WESTERN ECONOMIC REVIEW

M1 Revisions, March – June 1982

Chart — Y-axis: Billion $ (30, 28, 26, 24, 22). X-axis: 1980, 1981, 1982.

Labels: 9%, 5%, Upper Target Band, 8%, 4%, June 24, May 6, March 25, March 18.

Manuscripts

The Western Economic Review welcomes articles and papers on economic issues of interest to Canadians, especially those in western Canada. Submissions should not exceed 8000 words, be typewritten (double spaced) and be provided in triplicate. Figures must be clear to enable convenient drafting and all data and secondary sources clearly identified. Submissions cannot be returned unless accompanied by return postage.

Of particular interest are industry and sector studies, resource policy analyses, and historical discussions which throw light on current economic trends and events. Articles which deal with national and international economic developments are welcome, provided they discuss their impact upon the western Canadian economy.

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LETTERS TO THE EDITOR

Dear Editor:

   In your first issue you highlight the slowdown in econom-
ic growth in Canada and the United States. There is an even
more striking slowdown in growth for the O.E.C.D. group of
countries, virtually all industrial countries. But here the
turning point from faster to slower growth is clearly about
1973. (See Chart). And the slowdown has been paralleled by
a sharp and continuing increase in unemployment. In retro-
spect the 25 year period from 1948 to 1973 may be viewed as
one of the most prosperous quarter-centuries in the history
of the world. Growth was rapid, per capita output increased
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low: 1.6 percent in Australia, 2.0 percent in Sweden, 2.1
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Even inflation by today's standard was moderate.

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sharply higher unemployment and double digit inflation? The
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has not failed. It has rather been too successful. It
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as I think the record will eventually show.

Yours very truly,

Clarence L. Barber, Professor of Economics

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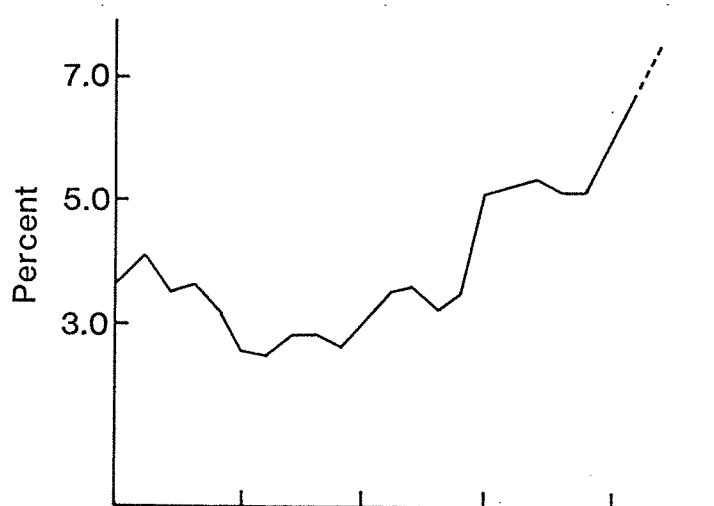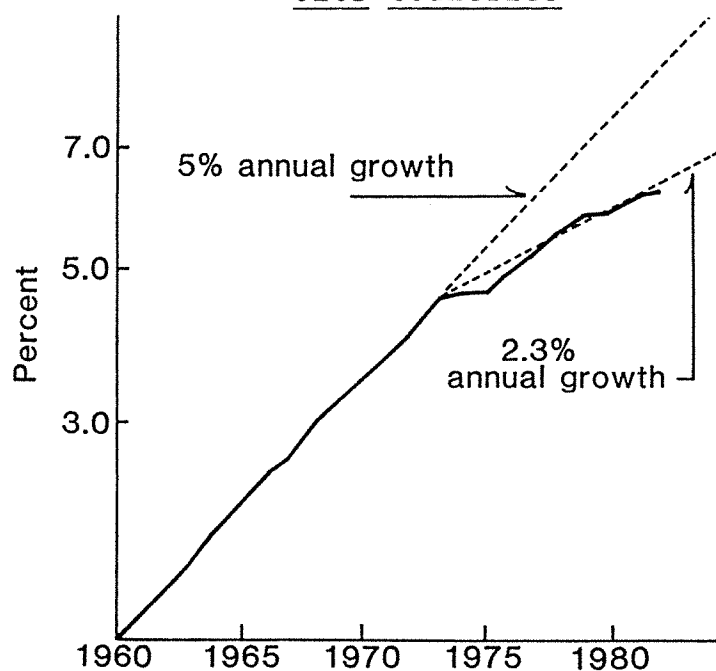
FIGURE 1

Unemployment Rate 15 OECD Countries

FIGURE 2

Gross Domestic Product at Constant Prices
OECD Countries

Note: These graphs use a semi-logarithmic scale.

Source: O.E.C.D. Economic Outlook, December, 1981.

INTEREST RATES AND INFLATION

by

N. E. Cameron

1.0 Introduction

An argument frequently heard in discussions of anti-inflation policy is "we must have higher interest rates in order to prevent a fall in the value of the Canadian dollar, because that would worsen inflation by driving up the cost of imported goods." Depreciation of our dollar is seen as a source of cost-push inflation. Somewhat less often, but much more vigorously, we hear the counter-charge that raising interest rates itself generates cost-push inflation (and probably demand stagnation as well). Indeed, in a survey of Winnipeg businessmen conducted several years ago, their unanimous response to a suggestion of higher interest rates (higher than the existent rate of 10 percent) was that it would raise costs, not that it would lower inflation. [1]

The dispute is badly in need of light. The Bank of Canada seems convinced that a drop in the exchange rate would push up costs far more than would an interest rate hike sufficient to prevent depreciation. The Bank, therefore, responds to downward pressure on the exchange rate by raising interest rates, as a move to prevent more cost-push inflation. If the Bank's assessment of the relative cost-push inflationary impacts of interest rate and exchange rate changes is wrong, then we are being subjected to either unnecessary inflation or unnecessary recession by this policy. If the Bank's assessment is correct, then the evidence supporting this policy should be better known so that the public can feel more secure in the wisdom of monetary policy. Since the Canadian dollar seems likely to display further weakness over the next few years, this is a critical policy issue.

This article looks at the supply-side or cost-push impact of an interest rate increase of 100-basis-points (1 percentage point) to see whether the Bank of Canada is right or wrong in its assessment. The analysis is in three parts. The first part is an estimate of how much exchange rate depreciation is prevented by a 100 basis point increase in Canadian interest rates. The second part is an estimate of the direct cost and price impact of a 100-basis-point interest rate increase. The third part explains the direct cost and price impact of exchange rate depreciation. Finally, the two impacts are compared and the conclusion drawn that there is little obvious difference between the direct cost impacts: six of one is as bad as half a dozen of the other.

Throughout this paper, effects of each policy on demand levels are ignored because they are well known already, and are not central to the issue of whether exchange rate depreciation is worse than an interest rate increase in generating cost-push inflation. Assumed is that 'inflation' refers to the Consumer Price Index (CPI), by far the most widely watched index of inflation. The CPI has its defects, to be sure, but they do not affect the analysis in this paper.

It will help to fill in some theoretical background for this issue. Economists agree that high interest rates depress demand levels in any economy, and especially in small open economies like Canada's. High interest rates depress investment spending. They also raise the Canadian dollar's value in terms of foreign currency, which lowers our competitive advantage so that exports fall off and imports rise. Eventually, lower demand serves to reduce wage inflation, shrink profit margins, and thereby slow price inflation. How long it takes slack demand to lower inflation rates is not clear. In the United States, for instance, wage increases have slowed dramatically in just two years of recession; in Canada the same two years of slack have had little impact.

Relatively few economists recognize that interest rates also affect business costs and therefore affect inflation from the supply side as well as from the demand side. Irving Fisher, the best known American economist of the early 20th century, was the first to identify this supply-side effect. Senator Wright Patman of Texas apparently brought the subject up in innumerable Senate hearings in the U.S., but economists generally ignored him. In the 1970s we became more sensitive to the role of cost pressures on inflation to the extent that the Bank of Canada now feels the need to defend itself on this point.

2.0 The Trade-off of Exchange Rate Depreciation for Higher Interest Rates

Mainstream economic theory of the 1960s suggested that small open economies like Canada can expect their exchange rate to be very sensitive to short-term interest differentials. Small changes in interest differentials were alleged to cause large flows of investment capital ('hot money', as it was then called) which in turn caused substantial movements of exchange rates.

By contrast, consider the track record of interest rate differentials and exchange rate movements in Canada for the last 30 months, shown in Figure 1.

FIGURE 1

Interest Rate Differentials
and Exchange Rates
1980 - 1982

Short Term Interest Differential
(in favor of Canada)

%   %

Exchange Rate

US$ C$

.88   1.14
.86   1.16
.84   1.18
.82   1.20
      1.22
      1.24

1980   1981
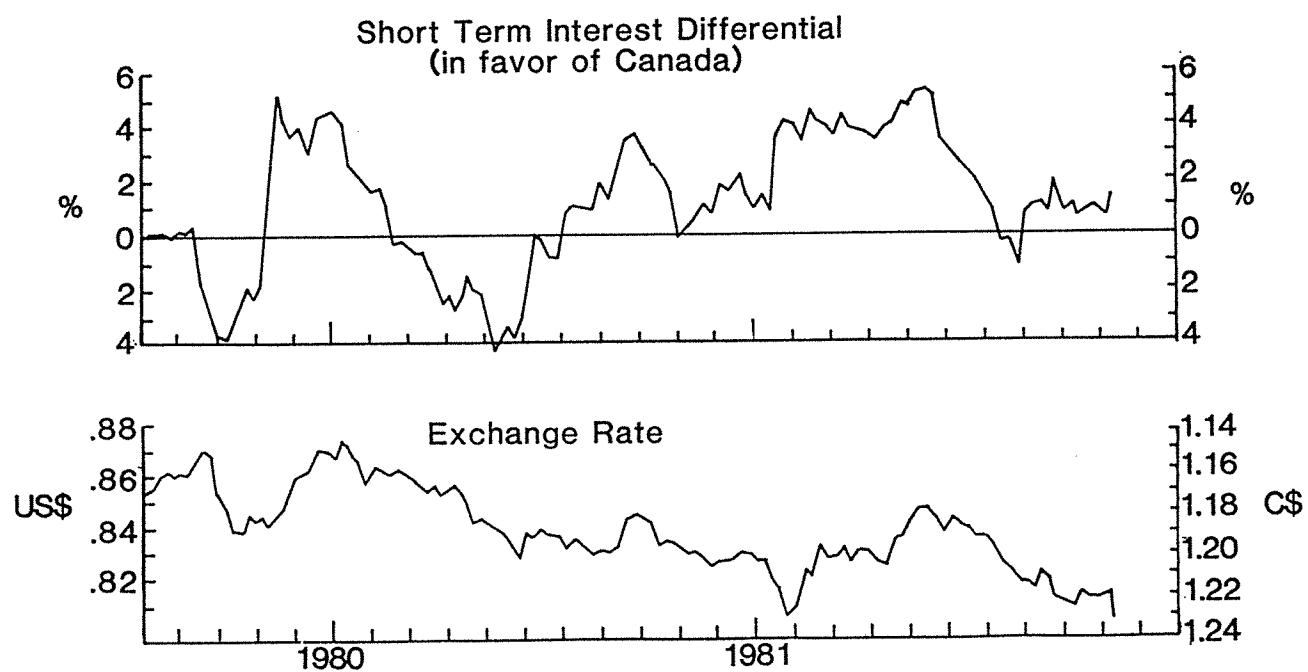
Source: Bank of Canada

The Governor of the Bank of Canada has summarized the appropriate moral this way:

> The Bank's conduct of monetary policy has not caused interest rates in Canada to move "in lock-step" with those in the United States. Over the past two years short-term interest rates in Canada have been everything from some 4 percentage points below to some 5 percentage points above those in the United States. That is quite a wide range of divergence, much wider than seems to be generally recognized. ([2], p. 9).

The amount of currency depreciation caused by very large swings in relative interest rates has been fairly modest. Table 1 shows the ratio of exchange rate changes to changes in the differential between Canadian and U.S. short-term interest rates, for each of the sharp swings since early 1980.

TABLE 1

Changes in Canadian-U.S. Interest Differentials and in the Exchange Rate, 1980-82

	(1) Change in Interest Differential (in Favour of Canada)	(2) Change in Exchange Rate (U.S. Cents per C$)	Ratio of (2) to (1)
Feb.1980-Mar.1980	-4.2%	-3.3	0.785
Mar.1980-Jun.1980	8.8%	3.6	0.439
Jun.1980-Nov.1980	-8.7%	-4.5	0.517
Nov.1980-Mar.1981	8.0%	1.8	0.013
Dec.1981-Feb.1982	-6.6%	-3.6	0.546
Average Ratio			0.460

The average response ratio is 0.46 cents of Canadian dollar appreciation for every 100-basis-points of extra interest differential in favour of Canada; this implies that if Canadian interest rates stayed put when U.S. rates rose by 100-basis-points, the value of our dollar would fall by 0.46 cents (U.S.).

That average response may be an underestimate for two reasons. First, it is only a short-run response; allowing longer time for adjustment would possibly produce a greater

response. [3] Second, over each of these periods the Bank of Canada was leaning against the exchange rate change by selling or buying foreign exchange; without that market intervention the exchange rate change would have been larger, at least initially. To be conservative on both grounds, let us double the estimated effect from Table 1 and assume that a 100 basis point increase in Canadian short-term interest rates avoids the necessity of a 1 cent fall in the value of the Canadian dollar. This is, incidentally, the summary of results of empirical research on the subject as surveyed in an internal research memorandum of the Bank of Canada some years ago (before the 1980-82 episodes in Figure 1). [4]

What remains is to estimate the effect on the price level in Canada of: (a) an interest rate increase, and (b) the exchange rate depreciation which ensues both in the long and short run.

3.0   The Inflationary Impact of Interest Rate Changes

It is useful to break up the interest rate impact on the cost of living into two parts. The first impact is through the mortgage interest component in the CPI. This is a direct impact, understood by everybody who has a mortgage outstanding, and it is possible to estimate this impact with great precision. The second impact is through effects on the costs of production of other items in the CPI basket, and thereby on their prices. The second impact is more indirect, much larger, and much more difficult to estimate with confidence.

(a)   Impact Via Mortgage Interest Costs

The 1979-82 experience suggests that changes in short-term interest rates cause roughly equal changes in mortgage rates. Residential mortgages are now relatively short-term borrowing instruments themselves, so it is to be expected that the two rates would be about equally volatile. Starting from a mortgage rate of 15.72 percent, a 100-basis-point increase would raise homeowners' interest costs by 6.36 percent (1/15.72). Since the weight of mortgage interest costs in the total Consumer Price Index is 3.28 percent [5], the eventual increase in the CPI is 6.36 x .0328 = 0.21 percent.

A 100-basis-point increase in mortgage rates does not affect all homeowners at once since many have mortgages with rates fixed for periods of up to five years. In constructing the CPI, Statistics Canada assumes a time distribution of maturity dates of home mortgages which is based on the pattern that existed in 1974. In this pattern, 37 percent of mortgages are renewable within one year, a further 25

percent within two years, and so on. Mortgages taken out or renewed at a later date have a larger weight in the mortgage interest index, however, since new mortgage principal amounts rise with house prices over time. Assume that house prices move together with the general price level and that both continue to inflate at 10 percent per year. The time path of impact of higher mortgage rates on the CPI is therefore approximately as in Table 2.

TABLE 2

Cumulative Impact of Mortgage Rate Increase on CPI

End of Year	Cumulative Percent of Mortgages Due	Cumulative Effect on CPI	Percentage of Total Effect
1	37	0.07%	32
2	62	0.12%	56
3	79	0.15%	74
4	91	0.18%	88
5	100	0.21%	100

(b) Interest Impact Via Other CPI Items

Interest costs are incurred to finance raw and finished inventories, equipment, and buildings. The interest rates involved are those on bank loans, commercial paper, mortgages, and long-term bonds. Long-term bond rates do not fluctuate as widely as short-term rates, so it is plausible to assume that a 100-basis-point increase in short-term rates (on loans, paper and mortgages) would be accompanied only by a 50-basis-point increase in bond rates. This could be an underestimate if in fact new bond issues are renegotiable after relatively short periods as has been the case in the last few years. Starting from an average level of 17.9 percent in 1981, a 100-basis-point increase to 18.9 means that dollar interest costs rise by 5.58 percent (1/17.9). Bond interest costs would increase by half of that, or 2.79 percent. Using the shares of long and short-term debts outstanding as weights, the weighted average dollar interest cost increase is 4.45 percent. [6]

The share of interest costs in total costs is estimated at 8.4 percent for 1981, up from only 5.7 percent in 1977. An increase of interest costs of 4.45 percent therefore raises total costs by 4.45 x 0.084 = 0.38 percent. Since this increase is across the board for the whole economy, almost all of it will be passed on to customers eventually, so

prices of goods and services will generally rise by 0.38 percent when all business borrowing is taking place at the new higher rates. Some sectors of the economy will experience more inflation than others but the average will be around 0.38 percent.

It will take some time before all business borrowers are paying the higher rates, and therefore some time before interest rates are reflected in higher costs and prices. The lag varies greatly by type of borrowing instrument. Bank demand loan rates adjust immediately on both new and existing loans. Other rates are adjusted only as outstanding debts mature or are renegotiated. For commercial paper this means over the 90 days following the announcement of higher rates on new loans because commercial paper terms are very short. For mortgages, the same long, gradual adjustment schedule is assumed as for residential mortgages, as a first approximation. For bonds, I have assumed an even pattern of renewals spread over ten years.

The combined result of these assumptions about timing is that over half (0.21) of the eventual impact of .38 percent occurs immediately and the rest builds up at a decreasing rate over ten years. The large immediate impact is due to prompt adjustment of the bank loan rate on both new and existing bank loans.

Table 3 summarizes the predicted impact of higher interest rates on the CPI, both through the mortgage interest component and indirectly through interest costs of producing the other items.

TABLE 3

Cumulative Impacts on CPI of a 100 Basis Point
Increase in Interest Rates

Time From an Initial Increase in Interest Rates	Mortgage Interest Component	Interest Cost of Other Items	Total Impact
3 months	0.02	0.22	0.24
6 months	0.04	0.23	0.27
9 months	0.05	0.24	0.29
1 year	0.07	0.25	0.32
1 1/2 years	0.09	0.26	0.35
2 years	0.12	0.27	0.39
3 years	0.15	0.29	0.44
4 years	0.18	0.31	0.49
5 years	0.21	0.33	0.54
10 years	0.21	0.38	0.59

4.0   Inflationary Impact of Exchange Rate Depreciation

The exchange rate depreciation which would occur if we
allowed foreign interest rates to rise by 100-basis-points
without changing our own is estimated in section 2 to be 1
cent, or about 1.25 percent from the current level of 78c
(U.S.).   Such a depreciation will affect the cost of living
in Canada through two channels: directly through increasing
the cost of imported goods - components, materials, and
end-products, and indirectly through the effect of higher
export prices.

(a)   The Cost of Imported Goods

Currency depreciation increases the importer's cost of
foreign goods in exactly the ratio of the depreciation. How
much the retail price of imported goods rises depends on how
much of that extra cost is passed on, which in turn depends
on how sensitive demand and supply are to changes in price.
At one extreme, if demand is very sensitive to price and
supply is not, the result will be a large drop in volume of
imports bought and little increase in the domestic price for
those goods.   At the other, much more likely extreme, if
supply from abroad is very sensitive to price and demand is
not, there will be little change in volume of imports and
almost a full pass-through of costs into prices.

Assume that on average, 80 percent of the cost impact of
currency depreciation will be felt in customer prices of im-
ported goods.   The rest will be absorbed by producers and
importers in lower profit margins, and by consumers in lower
import volumes.   Since imports make up 24.6 percent of Cana-
dian gross final demand in 1981, the total impact of 1.25
percent depreciation being passed on 80 percent in import
price increases is 1.25 x 0.8 x 0.246 = 0.25 percent.   This
is the eventual, long-run effect, after all import contracts
have been adjusted to reflect the new exchange rate level.
Of course a lower "pass through" of currency depreciation to
the price of imported goods would reduce this.

(b)   Effects of Higher Export Prices

Depreciation automatically raises the Canadian dollar
price of all exports whose price is normally set in world
markets in U.S. dollars.   That includes many agricultural
and mineral and forest product exports.   The same foreign-
currency price now translates into more Canadian dollars.
Such prices are not themselves part of our cost of living,
however, since by definition our exports are consumed by
others.   If only the prices of exported items were affected,
we could ignore exports in this analysis.   In a small open
economy, however, exports account for a large share of some

industries' output and it is inevitable that a rise in export price will also raise the price at which suppliers are willing to supply domestic customers. This will be particularly true when the commodities sold are relatively homogenous and are sold through world-wide auction-type markets. Agricultural items, forestry products, minerals, are all of this sort. Most manufactured items are not sold in this way.

It is plausible to assume that demand by foreigners for Canadian exports is very sensitive to the relative price of Canadian output so that Canadian exporters will be able to capture almost all of the depreciation in higher Canadian dollar prices for their exports. In sectors where foreign demand is not that sensitive to price, the export prices will rise in Canadian dollars by less than the depreciation; extra supply by eager exporters will lower the foreign currency price by some amount. Assume that on average, export prices in Canadian dollars rise by 80 percent of the depreciation.

Assume also that domestic prices of exportable items sold to Canadian residents rise at the same rate as export prices in agriculture, forestry, mining, and in approximately one-third of the manufacturing sector. These sectors account for roughly one-third of Canada's Gross Domestic Product (GDP). In the other sectors of the Canadian economy, production for the domestic market is sold at the same domestic price despite the higher prices to be had for exporting. This occurs because export demand is fixed, or because there is some barrier such that supply cannot be shifted from one market to the other, or the domestic price is set on a cost-plus basis and cannot easily be raised without the justification of a cost increase.

What is required to weight the impact of export price increases on the domestic cost of living is not the share of exports in Gross Domestic Product but rather the share of domestically consumed output from those sectors in total domestically consumed output. The latter share is much smaller than the former. Canada's agricultural, forest and minerals sectors produce the bulk of their output for export and relatively little for home use. The impact of higher export prices on domestic price levels is therefore smaller than the importance of export sectors in total GDP would suggest. As a 'guesstimate', assume the proportion of domestically-consumed, domestically-produced output (whose prices move together with export prices) is 20 percent.

The effect on domestic inflation of a 1 cent U.S. depreciation of our dollar, via changes in export prices alone, is then 1.25 x 0.8 x 0.2 = 0.2 percent. Add to this the effect on domestic inflation of higher import costs (0.25 per-

cent) and the total effect by both channels is 0.45 percent per 1 cent depreciation.

It is hard to tell just how fast this eventual impact will be felt. Surely not immediately, but substantially within the first year. It takes several weeks for the first impact to be felt at the consumer level, as inventories bought at old prices must be sold off first. Some items are supplied across the border on long-term contracts where prices change only once a year. A plausible assumption is that two-thirds of the impact will be felt in the first year and the rest over the second year. Other assumptions are possible but they make little difference to the conclusions. This assumption implies a cumulative impact on the CPI of 0.30 percent after 12 months, and the full 0.45 percent after 24 months as a result of a 1 cent depreciation of the Canadian dollar.

5.0 Comparison and Conclusions

Figure 2 summarizes the calculations so far. It shows the cost-push inflation to be expected if U.S. rates rise 400-basis-points and either we raise our interest rates by the same amount to protect the dollar from falling, or we leave our interest rates unchanged and let the dollar fall by the predicted total of 4 cents. One should not attach any great significance to the exact shape of the two time paths since they are only the product of several at best plausible assumptions. [7] The important inference is that the cost-push impacts of these two occurrences on domestic price levels are of the same order of magnitude. Neither is 'clearly' dominant to the point that the other can be ignored as a first approximation, and the differential effect is so small and uncertain as not to be relied on in formulating anti-inflationary policy. It does not look as though we have the information to say confidently that raising interest rates to prevent exchange rate depreciation will raise costs and prices significantly less than the alternative of letting the depreciation happen, or vice versa. Incidentally, these calculations have been supported by a recent Conference Board of Canada study. [8]

The implication for monetary policy is that the choice between the two strategies must again rest wholly on the implications of each for demand behaviour; higher interest rates depress demand while depreciation stimulates demand. No case can be made for or against either policy strategy as a means of avoiding cost-push inflation. Accordingly, a strategy of raising interest rates to protect the dollar must be justified by a belief that we need more recession rather than less.

FIGURE 2

Impact on CPI of the Two Policies

Cost-plus effects on inflation over time
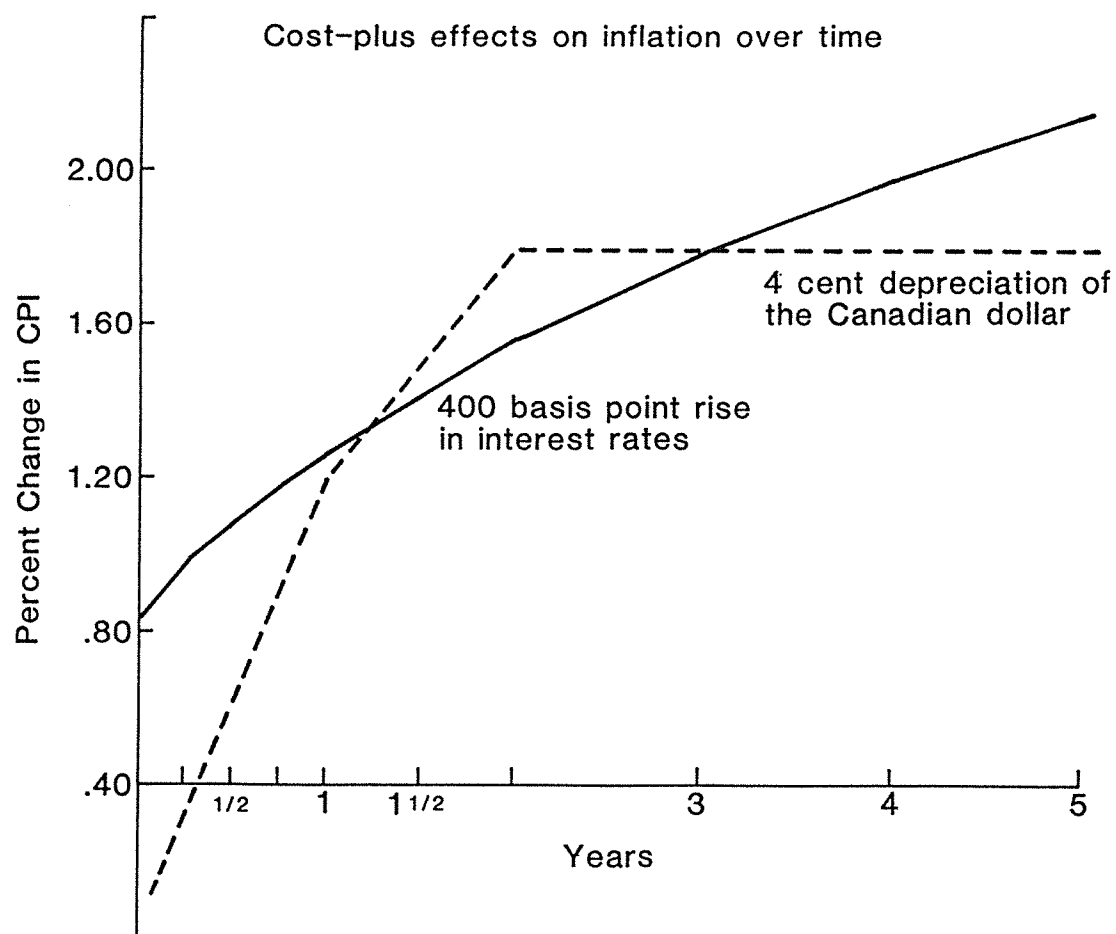
There is one other aspect of the policy choice which theory seldom includes but which is quickly felt by central bankers: the uncertainty caused by fluctuating exchange rates. Governor Bouey of the Bank of Canada has noted in several speeches the need to keep exchange rates from fluctuating wildly in order to keep risk levels down in foreign trade transactions. The experience of the last few years has also borne in upon us, however, that the same argument about risk levels is relevant for interest rates. Wild volatility of interest rates makes business uncertain for every firm which must do any borrowing or investing and of course for the whole construction sector which depends on high investment levels for its sales volume. There are differences in impact, of course, but no evidence to suggest that the one kind of uncertainty is any better or worse than the other kind. One suspects that the optimal strategy in a volatile world is to have about half of that volatility expressed via exchange rates, and half via interest rates. This is not far from what we have had in Canada over the last three years.

NOTES

[1] R. C. Bellan and N. E. Cameron, "Winnipeg Businessmen Rate Stimulatory Policies", Canadian Business Review, Spring 1980.

[2] Bank of Canada, Annual Report for 1981.

[3] "Possibly", but not definitely. Allowing more time for adjustment of capital flows also allows more time for the initial exchange rate change to have effect on real trade flows - which reduces the need for further exchange rate change and might even cause it to be reversed.

[4] I am grateful to William White of the Bank of Canada for that information.

[5] This is the weight from the 1974 Family Expenditure Survey, which has recently been replaced by 1978 weights. The total weight of homeownership items in the CPI has increased from 19.1 percent to 20.7 percent, some of which is undoubtedly due to increased importance of the mortgage interest component.

[6] Statistics Canada, Financial Flow Accounts. The debt totals are those of sectors III and IV (private and government non-financial corportations) plus half of the loan total of the combined persons and unincorporated business sector.

[7] Among the more vulnerable assumptions are (a) that a 100-basis-point interest rate change would cause a full 1 cent move in the exchange rate rather than just the 1/2 cent effect we have repeatedly observed over the last three years; (b) that export prices would affect domestic prices of items accounting for 20 percent of the CPI, instead of 10 or 30 percent; and (c) that import costs will be 80 percent passed on in higher import prices. Of these, (a) has the largest impact: if the exchange rate moved only 1/2 cent instead of 1 cent, the time path of cost-push effects of exchange rate depreciation in Figure 2 would be lowered by half.

[8] Quarterly Canadian Forecast, Conference Board of Canada, 1982.

TAX-INDUCED MIGRATION
IN CANADA 1972-79

by

James M. Dean

1.0 Introduction

Tax-induced migration has received little study from economists, partly because tax differences among provinces were not considered a problem prior to 1973, and partly because Canada had a reasonably adequate equalization program up until that time. Interest in tax-induced migration has been rising since then, and economists have begun to examine whether it occurs and how important tax factors might be in determining locational decisions.

This article reviews provincial tax differences, their effect on interprovincial migration, and explains why it is worth serious study. It discusses some of the implications for Canadian federation, federal-provincial fiscal arrangements and the possibilities of institutional changes to correct the problem. The article also reports the preliminary results of an empirical study on tax-induced migration by family allowance recipients between 1972 and 1979, with a view to stimulating interest in this issue.

2.0 Tax-Induced Migration

Tax-induced migration is the movement of factors of production (labour, capital, managerial talent, etc.) to political jurisdictions which impose lower effective taxes for comparable service levels than other jurisdictions. The taxes can be viewed as the prices that people pay for government services, and migration as the process where people choose to move to the jurisdictions with lower prices. It is not strictly necessary that taxes be lower in the favoured jurisdictions; it might be that governmental service levels are better for comparable tax burdens. However, for tax-induced migration to occur, it is necessary that people prefer jurisdictions where on balance, considering the benefits of government services and the burdens of taxation, they are better off.

In the following discussion, the movement of people will be emphasized. However, it should be stressed that tax differentials can lead to the movement of capital and other factors of production as well as people (labour). In Table

1, selected provincial tax rates have been collected for 1972 and 1979. The table gives a revealing picture of the incentives to move interprovincially.

TABLE 1

Selected Provincial Tax Rates
1972 and 1981

Province	Personal Income Tax (Effective % of Basic Federal Tax)		Sales Tax (%)		Small Business Tax Rate (%)	
	1972	1981b	1972	1981	1973c	1981
Newfoundland	36.0	58.0	7.0	11.0	13.0	12.0
Prince Edward Is.	36.0	52.0	8.0	10.0	10.0	10.0
Nova Scotia	38.5	52.5	7.0	8.0	10.0	10.0
New Brunswick	41.5	52.45	8.0	8.0	10.0	9.0
Quebec	58.0a	n/a	8.0	8.0	12.0	3.0
Ontario	29.6	46.0	7.0	7.0	12.0	10.0
Manitoba	42.5	54.0	5.0	5.0	13.0	11.0
Saskatchewan	37.0	52.0	5.0	5.0	12.0	11.0
Alberta	36.0	38.0	nil	nil	11.0	5.0
British Columbia	30.5	44.0	5.0	6.0	12.0	10.0

Source: Provincial and Municipal Finances, 1973 and 1981 (Canadian Tax Foundation, Toronto).

   (a)   Break-even rate for Quebec which uses its own rate schedule. Estimate is from Provincial and Municipal Finances, 1973, Table 5-8, p. 79.

   (b)   Note that under the 1977 Fiscal Arrangement Act, tax room was transferred from the federal to the provincial governments, so the 1972 and 1981 personal income tax rates are not comparable. As one example, Manitoba imposed a rate of 42.5% in 1976. Under the 1977 arrangements, the new break-even rate for Manitoba was 56.84% and Manitoba chose to impose a rate 56.0% (Provincial and Municipal Finances, 1981, Table 5-11, p. 108).

   (c)   1972 figures are not readily available.

There are major differences in personal income tax, provincial sales tax and small business tax rates among the ten Canadian provinces. Personal income tax rates of Newfoundland and Ontario are 53 and 21 percent higher respectively than the Alberta rate. Furthermore, Table 1 shows that tax differentials are not just a result of the increase in oil prices. Major differences in tax rates existed in 1972 as well.

Furthermore, the issue of tax differences is likely to remain important in Canada. The retail sales tax and the small business tax rate differentials have both widened recently. The small business tax rate threatens to become a tool in an interprovincial rate war, and it is interesting to speculate on how long it will take for other provinces to match the Alberta and Quebec rates of 5 and 3 percent respectively. In recent moves, the Saskatchewan government has eliminated gasoline taxes and the Quebec government has raised the retail sales tax. There is no reason to believe tax differentials are likely to narrow in the near future.

The taxes people pay for a given level of government services, help determine where people are best off financially. It is reasonable to assume that people will choose to live where they are best off. In deciding where to live, individuals will consider the gross incomes they can earn, the cost of living and a number of other factors (cultural and social as well as economic), in addition to their net fiscal benefits from government. The gross incomes they expect to earn can be taken as a proxy for the individuals' contributions to the value of goods and services produced in Canada. However, individuals are assumed to be concerned with maximizing their own welfare. When tax differentials are significant, movements to maximize their welfare may not ensure that the value of national production is maximized.

Production is maximized in Canada when people are geographically situated in such a way that their marginal contribution to production is identical in all locations. Considering only gross incomes and net fiscal benefits from governments, the locational decisions of individuals will maximize the value of production only if the net fiscal benefits from governments are the same in all locations. From an individual point of view, it does not matter if a dollar of personal income is earned as higher gross income or lower net taxes. From the point of view of national efficiency, only the higher gross income maximizes the value of production.

For example, people may move to a jurisdiction where their taxes are $100 lower and their gross incomes are $50 lower. If the tax differential is due to the existence of provincial natural resource revenues, rather than real pro-

ductivity differentials, then there is no economic
justification for the people to move. If migration occurs
to the lower-taxed jurisdiction, then, in this example, the
value of goods and services produced in Canada will decline
by $50. However, the people who move are better off by $50
($100 - $50). These migrants are unlikely to stay in the
jurisdictions with the higher gross incomes, even though the
net impact of their migration on the whole country is neg-
ative. There is a conflict between what is best for the in-
dividual migrant and what is best for the country.

It is reasonable to assume that much of the tax differen-
tials in Canada are due to differential endowment of natural
resource revenues. Hence, much of the tax-induced migration
must be to share in the natural resource revenues accruing
to some provinces. At the present time, the only way cur-
rent residents of a province can control the provincially-
owned portion of the revenues is by excluding any others who
would move to the province. Furthermore, once people have
moved to the province they cannot be excluded from the ben-
efits of lower net taxes. In fact, it is possible that the
entire tax advantage new migrants gain from living in some
provinces, will be offset by a reduction in the overall val-
ue of production as a result of people choosing to locate in
lower tax locations. That is, the total tax saving accruing
to the migrants will be dissipated as a result of the inef-
ficient location of people. (See also Norrie and Percy;
1981, pp. 79-82).

One way of handling this problem is by adopting the prin-
ciple of fiscal equity, which says that comparable people
should be taxed at comparable levels for comparable services
regardless of where they live in the country. (Graham,
1964; Eden, 1981). Fiscal equity implies a set of intergo-
vernmental transfers which eliminate the incentive to mi-
grate solely for tax reasons. Fiscal equity does not imply
a set of transfers that will impede the movement of people
to more desirable locations; it impedes inefficient but not
efficient migration. It does this by ensuring that juris-
dictions have the fiscal capacity to provide comparable ser-
vice levels without resort to higher levels of taxation al-
though, in practice, each jurisdiction may decide to provide
a greater or lesser government presence.

Fiscal equity has been well discussed in a Canadian con-
text. (Graham, 1980; Eden, 1980, 1981). Fiscal equity im-
plies that equalization be to the standard of the top rather
than to a lesser standard such as the Canadian average or a
five province average. The current equalization program
fails to eliminate differential fiscal capacities and thus
fails to discourage people from moving for tax reasons. It
is possible that the net loss in Canada's aggregate value of
production is about equal to the unequalized differential in

the net fiscal advantage gained by individuals living in low-taxed provinces. Fiscal equity also has a strong ethical rationale, but it is the efficiency rationale that we have developed here.

The problems with the 1977 Fiscal Arrangements Act, and the 1982 legislation, have received much attention, (cf. Economic Council, 1982). However, most of the discussion has focussed on a feasible, affordable and acceptable equalization program. There has been no estimate, to date, of the net loss in national production. Indeed, the savings to the federal government from a less than ideal equalization program may be a reasonable estimate of the waste in the whole country. Such a possibility should give critics of equalization cause to stop and think. Furthermore, it is unfortunate that so much of the debate on natural resource revenues has been about the appropriate way to include them in the equalization formula, rather than about how these revenues may encourage interprovincial migration.

There has been some discussion of institutional changes to eliminate the incentives for tax-induced migration. Specifically, the idea of vesting ownership of existing natural resource revenues has been discussed. Such a proposal could eliminate the incentive to migrate for purely tax reasons, as potential migrants could be excluded from enjoying the benefits of natural resource revenues through lower taxes. But whether such proposals are worth serious consideration depends upon whether tax-induced migration is a problem. The next section will review what is currently known about this issue.

3.0 Does Tax-Induced Migration Occur? - Current Knowledge

There has been very little empirical research on tax-induced migration in Canada. There have been several studies which looked at the importance of unemployment insurance payments in impeding interprovincial migration. One early study (Courchene, 1970) examined equalization payments and concluded that they tended to reduce mobility. Two more recent studies have examined tax incentives more directly and obtained conflicting results. A migration study by the Government of Alberta found that after-tax incomes were not as effective explanatory variables as gross incomes. "These results suggest that migrants consider gross rather than after tax income in their analysis of the benefits associated with migration," (Alberta, 1980, pp. 5-10). Such a finding implies that people do not consider taxes when making migration decisions.

The Economic Council of Canada reported the results of a study of fiscally induced migration as part of their Financing Confederation (1982) study. The study explicitly examined what migration changes would have occurred among different income groups had western natural resource revenues remained at their 1971 level. The results indicate that migration from the Atlantic Provinces to the west was strongly influenced by the increase in natural resource revenues. "The results of the simulations indicate that, in 1977, migration rates from the Atlantic Provinces to Saskatchewan and Alberta for the low-income group were between 40 and 65 percent higher than they would have been had western natural resource revenues remained at their 1971 level. The corresponding increase for the middle- and high-income groups varied from 20 to 30 percent" (Economic Council, 1982, p. 142).

The lack of unanimity at the early stages of research on this topic are reflected not only in the empirical literature. Powrie (1981) expresses skepticism about the likelihood of tax-induced migration by noting that natural resource revenues may be saved, as well as used to reduce net tax rates, and that higher housing costs might offset the advantage of lower taxes. It does appear more appropriate to look at tax burdens than natural resource revenues per se. There is no reason to assume that the influence of natural resource revenues is identical regardless of whether they are saved or used to finance lower taxes. Also, some recognition of the variation in the real cost of living in Canada must be made. The Alberta (1980) study does make a correction, but the price indices used do not have comparable bases.

In short, the issue of tax-induced migration is important and an examination of the evidence is appropriate and timely. The following section develops a migration model using a standard formulation of the determinants of migration, and then adds variables to capture the tax incentive to migrate. The results will show that there is good reason to believe tax differentials are significant and important variables in explaining the variation in migration flows.

4.0 An Empirical Examination of Tax-Induced Migration

Ideally, it would be useful to have a comprehensive study which includes information on the socio-economic characteristics of migrants as well as information on the locale from which they migrate and the locale to which they move. Such information was not available for this study. Instead, this study uses data on gross migration by families receiving family allowance benefits. Given the difficulty of incorpo-

rating tax variables into the migration decision of individuals, this aggregative data had a major advantage in undertaking this preliminary study.

The model explains the migration decision of these families receiving family allowances between 1972 and 1979. It is known that this excludes a number of migrant groups in which we are interested. A recent study of migrants to Alberta and British Columbia (Statistics Canada, 1982) notes that 36.5 percent of recent migrants to Alberta, and 28.2 percent of recent migrants to British Columbia are single. However, the largest migrant group to both provinces is made up of people who are married and between the ages 25-44. So, while the family allowance data excludes major migrant groups, it does represent an important source of information on what appears to be the largest migrant group in Canada.

Furthermore, this data source has two major advantages. First, the information on family allowance recipients is likely to be a reliable indicator of migration variations by year over the 1972-79 period. Statistics Canada estimates interprovincial migration intercensually by extrapolating migration patterns identified in the last census. However, this was felt to be inappropriate when studying migration movements during the 1972-79 period in Canada. Second, the migration pattern of family allowance recipients is a reasonable indicator of the migration pattern of all individuals.

There is substantial literature on the determinants of migration in Canada (see Grant and Vanderkamp, 1980, and references therein). This literature has identified a number of variables as significant factors in explaining migration patterns. Specifically, the unemployment rate and the income in the sending and receiving provinces, the distance moved, and the size of the receiving province, are likely to be important variables and are included in the study. The income and unemployment variables are entered for both sending and receiving provinces. Such a procedure does not constrain unnecessarily the specific form of the relationship between relative unemployment and income levels in the sending and receiving provinces.

The proxy for income is personal income per capita. The income data is compiled in the Department of Finance, Economic Review, April, 1981, (Table 14). Unemployment ratios are from The Labour Force, various years. Population is the annual estimate of population as of July 1, prepared by Statistics Canada and found in the Economic Review, April, 1981. Distance is the distance in miles between the major cities in each province. An ordinary road map was used to compute mileage.

Income variables are gross money incomes received. In Canada, with substantial variation in the cost of living among provinces, gross money incomes are unlikely to be accurate indicators of real incomes, and individuals are likely to consider the cost of living, including housing costs, before moving. Accordingly, we wished to convert the income variables into real incomes by correcting for the variation in the cost of living. Two sources of data are available on the cost of living in Canadian cities. First, Statistics Canada published a monthly series of consumer price indices for major Canadian cities using 1971 as a base year. Unfortunately, the index for every city is set equal to 100 in the base year, so the comparability between cities is seriously affected. The second data sources are the Conference Board of Canada indices of the relative cost of living for an apartment dweller lifestyle and a homeowner lifestyle. This data used Toronto as the base of comparison and the series is available from 1972 to 1979. In this study, the Conference Board index for the homeowner lifestyle was used to capture the important impact of housing costs on income. Extensions of this study should also examine the behaviour of the cost of living index for an apartment dweller lifestyle.

A variable for growth in employment is included to represent the employment potential in the receiving region in addition to the inclusion of the unemployment rate. It seems inappropriate to assume a priori a comparative statics model of migration decisions, where people move only to increase current income. We were concerned with the possibility that there might be a strong negative correlation between growth in employment and provincial tax rates. In fact, this correlation was relatively low.

Finally, to test the hypothesis that tax-induced migration occurs, we include two sets of tax variables. The first is the personal income tax rate in each province as a percentage of Basic Federal Tax. The data is compiled from Provincial and Municipal Finances, various years. This variable is a proxy for income tax rates only, and has three serious deficiencies. First, all provinces have a variety of programs which modify provincial tax payable from the percentage of Basic Federal Tax, including tax credits, surtaxes and rebates. Still, we remain convinced that the provincial tax rate is a reasonable proxy for effective relative income tax rates. Second, this measure ignores other important taxes, such as the provincial retail sales tax and residential property taxes. This is a serious problem, but the correlation between the provincial income tax rates and retail sales tax rates is high (r= .76), and this result would probably hold for most measures of tax liability. Third, the provincial income tax rate cannot be used for the Province of Quebec because of the different income tax

structure in that province. Accordingly, the tax rate for Quebec is omitted and treated as a missing variable for Quebec. This is unfortunate since Quebec imposes the highest tax rates in Canada. The importance of tax factors are thus likely to have been underestimated because of the exclusion of Quebec.

The second set of tax variables is the direct taxes payable in a province as a percent of each province's personal income. This can be viewed as a measure of tax effort for a given set of provincial income tax rates. This aggregate measure of tax liabilities is from Provincial Economic Accounts, (Statistics Canada, 13-213), various years. The major advantage of this second set of variables is that it enables the high tax liabilities in Quebec to be included as explanatory variables in the model. Interestingly, the correlation between this variable and the provincial income tax rates, for all provinces, is only .36, so we felt confident including it.

5.0   The Results

The model is an ordinary least squares (OLS) model. The dependent variable is migration from each province of origin to each province of destination, divided by the population of the province of origin. That is, migration as a percent of the sending province's population is the dependent variable. The full regression results for the ten provinces are reported in Table 2. This model suggests that tax variables are important explanatory variables when studying migration. The model appears to incorporate the major explanatory variables of migration in Canada. It explains 60 percent of the variation in the dependent variable. Except for the unemployment rate variables, the standard variables (all except the tax variables) had the correct sign and were highly significant. The tax variables are mostly significant and appear to be an important addition to the model. Note that the tax rate and the direct tax burden in the province of destination both have strong negative influences on migration. That is, the lower the tax rate and the tax burden in the province of destination, the greater the migration to that province. This is exactly what would be predicted if people move in response to tax differentials.

Initially, it was surprising to find that both the tax rate and tax burden in the province of origin also had a negative influence on migration decisions. This result is not in conformity with our prior expectations, and appears to suggest that the higher the taxes are in a province, the less likely people are to move away. The difficulty here arises partly due to the aggregative nature of the model.

When the model was disaggregated by province, and the influence of each factor on migration from only one province to all other provinces was examined, the tax variables had the correct sign for eight of the ten provinces. Migration from the two provinces which did not have the correct sign on the tax variable for the provinces of origin, Ontario and Quebec, is large enough to overwhelm the other provinces. Further work is need to investigate this problem. Second, note that the coefficient of the tax variables for the province of destination is substantially greater than the coefficient for the same variables for the province of origin. This suggests that tax differentials among provinces, rather than tax changes within a province, explain more of the migration phenomenon in Canada.

TABLE 2

Migration Determinants and
Tax Variables in Canada, 1972-79

Independent Variables		Coefficient (x 10^6)	t-ratio
Intercept		2158.93	9.20
UN_i	unemployment rate in i	-20.66	-3.04
UN_j	unemployment rate in j	20.08	2.96
$RINC_i$	real income in i	-9.00	-3.86
$RINC_j$	real income in j	12.32	5.20
POP_j	population in j	.03	3.08
D_{ij}	distance from i to j	-.13	-17.52
EM_j	employment growth in j	1.75	2.64
TAX_i	tax rate in i	-5.43	-1.66
TAX_j	tax rate in j	-24.14	-6.71
DUM	dummy variable for 1977 change in fiscal arrangements		
	(DUM = 0; 1972-76)		
	(DUM = 1; 1977-79)	513.02	5.66
DTB_i	direct tax burden in i	-57.23	-6.06
DTB_j	direct tax burden in j	-98.58	-9.48
	R^2	.60	
	degrees of freedom	617	

Note: 1. Province i is the province of origin and province j is the province of destination.

    2. The coefficient tells what change would take place in the dependent variable for a small change in one of the independent variables, holding all other independent variables constant.

One interesting experiment is to examine how a change in tax rates would influence migration. In the experiment reported here, it is assumed that the provincial income tax is changed by one point in a province of destination. One point is one percent of the Basic Federal Tax. The results reported in Table 3 are calculated by using the models estimated for individual provinces. These disaggregated models are tentative since there are some statistical difficulties in estimating the models with tax rates for individual provinces. Still, the results are suggestive.

TABLE 3

The Percentage Change in Migration For a One Point
Change in Provincial Income Taxes in Alberta
and British Columbia

Migration from Selected Provinces	Impact on Migration to	
	Alberta (%)	British Columbia (%)
Newfoundland	5.94	14.46
New Brunswick	5.26	12.08
Quebec	2.56	2.90
Manitoba	4.80	8.76

Notes: 1. One point is one percent of Basic Federal Tax.

2. These results are based on individual models for each province of origin. These models are not reported in full in this article. The individual provincial models are available from the author on request.

For each point reduction in income tax rates in Alberta, migration from selected provinces rises from between 2.5 and 6.0 percent. Personal income tax rates in Alberta are currently between 5.5 and 20.0 points lower than other Canadian provinces. It is impossible to extrapolate from the estimates of a one point change in tax rates to an estimate of the impact of the entire tax differential, and have much confidence in the results. However, it does appear that the low rates in Alberta are a major factor in explaining migration flows from other provinces to Alberta.

Second, the same experiment was conducted for British Columbia. A one point reduction in provincial income tax rates suggest migration to B.C. rises from between 3.0 and

15.0 percent, depending on the province of origin. Again, tax rate differences appear to be an important factor in explaining migration flows from other provinces to British Columbia.

6.0   Conclusions and Speculations

There are major differences in tax rates and tax effort among the ten provinces in Canada. These differences may induce migration which reduces the efficiency of the Canadian economy. In the empirical study reported here, it was found that tax factors were important explanatory variables in studying migration flows. These results are suggestive only. It is not claimed that these results clearly delineate the size of the tax-induced migration. However, it provides support for the recent study by the Economic Council of Canada which claims fiscal variables are important, and suggests a more comprehensive study is long overdue.

The impact of tax-induced migration on the value of production in Canada has not yet been estimated. However, serious estimates are now in order. Canada has opted for a system of less than full equalization payments to have-not provinces. Some commentators are questioning the basis for equalization by trying to define the 'appropriate' standard of public services for have-not provinces. Such an approach is not only inconsistent with our committment to improve the position of people in have-not provinces, it is likely to result in more waste due to inefficient migration.

NOTES

[1]   Certain restrictive assumptions are necessary to get this result, including the assumption that the cost of providing government services is equal per capita in all provinces. These assumptions are unlikely to hold rigorously in practice. Still, it is likely that the equalization program implied by fiscal equity is to be higher standard than in the current program.

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IMPACTS OF THE 1980 DROUGHT
IN AGRO-MANITOBA

by

D. Freshwater and A. Phillips

1.0 Introduction

Some of the most powerful forces affecting the attitudes
of people and social institutions on the prairies developed
from the experiences of the 1930s. In this period of gener-
al worldwide depression, the principal grain production area
of the nation was also burdened by a major drought that
lasted from 1932 to 1938. Drought conditions were prevalent
throughout central North America during this period, and ag-
riculture suffered from the double impact of low yields and
low prices.

One of the major institutional responses was the strong
co-operative movement that grew out of the experience of the
1930s. In addition, a new perception arose of the need for
government intervention in the market place, as well as a
desire for the implementation of programs to alleviate the
physical problems associated with low moisture levels. Al-
though the droughts of the 1930s have not been repeated,
there have been periodic dry spells on the prairies which
lead to a reinforcement of these attitudes and significant
economic costs. The last of these droughts occurred in 1980
and its impact on Manitoba is the subject of this article.

2.0 Drought on the Prairies

Fundamentally, drought at the plant or crop level is a
condition of moisture stress which reduces yield in terms of
both quality and quantity. The prevailing climate of the
prairie region is such that in most years, every region un-
dergoes some period of time where soil moisture levels are
less than optimal for plant development. Consequently, arid
conditions are a fact of life in prairie agriculture.

There are, however, major differences between minor lev-
els of water stress experienced within a particular field,
and a widespread drought that can encompass all three prai-
rie provinces, a dozen states and extend over a number of
years. Local dry spells have impacts on the incomes of
farmers in the affected area, and possibly on those individ-
uals whose businesses directly depend on purchases from, or
sales to, these farmers. A major drought in central North

America affects the entire continent directly, and the rest of the world indirectly, through reduced supplies and higher grain prices.

In terms of impact, the 1980 drought fell somewhere between the global devastation that was associated with the 1930s, and the regional repercussions of a minor drought, widespread throughout North America. Its duration, while long enough to cause some rather major effects, was not sufficient to induce significant long-term adjustments at either national or international levels.

Droughts, like other natural disasters, can be treated in a probabilistic sense. Lesser droughts are more common than major ones, just as minor floods are more common than major floods. Unlike most natural disasters, a drought's impact is cumulative. As time passes with no precipitation, a drought makes the transition from minor to major. Another important climactic phenomena is that long intervals without precipitation are associated with aridity being spread over a large area. Thus a major drought, in terms of days without precipitation, is also likely to cover a wide geographic area.

Although the 1930s drought remains the benchmark by which all others are judged, significant dry spells have occurred in the prairies in the last twenty years. These were primarily short duration droughts with normal precipitation levels returning at some time within a single crop year. In 1961, 1977 and most recently 1980, low rain conditions affected a major area of the prairies. Each of the three droughts had different effects due to the timing of the precipitation shortfall and the economic conditions prevailing at the time.

The drought of 1961 may be described as "traditional", characterized by a hot summer with low precipitation and high evaporation. The brunt of this aridity was felt in the crop production sector, where cereal yields were severely depressed. In 1977, reduced snow cover and runoff coupled with low spring precipitation shifted the focus of concern to the livestock feed sector, as spring hay and pasture growth were extremely reduced. 1980 resembled 1977 more than 1961 in that it was primarily a spring and early summer drought. In fact, Manitoba farm incomes and yields were probably reduced as much by an unusually cool and wet fall which made harvesting difficult.

3.0   Characteristics of the 1980 Drought

Throughout the prairies, the winter of 1979-80 was char-
acterized by lower than normal precipitation, leading to low
snow pack levels.   In March of 1980, the principal crop
growing areas of Manitoba received 30 to 65 percent of nor-
mal precipitation.   At this time, soil moisture levels were
low but not by enough to trigger widespread concern.   April
proved to be unseasonably warm and dry, leading to signifi-
cant evaporation from the soil.   By the end of April, soil
moisture levels in much of the province were at less than 50
percent of capacity.   May continued the pattern of unusually
low precipitation levels and high temperatures.   Within a
one week period in late May, soil moisture levels declined
by 6 to 10 percent throughout the province.   In June, condi-
tions improved in some areas of Manitoba where thunderstorms
relieved immediate moisture problems.   During the month of
June, the drought ended in Alberta and western Saskatchewan
as major rainfalls brought soil moisture levels up to normal
levels.   In eastern Saskatchewan and Manitoba, it was not
until mid to late July or early August that the rains came
in sufficient volume to alleviate problems of moisture
stress.   By this time, however, major damage had occurred.

4.0   Impact of the 1980 Drought on the Farm

The results of the drought were wide ranging in the prov-
ince.   Farms of all types were affected, with the greatest
impact falling upon forage producers, and beef and dairy op-
erators.   The absence of moisture in the spring severely
stunted the growth of tame and native hay.   The first cut-
ting, which normally occurs in June, was so poor that in
many instances it was not worth harvesting.   Similarly, pas-
tures for dairy and beef cattle were also inadequate to
maintain livestock.   As a result, farmers were forced to
keep animals on feed rather than pasture.   The shortage of
local forage production led to: rapid increases in hay pric-
es;   the necessity of importing hay at considerable expense;
and the use of non-traditional feeds such as grain screen-
ings and treated straw.

As feed costs escalated rapidly, profit margins, for beef
producers in particular, were squeezed.   This in turn led to
the potential for large scale herd reductions, which would
have further contributed to the profit squeeze by causing a
decline in cattle prices.   The long run implications of such
a sell-off would have been a major decline in the beef sec-
tor of the provincial economy, as beef herds can only be re-
built slowly once they are reduced.

Dairy producers faced similar feed shortages but were under less direct financial pressure. The number of cows in the dairy sector is relatively small when compared to the beef producing sector. Also, dairy revenues are protected by the government regulated status of the industry. Costs of production form the basis for producer milk prices so increased costs are offset by increased revenues. During the period of the drought the volume of milk produced actually increased although milk quality declined. This decline can be attributed to the difficulty of obtaining quality hay, such as alfalfa, which is required to produce milk with high levels of butterfat.

5.0 Federal and Provincial Drought Mitigation Programs

In response to the needs of beef and cattle producers, the federal and provincial governments implemented a number of emergency relief programs. Federally, the Herd Maintenance Assistance Program (HMAP) was the most visible. HMAP was designed to prevent liquidation of breeding herds by providing farmers with funds on a per head basis. To qualify, the farmer had to maintain at least 70 percent of the basic herd and reside in an area severely affected by drought. The program was initially oriented towards dairy and beef producers but was later extended to cover sheep producers. Major disagreements developed between farmers and the government regarding the definition "areas of severe drought." This led to a number of revisions of the criteria and considerable bad press for the federal government.

In addition, the federal government implemented a fodder procurement program, aimed at increasing feed supplies available to livestock producers. Producers received monies to purchase straw, to treat it with ammonia to improve its nutritive value, and to purchase green feed (any crop normally not harvested as fodder but that is a useable animal feed e.g., immature wheat) The program also provided nutritional and management advice on using these unfamiliar feeds. Federal expenditures on these programs in Manitoba are shown in Table 1.

TABLE 1

Federal Drought Relief Program Expenses for Manitoba
as of October 31, 1981

Program Name/Description	Total Costs ($ '000)
Herd Maintenance Assistance	$16,558.9
Fodder Procurement *	
- Straw Feed Procurement	917.1
- Straw Feed Ammoniation	12.0
- Green Feed & Silage Procurement	750.8
- Nutritional & Management Advice	30.0
	$18,268.8

* Estimated breakdown of known Fodder Procurement Program Total.

At the provincial level, the Government of Manitoba implemented a number of new programs and expanded existing programs to assist livestock producers. An information service listing available food stocks throughout the province was set up so that individual purchasers could make contact with sellers. The government also set up a program to provide incentive to grain producers to grow green feed for livestock consumption and to harvest hay that would not otherwise be harvested. This program was administered through the Manitoba Crop Insurance Commission. Table 2 indicates provincial expenditures on the green feed hay incentive program.

Expanded programs included water quality monitoring and information on feed management and feed analysis. The province also made available to farmers Crown lands for use as pastures and hay fields. These lands were comprised of parks, forests, and wildlife management areas. A direct impact of the program was a major reduction of nesting cover in some areas, reducing waterfowl production for several years.

TABLE 2

Manitoba Expenditure on Green Feed Hay Incentive Program
in Thousands of Dollars

Program Description	Total Costs ($ '000)
Administration	373.7
Green Feed Assistance	9,294.7
Hay Incentive	183.6
TOTAL	$9,852.0

In addition to the programs administered individually by the two levels of government, there were some that were operated jointly. These were a water supply program and a hay transport program. The water supply program was an expansion of existing activities, oriented to filling farm dugouts, diverting water to maintain flows, and subsidizing the purchase of irrigation equipment. The Emergency Feed and Transportation Program (EFTP) paid for either the movement of feed to animals or animals to feed. Where feed was moved by truck EFTP was jointly funded by the two levels of government. Rail movement of hay from Ontario was completely subsidized on an equal one third share basis by the federal and provincial governments and whichever railroad was moving the hay. Movement of livestock was partially subsidized under EFTP. The provision of access to federal and provincial Crown lands as pasture and for haying was jointly administered by both governments. Table 3 provides a summary of joint programs implemented or expanded in Manitoba as a result of the drought.

TABLE 3

Joint Federal/Provincial Drought Relief Programs

Program Name/ Description	Provincial Costs ($ '000)	Federal Costs ($ '000)	Total Costs ($ '000)
Emergency Feed & Transport			
- Administration	199.5	0	199.5
- Rail Feed Transport - Ontario	1,475.0	773.6	2,248.6
- Feed Purchase - Ontario (net costs)	136.3	0	136.3
- Feed Transport (hay and straw)	2,117.8	0	2,117.8
- Feed Transport (pellets)	212.7	0	212.7
- Livestock Transportation Assistance	42.2	547.4	589.6
Dugout Pumping & Water Diversion			
- Pumping, Rebates, and Diversions	185.5	165.8	351.3
- Equipment	81.0	0	81.0
Emergency Hay & Grazing of Crown Lands	114.7	26.9	141.5
Total	$4,564.7	$1,513.7	$6,078.3

In total, some 34 million dollars were expended by both levels of government in Manitoba. Although many of these programs generated criticism regarding their implementation, the general consensus among rural residents is that the benefits exceeded their costs of provision. To this point, only direct expenditures by the provincial and federal governments have been considered. There were, however, other government programs which were adversely affected by the drought.

The hardest hit was the crop insurance plan. With the early spring and dry weather of 1980, farmers increased their level of crop insurance as a precaution against con-

tinued dry weather. The low yields obtained on most fields qualified for compensation. Insurance payouts in 1980 were far higher than normal. Only in the far eastern portion of the province were premiums larger than payments. In the extreme south-west, payments were more than six times larger than premiums, while in other areas payments were two to three times the level of premiums.

Although any insurance scheme is designed to be in equilibrium between payments and premiums only over the long haul, expenditures in 1980 were so great that the crop insurance system reserves were all but exhausted. In 1980-81 the federally and provincially funded Manitoba Crop Insurance Commission paid out over 55 million dollars in indemnities, the vast bulk of which was related to drought impacts. A continuation of the dry conditions would have resulted in claims of at least that amount in the next crop year, resulting in a high level of expenditure for both governments.

6.0   Impacts of Relief Programs: an Evaluation

These government programs, through their provision of cash payments and cost reductions, had a significant effect in relieving the impact of drought at the farm level. In addition, on-farm inventories of grains and oilseeds were fairly high at the beginning of the 1980-81 crop year, and farmers were able to sell this inventory at good prices. This too, contributed significantly in reducing the direct impact of the drought on farm net incomes over the year. To a certain extent, farm production costs were reduced. Where crops were not worth harvesting, they were ploughed down at lower costs than would be incurred in the normal harvest procedure. Farmers also began to reduce fertilizer and herbicide application rates in the spring as soon as it appeared there would not be sufficient soil moisture to allow seed germination. Fall application of fertilizer and herbicide was also reduced significantly.

By reducing or eliminating normal cultivation practices and disposing of inventory, farmers minimized their costs. These strategies, coupled with the safety net of government programs and crop insurance, reduced the general impact of the drought on producers as a group. However, it must be noted that by the end of the year all the safety margins were pretty well exhausted. Grain inventories were depleted, the crop insurance program had exhausted its reserves, forage stocks in Manitoba were at low levels and all non-essential farm expenses had been eliminated. Had the dry conditions continued another year, the impact on producers and then on the governments would have been devastating.

7.0 Impacts on the Rural Community

The impacts of the drought on the rural communities of Manitoba were, to a considerable extent, more severe than those on producers. The major function of these communities is to provide goods and services to farms. With the onset of the arid conditions, farm demand for goods and services declined rapidly, sales of consumer durables and farm machinery fell and purchases of operating inputs also fell in 1980 as farmers reduced or eliminated fertilizer and chemical applications.

The impact of this reduction carried into 1981 as farmers were able to use existing inventory in the 1981 crop year. Current economic conditions have increased the effects of this necessary major drawdown of farm reserves. Consumption and investment rates are lower than historic levels as farmers try to rebuild their reserves. Current low crop prices and high interest rates make reserve accumulation difficult. As a result, sellers of farm equipment are caught between reduced demand and high operating costs. To a great extent, these problems of rural businesses would have arisen even if there had not been a drought, but its impact has made things worse.

Some rural communities also encountered water supply problems. Towns that had near capacity water supply systems found that increased demands from farmers for water, in conjunction with fixed or reduced supply conditions, led to shortfalls and rationing.

8.0 Indirect and Unpriced Impacts

The impacts considered to this point consist of relatively "hard" information on actual magnitudes of expenditures incurred and sales foregone. There are a number of other impacts far less readily quantified, which were also consequences of the drought. They include increased fire fighting costs in forested areas, reduced wildlife habitat, reduced wildlife production, and foregone sales of agricultural production. In some of these instances, dollar values can be imputed to give approximate magnitudes.

If we consider well below normal crop yields and the fact that Manitoba supplies a small proportion of the total grain traded in the world, then it is possible to estimate lost revenues. Farm revenues in 1981 in Manitoba were approximately 1.2 billion dollars. Had yields been normal and farmers able to market an average crop, receipts would have been in the neighbourhood of 1.5 billion, although there would have been additional harvesting expenses.

A further impact on farms was experienced in 1981. Normal cultivation practices were severely disrupted in 1980. This resulted in uneven fertilizer levels in fields, intermittent weed infestations and differences in seed bed conditions. The failure of crops to grow and mature uniformly caused additional expenses in spring field work and seeding, as well as in harvesting.

Drought impacts on wildlife were considered briefly above with reference to emergency haying programs. It was noted that emergency haying operations resulted in major damage to wildlife habitats, causing lower waterfowl reproduction for several years. In addition, as sloughs and other wetlands dried up, waterfowl lost feeding area and were forced into greater densities in the remaining wetlands. Associated with this increased crowding and reduced food supply were disease outbreaks that resulted in a large number of deaths. Problems with waterfowl feeding on cereal crops are generally heightened when natural foods are reduced. However, this problem was somewhat mitigated by reduced crop yields and smaller bird populations.

In 1980, expenditures on forest fire fighting in Manitoba set a new record. The number of fires fought was over one thousand, approximately three times the average number. Over 1.25 million acres of woodland was burnt and expenditures on fire fighting totalled over 7 million dollars. The value of the trees destroyed in terms of commercially marketable wood was not estimated. Environmental impacts such as heightened erosion of soil, increased sediment loads in streams and lakes and lost wildlife also should be quantitatively evaluated.

9.0 Summary and Conclusions

From the perspective of the total expenditure and revenue flow of the nation and the province, the 1980 drought could not be considered to have had a devastating impact. It was, however, severe enough that emergency measures to provide forages and maintain cattle breeding herds had to be implemented. In addition, existing income maintenance programs in agriculture such as crop insurance were strained to their limit. Manitoba in aggregate was not severely affected due to the diverse nature of the economy, and the fact that the direct contribution of agriculture to total provincial output is fairly small. Because reduction in 1980 output was offset to some extent by higher prices, the value of production declined by less than the volume of production.

Looking at provincial aggregates can, however, be misleading. Approximately one third of the province's popula-

tion resides in what may be called Agro-Manitoba, the area in the province where farming takes place. The economy of Agro-Manitoba is geared towards producing livestock and crops and providing the goods and services necessary for that production. Within this region the drought had a very major impact; both on those who farm and on those who make their living from dealing with farmers.

Impacts were buffered to a considerable extent by a number of fortunate circumstances, the most important of which was that the low moisture levels lasted only one year. Because the drought started in the spring, farmers had sufficient warning to stop planting and to reduce expenditures on fertilizer and soil incorporated herbicides. The government was able to implement the green feed program with a reasonable chance of success. There were still enough days in the growing season that reseeding of a field would result in sufficient growth to provide a forage crop. Farmers were also able to bridge the drought year by drawing down reserves, liquidating inventories and delaying purchases. This type of strategy cannot be extended beyond a single year, so a multi-year drought would have led to major difficulties for most farms in the second year.

Even with these mitigating circumstances, the drought did provide a significant drain on a large number of individuals and businesses, and on the provincial government. At the provincial level, revenues were reduced and expenditures increased, and at a time when the provincial economy was already under considerable pressure from high interest rates and weak economic conditions in other sectors.

BANKRUPTCIES IN CANADA - AN ANALYSIS

by

Greg Mason and Frank Strain

1.0 Introduction

One of the major, and most disturbing features of the
present recession, is the surge in bankruptcies and business
failures. For many, this is as important as high unemploy-
ment and inflation. Despite the close attention paid to the
rising bankruptcy rates by the media, there has been compar-
atively little analysis of these trends. This article will
discuss the precise legal nature of bankruptcy and review
the recent trends regionally and sectorally. It will also
present some preliminary econometric analyses of the deter-
minants of bankruptcies and review economists' interpreta-
tions of the effects bankruptcies have on the economic
health of the nation.

2.0 Bankruptcy Defined

Many view bankruptcy as a serious calamity, akin to a
death in the family. Certainly this is understandable for
those most directly affected by the business failure. Usu-
ally it is assumed that a bankruptcy is, of necessity,
closely followed by layoffs, waste of productive resources,
and the cancellation of raw materials and machinery orders
throughout the economy.

In fact, bankruptcy is a legal condition. In some cases,
such as the recent "failure" of the Admiral Corporation, the
firm may cease operations for only a short period, emerging
later with new owners and management, and revamped capital
equipment and product lines. In other cases, firms fade
quietly from view without being recorded in the official
bankruptcy data, allowing significant resources to slip into
idleness.

In Canada, all firms, regardless of whether or not they
are incorporated, fall under the Canada Bankruptcy Act. For
firms, this legislation applies in three general situations:

(a) If the firm owes more than $1,000.00, the creditors
(often the major lender or bank) can petition the courts for
the bankruptcy of the firm. If successful, the court then
issues a receiving order whereby an authorized trustee or

receiver disburses the assets of the firm to the creditors in a predetermined priority. Typically, those owed money for goods and services received are satisfied prior to shareholders, who may get as little as 25 cents on the dollar for their interest, and frequently receive nothing.

(b) The firm can elect to come under the legislation voluntarily, in which case the official receiver for the district is requested to provide a trustee to assume control of the financial affairs of the firm. A scheme of arrangement or composition is devised, which results in staying formal bankruptcy proceedings if approved by creditors holding at least 75% of the outstanding debt. Essentially, this is a legal procedure for rescheduling the debts under the supervision of a third party.

(c) The final provision is also voluntary, in that a firm can request a licenced trustee to assume control of the firm. Such a procedure, also known as an authorized transfer, has the same effect as a bankruptcy declaration, but is instigated by the firm and not the creditors.

The exclusion of voluntary closures and receiverships from the official bankruptcy data may appear to be a very serious distortion. Certainly, during periods when the economy is growing, or at least not sliding into recession, one could expect a very close correlation between bankruptcies and unrecorded closures. During the last few months, with the bankruptcy rate soaring, there is reason to believe that the official data seriously underestimate the true business mortality rate. None the less, the actual relationship between the recorded data and the true incidence of business closure, can only be conjectured, although some indicate that for every recorded failure, ten firms actually cease operations.

It is important to stress that bankruptcy has two functions. First, it simply ensures that lenders, creditors and shareholders are satisfied with respect to the security of their investment. Second, bankruptcy is devised also to conserve the entrepreneurial talent pool. By declaring bankruptcy, an individual or group is allowed to halt the erosion of all their assets and "live to fight another day." Thus, while bankruptcy is indeed symptomatic of a failure, either by the firm, or perhaps systemically in the economy, it also has the function of cauterizing economic failure and limiting its impact to a localized entrepreneurial group. Capital and other resources can then be transferred to those more able to co-ordinate their productivity.

3.0 Bankruptcies in Canada - A Regional and Sectoral Perspective

Bankruptcies are not a recent phenomena, as shown in Figure 1, but since 1945, the trend has definitely been on the rise. Prior to the Second World War, bankruptcies declined annually except for a reversal during the Great Depression.

FIGURE 1

Bankruptcies in Canada: 1920-1978
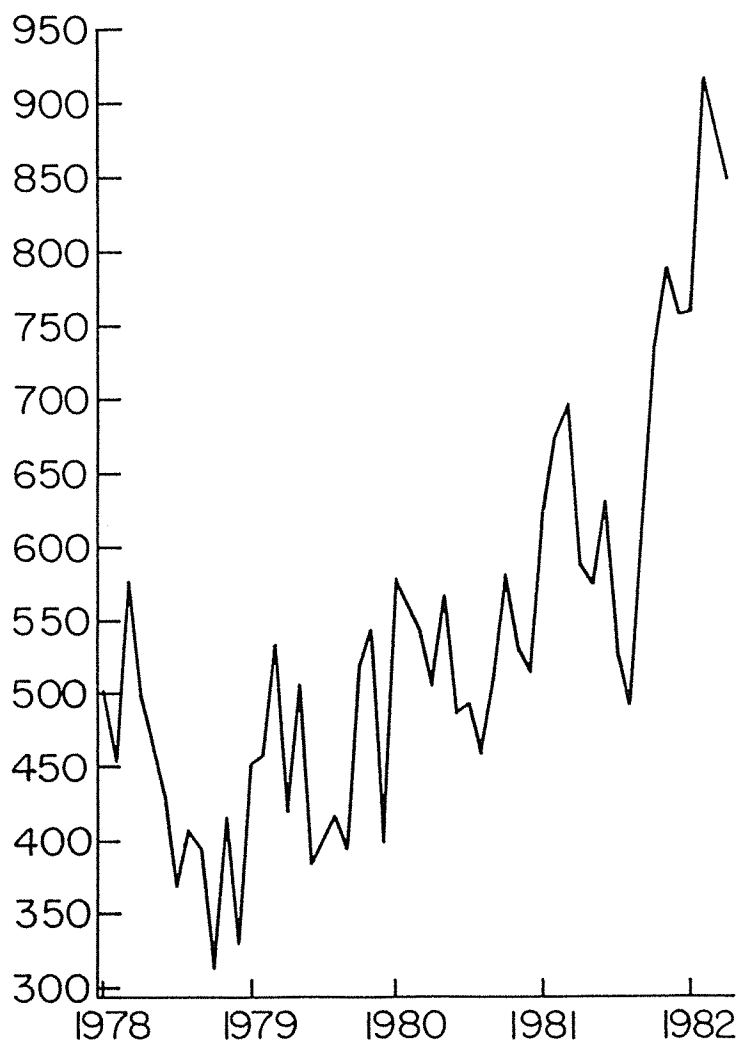#### (Failures per 10,000 Recorded Firms)
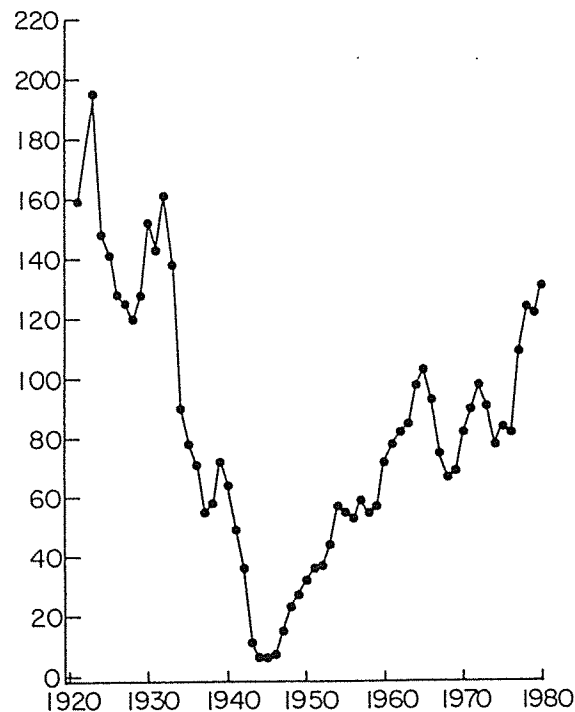
Source: Consumer and Corporate Affairs. Insolvency Bulletin.

It is possible to refine bankruptcy data for the past four years on a monthly basis as shown in Figure 2.

FIGURE 2

Bankruptcies in Canada: 1978-1982
(Months)
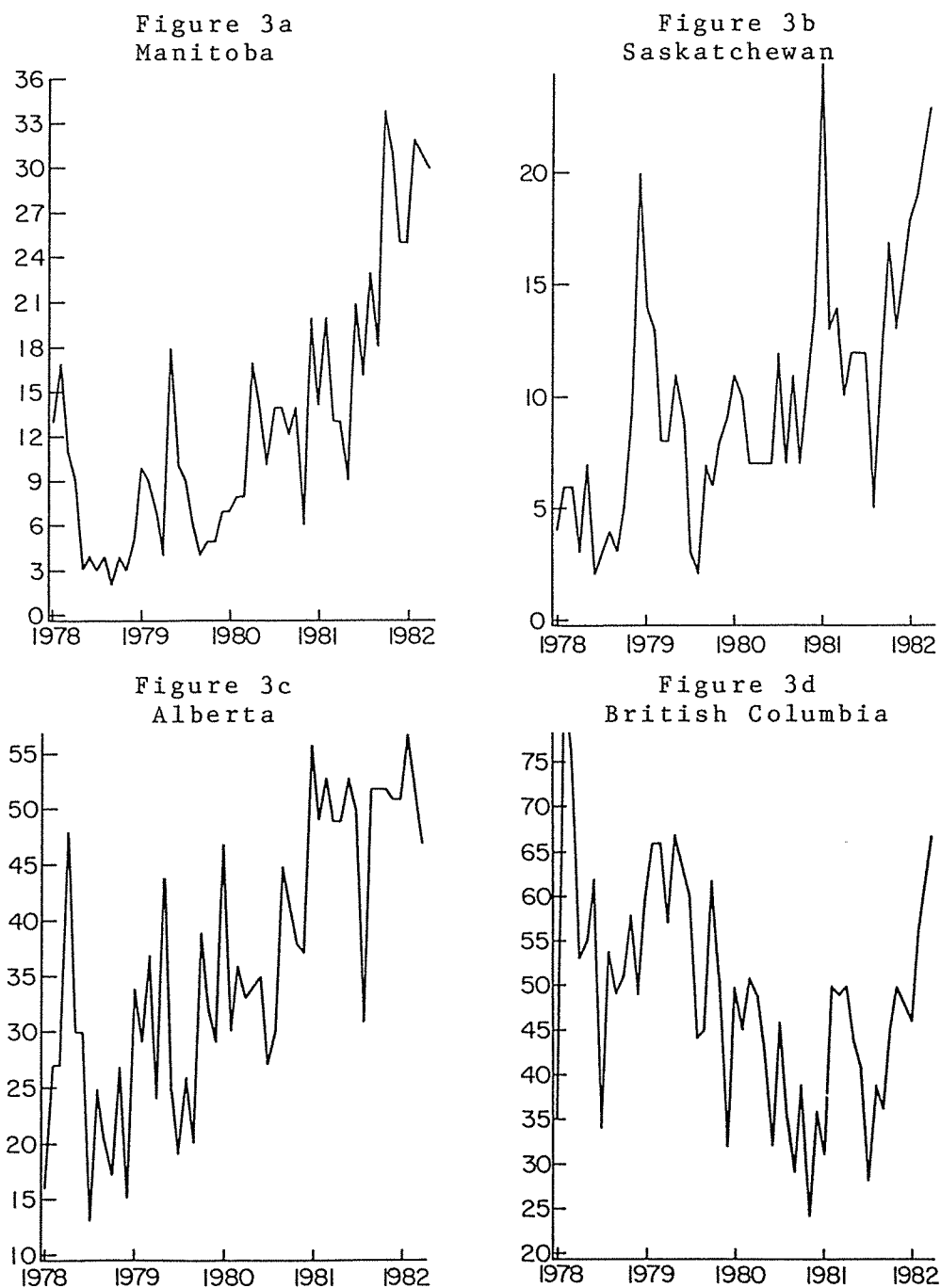(Failures per 10,000 Recorded Firms)

The regional breakdown of bankruptcy between Canada and the western provinces is shown in Figures 3a-d.

FIGURE 3

Bankruptcies in Western Canada
1978-1982
(Failures per 10,000 Recorded Firms)

Figure 3a
Manitoba

Figure 3b
Saskatchewan

Figure 3c
Alberta

Figure 3d
British Columbia

Source: Consumer and Corporate Affairs. Insolvency Bulletin.

What is remarkable about the various trends shown in Figures
2 and 3, are the differences that exist among western prov-
inces. Manitoba has had perhaps the most dramatic accelera-
tion in bankruptcies during the last four years. The Sas-
katchewan experience, while showing a trend upward, reflects
the greater cyclical variation in the level of economic ac-
tivity associated with its agricultural base (see Western
Economic Review, Vol. 1, No.1). Alberta's bankruptcies have
also increased, with considerable variation, but there does
not appear to be a marked acceleration in the recent rates.
Most surprising is B.C., where bankruptcies actually appear
to have declined until quite recently, when the trend re-
versed sharply late in 1981.

The most important conclusion from these data, is that
there are important regional differences in the nature and
character of bankruptcies. These must be acknowledged in
any discussion of business failures. Were one to institute
a general policy to assist firms to forestall failure, these
would probably have to be regionally defined to account for
varying determinants of business failure in the regions of
Canada.

The differences in bankruptcy pertain not only to re-
gions, but also to sectors in the economy. When these are
identified in the data, significant differences emerge, sug-
gesting that analyses which seek explanations for bankrupt-
cies should be able to discriminate among sectors as well as
regions.

FIGURE 4

Bankruptcies By Sector (Canada)
1978-1982
(Failures per 10,000 Recorded Firms)
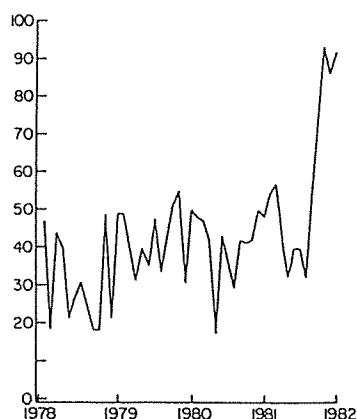
Figure 4a
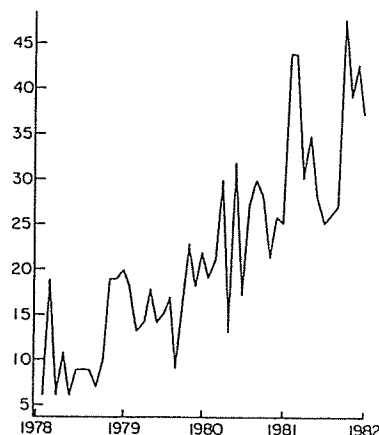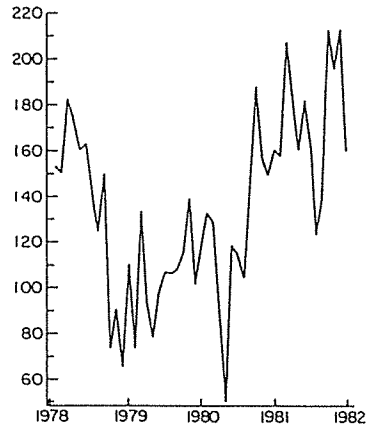Manufacturing

Figure 4b
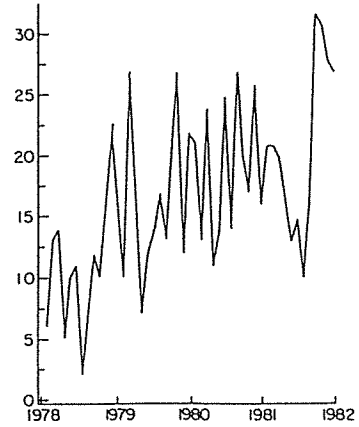Primary

49

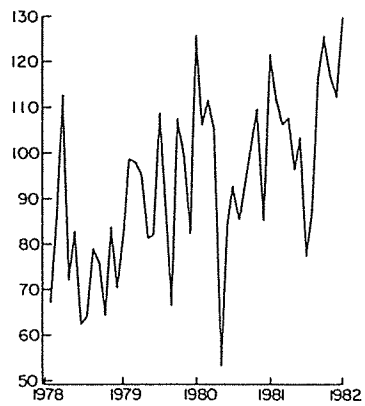Figure 4c
Service

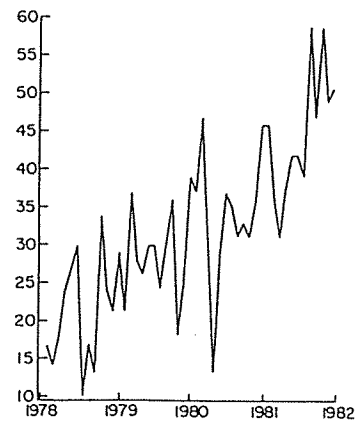Figure 4d
Finance

Figure 4e
Construction

Figure 4f
Transport

Figure 4g
Trade
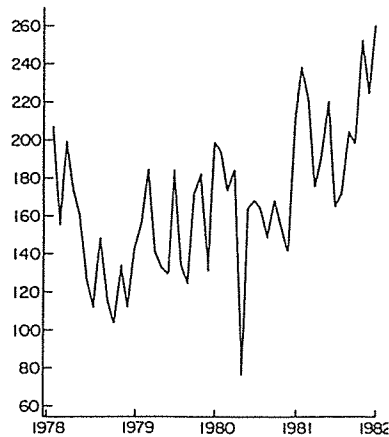
What is apparent from these breakdowns of bankruptcy is that some sectors, such as primary production (forestry, mining, oils, etc.), have experienced steadily increased business failure during the past four years; others such as manufac-turing have only recently experienced sharply increased failure rates.

4.0   <u>Causes</u> <u>and</u> <u>Consequences</u> <u>of</u> <u>Bankruptcies</u>

The general presumption is that bankruptcies are sympto-matic of general failure in the economy. Much of the writ-ing on business failures uses biological analogies; some-times the life of a firm is compared to that of a human life, as both go through the cycle of birth, infancy, ado-lescence, maturity, decline and death. Pseudo-Darwinian concepts abound where "survival of the fittest" occurs in the "corporate jungle." At times, these firms are viewed as trees in a forest, with old firms withering away, some suc-cumbing to accident, while others spring up in their place.

Doubtless these analogies are intuitively appealing, but they do not really further any analysis of the main ques-tions. Can we identify weaknesses within the firm that would predispose it to failure? What systemic macroeconomic factors increase bankruptcy rates? At what point do bank-

ruptcies cease to be merely a symptom of economic difficulty and begin to exacerbate the decline? What policies can and should government consider to forestall the adverse effects of a high bankruptcy rate? Each of these questions will be addressed in turn.

(a) <u>What are the Attributes of Bankrupt Firms?</u>

A number of studies have been undertaken in the last several years in an attempt to identify the specific causes of business failure. Table 1 presents a summary of presumed "causes" of bankruptcies emerging from two of these analyses.

TABLE 1

Causes of Business Failure in Canada

McKinley, 1979

Management Shortcomings	70.0%
Fraud and Related Causes	10.0%
New Product Difficulties	9.0%
Shareholder Disputes	5.0%
Financing	3.0%
Over Expansion	3.0%

Dun and Bradstreet 1981

Management Incompetence	66.0%
Lack of Experience	29.5%
Fraud and Neglect	1.1%
Disaster	.3%
Unknown	3.2%

These studies, while underlining that management is a key element in the success of any firm, do little to provide insight into the reasons for failure. For example, one could easily argue that overexpansion is due to management error, and that there is little difference between management incompetence and inexperience. To state that management failure is a reason for bankruptcy cannot lead one to the conclusion that better management will reduce that rate of bankruptcy. In specific instances, superior management may allow a firm to survive, but on average, were the present group of managers better trained and able, the result may well be that the same number of firms would fail, but that they would be better managed failures. To identify better management as a potential impediment to business failure largely begs the question.

A more useful tack is to consider the age distribution of firms that have failed. Table 2 presents the best available data, and shows quite dramatically that it is the young (new) firm which is most prone to bankruptcy.

TABLE 2

Business Failures in 1980 by Age of Firm

Age (Years)	Percent
Less than 1	1.2
1	12.9
2	15.2
3	14.0
4	11.8
5	7.9
6	6.8
7	5.5
8	3.3
9	2.9
10	2.6
11-15	7.1
16-20	3.7
20+	5.1
	100.0

Source: Dun and Bradstreet, 1981.

There are some straightforward reasons why new firms are vulnerable to failure. Typically, these are also small firms, often entering the industry with new products, and frequently undercapitalized and unable to remain in operation for the period of time required to establish a viable market. In some instances, such as the retail sector, new firms enter specializing in unique products, or catering to a specialized market. These operations often are staffed by refugees from other parts of the economy, whose lack of experience may cause them to settle for second best locations, products, and financial backing. When there is even a relatively short reversal in the growth of personal income, these retail operations tend to fail at a very high rate.

Recently in the media there have been a spate of reports from the "front." Receivers have written on their impressions for business failures. [1] A recurrent theme is that business failures are undercapitalized: specifically debt/ equity ratios are very high, exposing firms to high, fixed service charges on financing.

Most of the studies probing for the specific attributes of firms which would predispose them to failure are inadequate. The usual claims that weak management is a major factor, or that young small firms are very risky are true,

but provide little insight into the current phenomena which surely transcends microeconomic considerations, and do not lead to useful policy prescriptions.

(b) <u>Systemic</u> <u>Factors</u> <u>in</u> <u>Bankruptcy</u>

Most economists, business people, and even Mr. MacEachen are agreed that high interest rates, the growing uncompetitiveness of Canadian products, and plummeting productivity are at the root of the business failures in 1982. It is worth exploring this in some greater detail, as by themselves high interest rates are not a sufficient explanation.

More to the point is the size of the debt that overhangs the entire economy - public and private. Although it is common to criticize governments for debt financing, the massive levels of private debt that must be financed is also worrisome. To understand why this situation has occurred, it is necessary to retreat to the halcyon days of the late seventies. During that period, the real rate of interest (prime rate less inflation rate) hovered around 2 to 3 percent, occasionally becoming negative. Many firms, encouraged by the fact that various assets (investments in the energy and raw resources) were appreciating more rapidly than the general inflation rate, used debt to acquire these assets. Assuming the situation remained unchanged, this approach was sensible. Indeed, to use debt to purchase goods which are appreciating is doubly sensible. First, the real rate of interest is very low or even negative , and second, the loan is repaid in tomorrow's dollars which inflation makes less costly to the debtor.

Also, some sectors based future expansion on an extrapolation of past trends and forecast almost exponential growth in demand. A case in point is the pulp and paper industry, which is in the final phases of an expansion in paper milling capacity. It is unlikely that even 50 percent of this capacity will be used, even if demand recovers to mid-seventies levels. Other industries, most notably the airlines, have been forced to defer capital renovations (purchases of new planes) because of the recession. Their aging equipment will have to be renovated soon, or operating costs will begin to escalate rapidly when oil prices begin to rise again. Finally, the National Energy Policy, predicated upon rising oil prices, encouraged Canadian firms to acquire assets in the oil and gas industry. With the recent (and many believe or hope, temporary,) softening in the world price for fossil fuels, those companies who borrowed to invest in the energy sector face a very low return on this investment and are forced into a cash flow crisis when interest rates rise. Some reports indicate that many firms are borrowing to pay debt service charges is surely an imminent precursor to business failure.

The present cash flow crisis in the Canadian industry is not provoked by a fundamental change in the value of the asset. For example, the softening of world oil prices has scuttled plans for a major tar sands development, but no one feels that the value of conventional oil resources will do anything but appreciate, more than likely at a higher rate than consumer price levels. The recession has dampened sales of fossil fuels and a heavy acquistion program by some firms using debt, which is now very much exposed to high interest rates, has produced the current financial squeeze. For the oil industry is really little more than a matter of some fiscal innovation by the banks. Surely, loans to Dome and Turbo Resources must compare very favourably to loans to Poland, Zaire or even Chrysler.

The cash flow squeeze does have important ramifications for the rest of the economy. While it is unlikely to damage major firms, with the possible exception of companies whose troubles began before interest rates increased (Massey-Ferguson), many firms are cutting back in "unnecessary expenditures." Smaller firms who service these "needs," find their markets are vapourizing. Various consulting groups, market research firms, and others specializing in different business services are among the casualties as general retrenchment occurs. Essentially, many of the failures result from the expectation of a stable market for business services and intermediate manufacturing goods, in turn based upon the assumption of continued growth by the larger primary producers and manufacturers.

Certainly hindsight is perfect, and it is easy to criticize decisions made in the late seventies from our present vantage. Nonetheless, the rapid escalation in capital equipment acquisition using debt finance does raise some disquieting questions about the state of corporate planning in Canada.

The precise relation between bankruptcy rates and various macroeconomic variables can be estimated statistically. The result, summarized below and detailed in the appendix, should not be viewed as conclusive, but as a preliminary and not altogether satisfying analysis of the relative impact of interest costs and retail sales on the rate of bankruptcy. What has been measured is the impact on the rate of bankruptcy (number of bankruptcies per 10,000 firms) of a change in the real value (inflation adjusted) of retail sales and a change in the ratio of interest to total expenses. These changes are shown in Table 3.

TABLE 3

	Change in the Bankruptcy Rate Due to a Change in Real Retail Sales of $100 Million	Change in the Bankruptcy Rate Due to a Change in the Ratio of Interest Costs to Total Expenses of .01
Canada	8.3	231.3
Ontario	7.1	70.5
Manitoba	2.0 *	17.7
Saskatchewan	3.4 *	5.9
Alberta	5.7 *	30.1
British Columbia	9.3	-17.4 **

* These results are not statistically significant and are only suggestive.

** All the results in this column are highly significant statistically, but the B.C. result contravenes both the theory and experience behind the western Canada figures. In point of fact, given that throughout the estimating period (except at the very end of 1981), the bankruptcy rate actually fell for B.C., this perverse relation between interest costs and bankruptcies is to be expected, given the simplicity of the model.

These results indicate that both retail sales and interest costs do have an influence upon the bankruptcy rates. The relation between retail sales and bankruptcy rate is not as strong for Manitoba and Saskatchewan as it is for the nation and the other provinces. Likewise, the relation between interest costs and the bankruptcy rate is more apparent for Canada as a whole than it is for the region, but this is probably the result of the statistical method.

Given the paucity of data, there is little point belabouring advance procedures to tease out precise relationships. Suffice it to say that the relation between retail sales, interest costs and bankruptcies is statistically supported, at least to some degree.

While none of the above is especially new, it is well to reiterate that the current exposure to interest charges felt across the economy is not merely the result of high interest rates per se, but rather due to a recent increase in the debt load for all sections in the economy. To some extent, this may be explained by speculation based upon very low real rates of interest during the late seventies. The role

of competition leading to an overbuilding of plant and
equipment also is evident in certain instances. With a
growing economy, planning mistakes can be absorbed, but not
when gross national product declines. Also, as in the case
of the overcapacity in paper milling, it is unlikely that
the plant and equipment will find alternative uses. The up-
shot is that while the government must assume responsiblity
for the present interest rates and perhaps for unfortunately
timed energy policy, the exposure to interest rates must
also be traced to the debt incurred willingly by the private
sector as a result of its normal planning process. It is
unlikely that a decline in interest rates will quickly al-
leviate this source of business failure, and a continuation
of the present high rates of business failure can be expect-
ed even if interest rates moderate.

(c) Are Business Failures Damaging the Economy?

To many, this is a rhetorical question. Yet, business
failure performs a useful function. As mentioned above, the
legal role of the Canada Bankruptcies Act is to preserve the
interests of the creditors. Its economic role is to limit
their claim on the personal assets of enterpreneurs, thereby
allowing them to regroup their resources.

One of the yet unmentioned aspects of the current bank-
ruptcy levels is that there appears to be some natural mor-
tality rate among business firms. Another factor, now al-
most a cliche, is that the economy is experiencing a
technological revolution. Certainly the major economic
forces are dominating, but this should not obscure an appre-
ciation that many firms are experiencing competitive pres-
sures to adopt new techniques and provide new products. The
case of Addressograph in the United States is illustrative.
For many years a standard name in office equipment, it em-
barked upon a very aggressive investment program to remodel
its entire product line. In the face of severe competition
from the new electronic office technology, it took a very
large gamble, borrowed heavily -- and lost.

The demise of firms due to technological change is part
of what Schumpeter termed the "creative destruction" inher-
ent in a capitalist system. In normal times, it represents
the selective pruning needed to keep the economic tree
healthy (to shamelessly use a biological analogy).

Another aspect of the new industrial revolution is that
new technology, not only with respect to actual production,
but also in consumer products, encourages rapid entry of
firms into an industry. Certainly this is true in home and
industrial electronics. Many of these new firms share the
standard infirmities of youth, but also are exposed because
many products either do find not markets or are rapidly su-

perseded by superior technology. In these sectors of the
economy there is a rapid entry and exit of new firms. Given
the pace of recent technological change, one would have nor-
mally expected there to be a high creation of failure rate
of new firms.

Unfortunately, there is insufficient data on this to re-
ally shed light. The data on the entry of new firms by in-
dustry is non-existent. Even the standard industrial clas-
sification (SIC) fails to incorporate catalogues for new
technologies such as genetic engineering, robotics, and vid-
eo entertainment. Even if the classification were in place,
more than likely, the data could not be released for fear of
violating confidentiality.

One view becoming more widespread is that while there may
be a certain bankruptcy rate which encourages the "creative
destruction," the present high rates are not only fundamen-
tally damaging to the entrepreneurial spirit of Canadians,
but are also changing the structure of the Canadian economy.
This assertion will remain difficult to evaluate until
bankruptices can be disaggregated by sector. In many sec-
tors such as the retail trade, the level of capital required
to begin operations are quite modest, and it is unlikely
that when the economy recovers entrepreneurs will be dis-
couraged from re-entering. In other areas, especially manu-
facturing, high bankruptcies are worrisome. There, capital
requirements tend both to be large and specialized. Bank-
ruptcies in that sector can easily force consumers into
higher cost alternative sources, and once recovery has be-
gun, several years may have to pass before financial insti-
tutions may be willing to refinance new operations in the
industry. By then, the old equipment may be obsolete, and
the alternative sources well entrenched in the buying pref-
erences of consumers. While there is no empirical evidence
to support these allegations, the concern is definitely not
frivolous.

Another irony of the current high bankruptcy rate is that
its continuation could cause damage to the competitive
structure of certain industries. A.E. Kahn, commenting upon
the demise of Braniff, argued that the price for deregula-
tion and improved price competition was that some firms
would fail. This is the Achilles' heel of the deregulation
debate. Increased competition often leads to fewer firms
who become better able to subvert the competitive process.
Viewed in a national context, the current high rate of bank-
ruptcy has not persisted long enough to raise the question.
When the focus is shifted to certain industries in a given
region, the question is not so clearly answered. It is con-
ceivable that for regions served by a few firms in an indus-
try or sector, the bankruptcy of a few, or even of one firm,
may upset the competitive structure of that local economy.

In this sense the current rate of business failure can portend serious problems for the economy of Canada and its regions.

(d) What Can and Should Government Do?

To the extent that the current bankruptcies are part of a "natural" process, many governments may be inclined not to provide direct programs to alleviate business failures. In fact, to accelerate the demise of inefficient firms may be considered by some to be a wise strategy. Resources locked into low productivity activities are wasteful, and to the extent that business failure releases capital equipment, raw materials, and labour for other, more productive uses, economic growth potential is enhanced. The problem is that there are no alternative uses for these resources in the present economy.

At the very minimum, and largely for political reasons, the provincial and federal governments may want to enhance the advisory resources available to small business. In many areas, however, these services are already well developed, but underutilized. The normal educational efforts, such as the plethora of pamphlets available to aspiring entrepreneurs, do not seem to enhance the management skills of the small business community for quite simple reasons.

First, many who are starting business steadfastly refuse such counselling, and often seek advice only when failure is imminent.

Second, the typical small business entrepreneur must possess a bewildering variety of skills ranging from economic forecaster, promotion manager, product and industrial designer, human resources officer, bookkeeper, etc. A serious deficiency in any of these areas, and it would be rare to find one person who performs adequately in all of them, can compromise the business.

Third, most counselling can only provide general advice, when a business really needs a deep understanding of the market, the production process, and the cost profile of a relatively narrowly defined activity. Also, despite general guidelines, the temptation for the aspiring entrepreneur to compromise is great. Many entering retail activities will have a sound product line, and good basic management skills, but may compromise location for inventory depth, and vice versa. In the restaurant business, for example, the four factors of success are location, service, food and atmosphere. The convential wisdom is that one definitely needs three of these to succeed: a neophyte may be tempted to believe that one can get by on two, or even on just good food.

The upshot is that since the existing counselling activities are both limited in their utilization by entrepreneurs, and also cannot be expected to provide specific enough information in any given situation, any expansion of counselling must be seen as political rather than economic exercise. Also, as mentioned above, in the current economic environment, if all firms improved their management, this may have only a marginal impact on the overall failure rate.

Government does have some options in addition to counselling activities. For example, franchising is often identified as the most secure way to start a business. One possibility is to provide special tax relief to those willing to sponsor and create franchise operations, and those who wish to start a franchise business.

Another alternative is to permit present tax deferral vehicles such as registered retirement savings plans to direct investment to small business ventures. Care must be taken here, as only those businesses which pass a careful screening should be allowed to obtain investment funds in this way.

Finally, one financial innovation would be to create an investment vehicle whereby savers could acquire an interest in the equity of small businesses through a mutual fund type of management. Rather than seeking a variety of sources of equity the small business could apply to a bank for capital generated by investors who purchased shares in a small business development fund. In this way, investors could direct limited amounts of capital to a diversified portfolio of small businesses. The risk to the investor is reduced, and the small business could raise the equity portion of this financing without the high cost normally associated with the intial marketing of shares.

Once financial innovations, and the various modifications to tax law have been fully exploited, government must also consider under what conditions direct support should be granted to firms in trouble. Usually this is confined solely to medium and large manufacturers with enough employees to be reported by the media and the decision to support a particular firm is based upon the visibility of the operation, rather than its strategic value in terms of regional development or the maintenance of competition. In general, unless the firm qualifies on either of these grounds, governments are better advised not to bail out the private sector.

5.0 Conclusions

The rise in the bankruptcy rate during the past two years
has prompted a spate of studies of the "problem." Unfortu-
nately, the information needed to make intelligent policy
always lags behind economic events. For example, only now
is the data on energy consumption becoming available in suf-
ficient detail to permit analyses of appropriate policy.
More than likely, the current crisis in bankruptcies will
call forth renewed efforts to improve data quality expected
to be available in 1990.

With respect to policy, there are some limited initia-
tives possible ranging from renewed counselling to financial
innovation to enhance the potential of small businesses with
good "fundamentals." Bailing out larger concerns should be
limited only to those concerns of strategic importance to
the economy, and not based solely on the visibility of the
business or its size.

In the final analysis the real solution is to create an
economic environment in which interest rates can fall. Giv-
en the latest federal budget, the prospects for this are
virtually nonexistent.

APPENDIX

Econometric estimation of bankruptcy determinants is
fraught with pitfalls. It is useful to look at the data
first. Generally, the industrial and regional disaggrega-
tions are not specific enough for our purposes. Often, the
confidentiality rules of Statistics Canada preclude the re-
lease of pertinent information. Second, bankruptcy fre-
quently pertains to a firm which may be engaged in a broad
spectrum of activities. In general, it is very hard to
classify many firms by industry, thereby precluding the mod-
elling of entry and exit on the basis of broad indicators of
industry performance. Finally, bankruptcy is a legal proce-
dure. The discrepancy between bankruptcies and business
failures has already been noted, but the problem is aggra-
vated by the judicial system's attitude toward social sci-
ence. To a lawyer, a particular bankruptcy case is quite
unique and defies summary and classification. Yet the cen-
sus statistician has no difficulties in classifying and
grouping a nation of diverse households. Generally, the ju-
dicial system has been unsympathetic to the data needs of
the social scientist.

These caveats aside, the model specified assumes a very
simple, functional form. The bankruptcy rate (failures per
10,000 firms) is a linear function of real retail sales and
the ratio of interest costs to total costs. The equation is

estimated for the provinces of Ontario, Manitoba, Saskatchewan, Alberta and British Columbia, as well as for Canada. The bankruptcy rate in each region is regressed against provincial and national real retail sales, and the ratio of interest costs to expenses for Canada as a whole. Unfortunately, the model specifications were weakened because it was not possible to regionally disaggregate the interest costs/expenses ratio. Each of the five provincial equations was estimated using ordinary least squares (OLS) and Zellner efficient procedures. The equation for Canada was estimated using OLS.

TABLE 1

Regression Coefficients for the Bankruptcy Models

Dependent Variable (Bankruptcy Rate)	Independent Variables	
	Retail Sales (Real) (Million dollars)	Interest Costs/ Expenses (Lagged 4 Months)
Ontario *	− .071 (.036)	70.55 (14.95)
Manitoba *	− .019 (.049)	17.71 (2.21)
Saskatchewan *	− .034 (.050)	587.89 (2.27)
Alberta *	− .056 (.036)	30.07 (4.83)
British Columbia *	− .093 (.034) $R^2 = .477$@	− 17.41 (4.78)
Canada **	− .083 (.031) $R^2 = .595$	231.34 (32.98)

* Zellner Efficient coefficients reported.
** OLS coefficients.
@ Weighted for the system.

Clearly, these results are based upon a simplistic model. Data inadequacy forces us to select variables such as retail sales, which do not have the same importance in all regions. Furthermore, the valuable interest cost/expenses variable is not disaggregated by province, and the model specification is weakened accordingly.

NOTES

[1]   c.f.   Canadian Business, June, 1982.

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M1, M1, HAS ANYBODY SEEN M1?

by

Norman E. Cameron

The Bank of Canada has been under fire about its interest rate policy for at least the last 18 months. This spring it has to confess that one of its key assumptions in that strategy is not borne out in the real world. The Bank has been using the narrowly defined money supply, called M1, as its barometer of what is happening to real output in the economy. M1 is useful in this role because its growth moves closely with growth of real output and price levels, and because the Bank thought it had accurate and timely measures of M1 (currency and bank chequeing deposits) in the weekly reports which chartered banks must submit under Bank Act rules. Measures of real output, by contrast, come out only with long lags and are still subject to large revisions later on.

At the end of March, the Bank of Canada had occasion to check the accuracy of its numbers, and found a 3 1/2 percent error -- equal to a year's growth under current policy, and clearly major. Full and complete month-end reports from chartered banks, showing the complete balance sheet, fell on the same day as the last regular weekly report for March, which reports only parts of the balance sheet. The month-end report showed M1 to be $862 million bigger than previously thought, a substantial measurement error on a total of only $25 billion. The Bank warned users of the data to be wary, and stopped plotting M1 data on its key chart of how monetary policy is doing, while scrambling to find where the errors were. By mid-June the Bank had decided to revise its own earlier M1 figures upward by an average of $450 million starting last November. Instead of being well below the Bank's target growth bank for 1982, M1 for May 1982 was now right at the bottom of the band. The Bank's room to expand without exceeding its targets has been cut in half. The chart shows successive upward revisions from mid-March to mid-June.

With M1 more difficult to measure, the Bank must fall back on other, poorer, proxies to guess what effect its policy is having on the real sector of the economy. The result may well be policy which is more cautious and slower to respond to changing economic conditions.

FIGURE 1

Bank of Canada Targets
and Measures of M1

M1 Revisions, March – June 1982

Source: Bank of Canada.

67
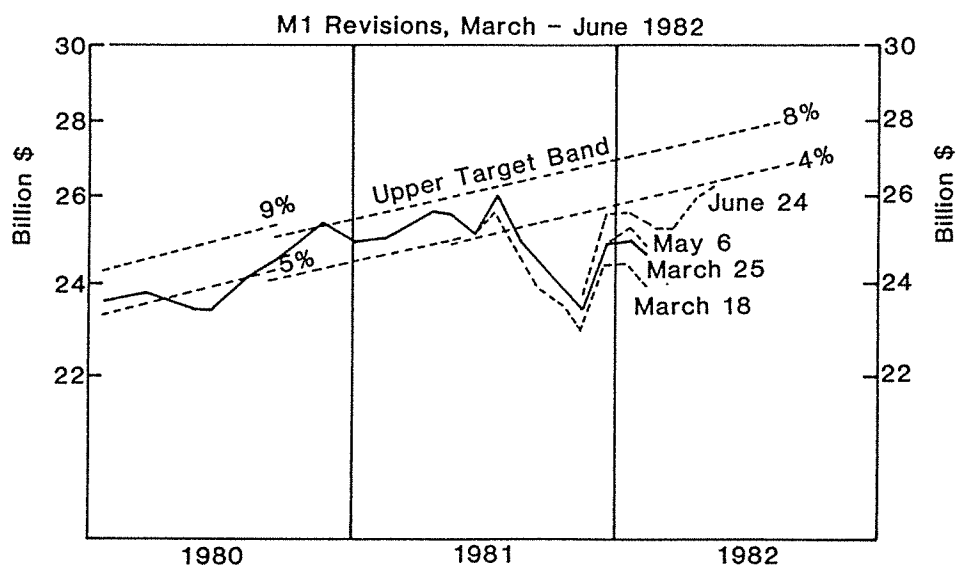
BOOK REVIEWS

Tax Based Incomes Policies: A Cure for Inflation? M. Walker
(ed.). Contributions by J. Carr, W. Scarth, R. Schuettinger
and others. The Fraser Institute, 1982.

Anyone who reads this book anticipating important new in-
sights into the problem of controlling inflation will be
disappointed. The title is misleading. Less than forty
percent of the book deals with Tax Based Incomes Policies
(TIPs). It opens with a long essay by J. Carr entitled
"Wage and Price Controls: Panacea for Inflation or Pre-
scription for Disaster?" Only gradually does it dawn on the
reader that the essay was written about the end of 1975, and
is reproduced here almost unchanged. Carr is a hardline
monetarist. Inflation is caused by excessive monetary
growth and controls have never worked. No reference is made
to the studies of a number of other scholars which show that
the Anti-Inflation Board had a significant impact on Cana-
da's inflation rate. Nor does Carr appreciate the genuine
innovation contained in the A.I.B. program in trying to
step down the rate of wage and price increase over a three
year period.

A long essay by R. Schuettinger, "A Survey of Wage and
Price Controls over Fifty Centuries", follows. While this
gives capsule descriptions of a large number of wage and
price control episodes, it is not clear that most of them
have any contemporary relevance. The evidence cited is, at
times, suspect. The Nazi leader, Hermann Goering, is quoted
in support of the view that wage and price controls didn't
work in wartime Germany. A comparison is made between Cana-
da's inflation experience during the two World Wars without
reference to the fact that total government spending on
goods and services exceeded 40 per of GNP in World War II
compared with about 15 percent in World War I.

The concluding section on TIPs consists of four short es-
says. In much the best of these, W. Scarth evaluates TIPs
in the context of a model of the economy. He concludes that
a TIP in its original form of a higher tax rate on excessive
wage increases in large firms, "can lower the unemployment
costs of a standard disinflation policy by an amount equal
to about two percent of GNP annually for six years." But if
these gains are to be achieved, some method will needed to
reduce labour's hostility to the plan. He also suggests
that one year, rather than two and three year labour con-
tracts, might reduce the cost of bringing down the inflation
rate. He fails to mention that this might also make it eas-
ier for the inflation rate to increase.

The other three TIP essays are written by avowed monetarists. All conclude that TIPs offer few advantages in the fight against inflation, and are likely to distort the working of the price system. Only the essay by N. Jianakoplos offers some description of TIPs for those not already familiar with these plans. Carr's essay enumerates the many problems a TIP program would face and shows a number of new insights. Henderson concentrates on the single point that with a reward TIP such as Carter proposed in 1979, people would be discouraged from moving from slow growth industries (railways) to rapidly growing industries (airlines). His conclusion is a triumph of technical economics over common sense.

Clarence L. Barber, Department of Economics, University of Manitoba.

Understanding Inflation by John Case, Penguin Books, 1981.

For most Canadians, even those with formal training in economics, inflation is perplexing. The media are rarely helpful; they parade a cast of villains across the stage - big business, government, and labour - and demand that a culprit be identified. Mr. Case has written a very lucid and balanced discussion of inflation from the American perspective. Even though the examples are drawn from the U.S. experience, many valuable insights are provided for Canadians.

The first chapter is an excellent account of how inflation is a "mixed curse" - some gain, some lose. Several conventional truths are questioned. Many prices have not risen at the same rate as overall inflation - an unsurprising fact, since the consumer price index is a weighted average of a standard basket of goods, and some of the prices must, by definition, rise at a slower rate than others. The elderly in the United States have tended to do better than average with respect to keeping pace with inflation. The poor, despite the allegations to the contrary, do not fare significantly worse than others in preserving real incomes.

The next four chapters consider in some detail the four main actors which Case argues are responsible for creating the "upward bias of sticky down" in the overall price structure. Big business, small business, labour and government, are all scrutinized over the past hundred years, and a convincing picture is drawn of the measures each has used to subvert the free market. Each of these groups has found ways to reduce competition, increase regulations and eliminate uncertainty from their day-to-day operations. Case is no simple-minded free market idealist however. For him, the cause of inflation "has been the long, tortuous and largely

successful escape from the terrible insecurity of the marketplace - from the chilling fingers of the invisible hand." All participants in the modern economy have willingly colluded to replace the hurly-burly of freely responding prices, with the greater security of social welfare assistance, joint public and private ventures, government rescue operations of private firms, and cost of living adjustments in wage bargains. The result has been an economy with less uncertainty than in the previous century, and greater resilience to the threat of major depression, but which also has inflationary biases built into every corner.

Case then considers the immediate causes of the inflationary experience in the seventies. The deficits of the Vietnam war, the major commodity shortages of the early seventies (grain, oil and anchovies), the ability of all major participants, business, labour and government to exert short term influence on the division of the economic pie, and public and private deficit financing, all have been imposed upon the economy, transmitting independent price shocks throughout the structure. An upward adjustment in the wages of one group, for example nurses, calls forth a simultaneous and upward revision in the wages of everyone in the medical profession, and even other groups far removed. Price increases in one industry are passed along by all like hot potatoes. The economy has been fundamentally restructured, so that while we have much less uncertainty as individuals, price shocks are no longer limited to a small segment, but are transmitted and magnified throughout the entire system.

Case evaluates a number of mechanisms for controlling inflation. The neo-conservative program, the approach currently in favour in Canada and the United States, calls for limiting spending and growth in the money - in other words, "throwing recessions at inflation" - is rejected. First, it appears that this approach has had only limited success in the past, and second, the costs are growing, in terms of higher unemployment and business failure. Conventional monetary and fiscal policies simply have no ability to address what Case considers to be the basic problem; namely that the economy is polarized into separate groups which can make short term claims on the national product. According to Case, some form of permanent wage and price controls to discipline these claims by all groups, not merely labour, is the only viable option.

Many will disagree with this conclusion, but all will benefit from this balanced and thoughtful analysis of the inflation problem besetting the North American economy.

Greg Mason, Institute for Social and Economic Research, University of Manitoba.

ECONOMIC POLICIES FOR CANADA IN THE 1980S

The Canadian economy has endured its deepest recession since the Great Depression. At this juncture, many solutions are proposed to reverse this stagnation, ranging from a do-nothing attitude based upon the assumption that things will get better as soon as the U.S. economy recovers, to activism based upon reversal of tight money and policies.

Against this backdrop, the Executive Board of the Institute for Social and Economic Research has decided to inaugurate a series of annual conferences with the theme "Economic Policies for Canada in the 1980's." Simultaneously, we shall be using this occasion to honour Dr. Clarence Barber, Distinguished Professor of Economics.

ECONOMIC POLICIES FOR CANADA IN THE 1980'S
October 28-29,1982
Conference Outline

October 28, 1982

Macro-modelling of the Canadian Economy

"Recent Advances in Macroeconomic Modelling of the Canadian Economy." J. Helliwell, University of British Columbia.

"Inflation, Inventories and Monetary Instability." Brian Scarfe, University of Alberta.

Macroeconomic Theory and Policy

"Keynesian and Neo-classical Macroeconomic Value Theories." T. Rymes, Carleton University.

"Rational Expectations and Macroeconomic Value Theories." D. Laidler, University of Western Ontario.

LUNCHEON ADDRESS: Premier Howard Pawley, Government of Manitoba

Open Lecture

"Privatisation: A Critical Evaluation." J. Weldon, McGill University.

Monetarism in Canada

"Recent Monetary Policy in Canada: Reflections of a Monetary Gradualist." T. Courchene, University of Western Ontario.

"A Critical Review of Monetarism in Canada." J. McCallum, Simon Fraser University.

October 29, 1982

Incomes Policies for Canada

"Incomes Policies for Canada." J. Vandercamp, University of Guelph.

"The Politics of Incomes Policies - a Microeconomic Perspective." A. Maslove, Carleton University.

Trade Policy and Industrial Structure

"Tariffs and Competition Policies for Industrial Development." H. Bloch, University of Denver.

"Industrial Policy in Canada." E. Neufeld, Royal Bank, Montreal.

LUNCHEON ADDRESS: The Honourable Lloyd Axworthy, Government of Canada.

Open Lecture

"Resource Abundance and Economic Development in Western Canada." D. Beck, Canada West Foundation.

International Constraints on Policy

"Canada - The New International Division of Labour - And the Third World." D. Snidal, University of Chicago.

"Foreign Ownership and Canadian Industry." B. Wilkinson, University of Alberta.

CONCLUDING BANQUET: "Economic Policies for Canada in the 1980s." C. Barber, University of Manitoba.

Discussants

D. Slater   Economic Council of Canada
W. White   Bank of Canada
A. Donner   Research Securities of Canada
A. Safarian   University of Toronto
D. Peters   Toronto Dominion Bank

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GLOSSARY

Economics, like all social sciences, is replete with its own curious jargon which at times appears designed to obscure rather than clarify. To assist readers in penetrating this vocabulary, the Western Economic Review will include a glossary of terms used in the current issue. It may also be useful for economists to remind them of what these terms mean.

BASIS POINT

Describing interest rate changes can be confusing. For example an increase in interest from 16.57% to 17.01% is an increase of 44 basis points or 2.66% (.44/16.57).

CONSUMER PRICE INDEX

Often fallaciously referred to as a "cost of living index," this monthly statistic measures the buying power of the consumer dollar. Specifically, "it measures the percentage change in the cost of purchasing a constant basket of goods and services, representative of the purchases made by a particular population group in a specified period of time". (Statistics Canada, "Your Guide to the Consumer Price Index, 1982).

DEPENDENT VARIABLE

The "effect" variable which is presumed to be carried by one or more "independent variable" in a regression equation.

INDEPENDENT VARIABLES

The "causes" of the variation in the dependent variable (effect).

M1

M1 is one version of the money supply. It is composed of all currency plus demand (chequeing) deposits. Other measures of the money supply include term deposits, saving accounts, etc.

OPEN ECONOMY

An economy where a high proportion of GNP is generated through external trade. For Canada this is approximately 20% while for the U.S. this is less than 5%.

R^2

The "goodness of fit" for a regression equation. Another interpretation is that it indicates the percentage of total variation of the dependent variable explained by the independent variables.

SCHEME OF ARRANGEMENT

A reorganization or rescheduling of debt repayment which is authorized by the Superintendent of the Bankruptcy Act. It requires support of creditors holding at least 75% of the firm's debt.

STANDARD INDUSTRIAL CLASSIFICATION (SIC)

This is one of several classification schemes used by Statistics Canada to catalogue varieties of economic activity. A special code is devised which assigns activities in a telescoping fashion.

T RATIO

A measure of the statistical significance of regression coefficients (among other things). In general, if the t ratio is greater than 2.00 (and the sample size is greater than 30) one can reject the null hypothesis that the regression coefficient in question is actually 0, with a 5% chance that one is rejecting a true statement.