intended (budgeted for) gross expenditures in Canada on new physical assets or facilities including additions, replacements and major alterations. Include all related costs charged to capital account, such as architectural, legal and engineering fees as well as work done by your own labour force; do not deduct receipts from insurance claims or allowances for scrap or trade-in. Include also expenditures of a capital nature which have been charged to operating account. Exclude charges for rented/leased buildings, machinery and equipment. Exclude also capitalized interest charges on loans with which capital projects are financed.

Gross expenditures should include the total value of outlays regardless of source of funds, i.e., inclusive of any government capital grants and/or subsidies.

Where applicable (oil companies, mining, etc.) expenditures for both development and exploratory drilling activities should be included, even if these are otherwise expensed by the companies. Expenditures for geological and geophysical work by oil companies are excluded and similarly in mining offsite exploration is excluded.

Include projects not in the "main line", i.e. a mining firm enters the hotel business and builds a hotel.

Report your portion in the case of a joint project.

CONSTRUCTION:

Report total actual and intended gross cost of construction (contract and by own employees) irrespective of the time of the final payment to cover building construction, all types of engineering construction such as roads, dams, transmission and pipelines, oil drilling and mine development. Include here the cost of elevators, heating systems, etc., which may be considered an integral part of the building or structure and the cost of site preparation and related land improvements. Exclude expenditures for the acquisition of previously existing buildings and other structures, and dwellings, bunk houses, etc., as well as the value of the land purchased.

MACHINERY AND EQUIPMENT:

Report total actual and intended gross installed cost of all new machinery, motors, generators, transformers, etc.; and the delivered cost of movable equipment, automobiles, trucks, professional and scientific equipment, office and store furniture and appliances, etc., whether for your own use or rent to others. Include progress payments paid out prior to delivery, and any balance owing or hold-backs in the year of acquisition. Exclude expenditures on used machinery and equipment unless imported.

INVESTMENT ABROAD

1) Capital investments should include outlays on land, plant and equipment (including used), infrastructural facilities (e.g. roads, living quarters), regardless of sourcing of funds, but purchased outside of Canada. Also, exclude leasing costs.

2) Report expenditures for all companies normally included in your consolidated financial statement.

CURRENT DOLLARS

Are those budget figures with a provision for an escalation in costs and, therefore reflect the expected future costs of new buildings, machinery and equipment.

CONSTANT DOLLARS

Are those budget figures with no provision for any expected escalation of costs and rather are based upon costs of either the present or some past year, i.e. the base year.

DÉPENSES D'IMMOBILISATION ET RÉPARATIONS

"DÉFINITIONS"

DÉPENSES D'IMMOBILISATION:

Déclarer les dépenses brutes effectuées ou prévues (au budget) pour de nouveaux biens matériels ou installations au Canada y compris les rajouts, remplacements et modifications importantes. Ajouter tous les frais connexes portés au compte de capital, comme les honoraires d'avocats d'architectes et d'ingénieurs ainsi que les travaux effectués par vos propres ouvriers; ne pas déduire les reçus de réclamations d'assurance ni les déductions pour les biens mis au rancart ou échangés. Ajouter également les dépenses d'immobilisation qui ont été portées au compte d'exploitation. Exclure les frais des immeubles, machines et équipements loués/pris à bail. Exclure aussi les frais d'intérêt capitalisés des prêts qui ont servi à financer des projets d'immobilisation.

Les dépenses brutes doivent comprendre la valeur totale des déboursés, peu importe d'où proviennent les fonds, c'est-à-dire y compris tous subsides ou subventions d'immobilisation provenant du gouvernement fédéral.

Dans le cas des sociétés minières, pétrolières, etc., ces dépenses doivent comprendre les frais de développement et de sondage d'exploration, même si la société doit effectuer les dépenses de toute façon. Le coût des études géologiques et géophysiques effectuées par les sociétés pétrolières sont exclus de même que dans le cas de mines, l'exploration effectuée en dehors de la zone productive.

Inclure les projets hors du cadre de l'exploitation habituelle, par exemple, une compagnie minière qui se lance en hôtellerie et construit un hôtel.

Déclarer, dans le cas d'un projet collectif, votre part.

CONSTRUCTION:

Déclarer le montant brut global, réels ou prévu des travaux de construction (effectués par des contractants ou par vos propres employés), peu importe le moment du paiement final de la constructions des immeubles, tous les genres de travaux de génie comme les routes, pipelines, forage des puits de pétrole et le développement minier. Ajouter ici le coût des ascenseurs, de l'installation du chauffage central, etc., qu'on peut considérer comme partie intégrante de l'immeuble ou de la structure et le coût de la préparation de l'emplacement et des améliorations foncières connexes. Ne pas tenir compte des frais d'acquisition des immeubles existants ni des autres bâtiments, habitations, dortoirs et autres ni du coût du terrain.

MACHINES ET MATÉRIEL:

Déclarer le coût brut global, réel ou prévu y compris l'installation, de toute nouvelle machine, moteur, générateur, transformateur, etc., ainsi que le coût livré du matériel mobile, automobiles, camions, équipement professionnel et scientifique, meubles et accessoires de bureau et de magasins, etc., qu'il soit destiné à votre propre usage ou à la location. Ajouter les paiements provisoires versés avant livraison et tout solde dû ou arriéré datant de l'année d'acquisition. Ne pas compter les dépenses d'achat de machine et du matériel d'occasion, à moins qu'il ne soit importé.

INVESTISSEMENTS À L'ÉTRANGER

1) Les investissements doivent comprendre les dépenses pour terrain, bâtiments et matériel (neuf et usagé), l'infrastructure (par ex.: routes, logements), sans égard à la provenance des fonds, mais pour ce qui est acheté à l'extérieur du Canada. Exclut toutefois les frais de location.

2) Déclarer les dépenses de toutes les compagnies qui font normalement partie de votre rapport financier consolidé.

DOLLARS COURANTS

Données de budgétisation qui prévoient une escalade des coûts et qui reflètent donc les futurs coûts prévus de nouveaux bâtiments, machines et matériel.

DOLLARS CONSTANTS

Données de budgétisation qui prévoient aucune escalade des coûts et qui sont plutôt basées sur les coûts actuels ou d'une année précédente (année de base).

Government of Canada / Gouvernement du Canada

Industry, Trade and Commerce / Industrie et Commerce

Ottawa, Canada K1A 0H5 / Ottawa, Canada K1A 0H5

INVESTMENTS ABROAD* 1978 to 1981

CONFIDENTIAL (when completed)

INVESTISSEMENTS À L'ÉTRANGER 1978 à 1981*

CONFIDENTIEL (une fois rempli)

Survey / *Relevé* S79 | Date D-J M-M Y-A | PART / *SECTION* D

Company / *Société* 1 ... 9 | In millions of dollars (round to the nearest 1/10 of a million) / *En millions de dollars (arrondir au plus près dixième de million)*

Country (Please specify) / *Pays (Veuillez préciser)*	Code	Assets / *Actif* 1978	Fixed assets / *Immobilisations* 1978	Capital investment – *Investissements* Actual – *Réel* 1978	Intentions 1979	Intentions 1980	Intentions 1981
	10 12	13 17	18 22	23 27	28 32	33 37	38 42
Total							

***INVESTMENT ABROAD**

1) Capital investments abroad should include outlays on land, plant and equipment (including used), infrastructural facilities (e.g., roads, living quarters), regardless of sourcing of funds, but purchased outside of Canada. Also, exclude leasing costs.

2) Report expenditures for all companies and foreign operations normally included in your consolidated financial statement, i.e., capital investment made either from Canadian or through foreign subsidiaries and affiliate of the Canadian corporate enterprise.

3) Investment totals should agree with the abroad totals for corresponding years in Part A, Linc 200.

INVESTISSEMENTS À L'ÉTRANGER

1) Les investissements à l'étranger doivent comprendre les dépenses pour terrain, bâtiments et matériel (neuf et usagé), l'infrastructure (par ex.: routes, logements), sans égard à la provenance des fonds, mais pour ce qui est acheté à l'extérieur du Canada. Exclut toutefois les frais de location.

2) Déclarer les dépenses de toutes les compagnies et opérations à l'étranger qui font normallement partie de votre rapport financier consolidé, par ex., investissements d'entreprises canadiennes ou de filiales d'entreprises canadiennes à l'étranger.

3) Les totaux des investissements devraient être en accord avec ceux pour les années correspondantes à la Section A, ligne 200.

No.

PART E
SECTION

Using the types of changes and reasons for changes listed below, please record the most significant types and seasons affecting seported plans since the Octobes 1978 survey.

D'après les renseignements inscrits ci-dessous, veuillez donner les modifications les plus importantes apportées à vos projets depuis l'enquête du mois d'octobre 1978, ainsi que les raisons qui ont amené celles-ci.

TYPES OF CHANGES

01 Abandoned plans

02 Deferred plans

03 Reduced existing plans*

04 Expanded existing plans*

05 Intsoduced new plans

06 Brought forwasd plans from future years

07 Re-introduced deferred plans

08 No change in plans**

*Carry-over of plans into or from a particular year should be viewed as either expanding or reducing existing plans for the year under consideration, in which case indicate reason "L" below.

**If there are no changes in plans but a change in budget figures associated with these same plans, then refer to reasons, for example a better estimate, cost factors, etc. Plans, therefore, are not to be considered synonymous with budget figures.

REASON FOR CHANGES

a) Market demand – domestic

b) Market demand – foreign

c) Capacity

d) Rate of return

e) Financing – external

f) Financing – internal

g) Costs – labour

h) Costs – Other† (specify e.g. energy)

i) Strikes

j) Government regulations†, policies and programs (specify e.g. trading regulations, tariffs, etc.)

k) Better estimates

l) Carry-overs

m) Other reasons† Specify below

†

For example

Type	0	1	0	3	0	5
Reason	a	c	e	i	a	j

GENRE DE MODIFICATION

01 Abandon des projets

02 Ajournement des projets

*03 Soustractions aux projets actuels**

*04 Additions aux projets actuels**

05 Présentation de nouveau projets

06 Présentation de projets prévus pour les années à venir

07 Présentation de projets ajournés antérieurement

*08 Aucune modification aux projets***

**Considérer les projets reportés d'une année à l'année en question où de celle-ci à une année à venir en tant que projets actuels avec additions ou soustractions. Dans ce cas, remplir la raison "L" ci-dessus*

***Si un projet n'a subi aucune modification mais que son budget a changé, remplir la section "raisons", donnant comme raisons, par exemple, une meilleure estimation, de nouveaux frais, etc. On se gardera de confondre modification d'un projet et modification de son budget.*

RAISONS DES CHANGEMENTS

a) Demande du marché – intérieur

b) Demande du marché – extérieur

c) Capacité

d) Taux du rendement

e) Financement extérieur

f) Financement intérieur

g) Frais de main-d'oeuvre

h) Frais – Autres (préciser† e.g. énergie)

i) Grèves

j) Programmes, politiques et† règlements gouvernementaux (préciser e.g. règlements du commerce, tarifs, etc.)

k) Meilleures évaluations

l) Reports

m) Autres raisons† Veuillez préciser

†

Par exemple

Genre	0	1	0	3	0	5
Raison	a	c	e	i	a	j

For each year, space is provided for 3 types of changes and 2 reasons for each type
Pour chaque année, on pourra indiquer 3 changements et pour chaque changement, 2 raisons

		Code	1978			1979			1980-83		
		10 12	13		18	19		24	25		30
CANADA	Type *Genre*	701	0	0	0	0	0	0	0	0	0
	Reason *Raison*	702									
ATLANTIC REGION – *RÉGION ATLANTIQUE*	Type *Genre*	703	0	0	0	0	0	0	0	0	0
	Reason *Raison*	704									
QUEBEC – *QUÉBEC*	Type *Genre*	705	0	0	0	0	0	0	0	0	0
	Reason *Raison*	706									
ONTARIO	Type *Genre*	707	0	0	0	0	0	0	0	0	0
	Reason *Raison*	708									
PRAIRIE REGION – *RÉGION DES PRAIRIES*	Type *Genre*	709	0	0	0	0	0	0	0	0	0
	Reason *Raison*	710									
B.C. AND NORTHERN REGION *RÉGION DE LA C.B. ET DU NORD*	Type *Genre*	711	0	0	0	0	0	0	0	0	0
	Reason *Raison*	712									
ABROAD – *À L'ÉTRANGER*	Type *Genre*	713	0	0	0	0	0	0	0	0	0
	Reason *Raison*	714									

Comments (e.g. elaboration on most significant factors affecting investment)
Commentaires (e.g. détails des facteurs les plus importants touchant l'investissement)

No.

Discuss in dollar and not in volume terms. Revenue may be more appropriate for some corporations (e.g. financial) than sales

Parler en terme de dollars et non en terme de volume. Pour certaines compagnies (e.g. financières) le revenu serait plus convenable que les ventes

PART / SECTION F — OPERATING LEVEL – CANADA / *NIVEAU D'ACTIVITÉ – CANADA*

	Code	$ Millions 1978	$ Millions 1979
a) Expected sales from Canadian operations *Préventions de vente des opérations canadiennes*	801		
b) What would sales be if the company were operating at the limit of the company's fixed capital? *Quel serait le volume des ventes si la compagnie fonctionnait à la limite du capital fixe de la compagnie?*	802		

Answer (c) if unable to answer both (a) and (b) above
Remplir la section (c) si on ne peut pas répondre aux sections (a) et (b)

	Code	1978	1979
c) Indicate expected rates of fixed capital utilization – *Indiquer les taux d'utilisation du capital fixe prévue*	803	%	%

Comments – *Commentaires*

	Code	1978	1979
d) What is the preferred or optimal rate of fixed capital utilization? *Quel est le taux d'utilisation du capital fixe?*	804	%	%

PART / SECTION G — DIRECTIONAL CHANGES / *CHANGEMENTS INDICATEURS*

Please indicate directional changes in the following factors by entering one of the numerical codes 1, 2 or 3

Veuillez indiquer tous changements dans les facteurs suivants en inscrivant un des codes numériques (1, 2 ou 3)

1 – up or better / *hausse ou amélioration* 2 – no change / *aucune modification* 3 – down or worse / *réduction ou aggravation*

	Code	78/79	79/80
example: / *exemple:*	809	1	3

If no response is given for any of the following questions, please indicate why in the appropriate comments section.

Si on ne peut pas donner de réponses aux questions suivantes, veuillez donner les raisons à la section appropriée des commentaires.

Corporate sales in Canadian market
Ventes de la compagnie sur le marché canadien
Comments – *Commentaires*

Code	78/79	79/80
810		

Corporate export sales
Exportations de la compagnie
Comments – *Commentaires*

Code	78/79	79/80
811		

Corporate profits
Profits de la compagnie
Comments – *Commentaires*

Code	78/79	79/80
812		

Corporate employment in Canada
Emploi au Canada de la compagnie
Comments – *Commentaires*

Code	78/79	79/80
813		

Corporate financial conditions
Etat des finances de la compagnie
Comments – *Commentaires*

Code	78/79	79/80
814		

Canadian business conditions
Etat des affaires canadiennes
Comments – *Commentaires*

Code	78/79	79/80
815		

Climate for investment outside Canada
Climat pour les investissements à l'étranger
Comments – *Commentaires*

Code	78/79	79/80
816		

No.

PART H SECTION — CONSIDERED INVESTMENTS / *INVESTISSEMENTS ENVISAGÉS*

Dollar value of plans for the 78-83 period seriously considered but not included in capital budgets reported on Part A for Canada.

La valeur monétaire des projets pour la période 78-83 qui ont été sérieusement étudiés mais qui n'ont pas été compris dans le budget pour le Canada précisé à la Section A.

(Millions of dollars)
(Millions de dollars)

Code	1978	1979	1980	1981	1982	1983
10 12	13 17	18 22	23 27	28 32	33 37	38 42
8,2,0						

PART I SECTION — FACTORS AFFECTING OUTLAYS / *FACTEURS TOUCHANT LES MISES DE FONDS*

Which of the following factors were most significant in deterring the company from making either the above outlays, (PART H), or higher outlays in Canada than those reported in the capital budgets (Part A)? Please mark the appropriate boxes with an X.

Parmi les facteurs suivants, quels sont ceux qui ont détourné la société de faire les mises de fonds ci-dessus (Section H) ou de faire des mises de fonds plus importantes que celles indiquées pour le Canada (Section A)? Veuillez inscrire un X dans les cases appropriées ci-dessus.

10 12 830	Factors – *Facteurs*	Elaborate on items check-marked. Use a separate sheet if space provided is insufficient. *Veuillez donner des détails. Utiliser une feuille séparée si l'espace fourni n'est pas suffisant.*
13	Canadian federal government policies *Politiques du gouvernement fédéral*	
14	Other Canadian government policies *Autres politiques gouvernementales canadiennes*	
15	Foreign government policies *Politique gouvernementales à l'étranger*	
16	Exchange rates *Taux d'échange*	
17	Non-tariff barriers – In Canada *Barrières non-tarifaires – Au Canada*	
18	Canadian tariffs too high *Tarifs canadiens trop élevés*	
19	Canadian tariffs too low *Tarifs canadiens trop bas*	
20	Tarrif and non-tariff barriers – Abroad *Barrières tarifaires et non-tarifaires – À l'étranger*	
21	Other trading factors (specify) *Autres facteurs d'échange (préciser)*	
22	Internal financial conditions – Expected cash flow *État des finances internes – Flux de liquidité prévu*	
23	Internal financial conditions – Rates of return *État des finances internes – Taux du rendement*	
24	Internal financial conditions – Other (specify) *États des finances internes – Autres (préciser)*	
25	External financial conditions – Cost of funds *État des finances extérieures – Prix de l'argent*	
26	External financial conditions – Availability of funds *État des finances extérieures – Disponibilité des fonds*	
27	External financial conditions – Other (specify) *État des finances extérieures – Autres (préciser)*	
28	Other financial and monetary factors (specify) *Autres facteurs monétaires et financiers (préciser)*	
29	Raw materials shortages *Pénuries de matières premières*	
30	Machinery and equipment shortages *Pénuries de machines et équipement*	
31	Manpower shortages *Pénuries de main-d'oeuvre*	
32	Labour problems *Problèmes de main-d'oeuvre*	
33	Expected sales – In Canada *Prévision de ventes – au Canada*	
34	Expected sales – Abroad *Prévision de ventes – à l'étranger*	
35	Expected economic conditions – In Canada *Prévision des conditions économiques – au Canada*	
36	Expected economic conditions – Abroad *Prévision des conditions économiques – à l'étranger*	
37		
38		
39		
40	Other factors (specify) *Autres facteurs (préciser)*	

Comments – *Commentaires*

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