Regional Fiscal Policy and the Great Recession of 1981-1982*

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Introduction

A frequent advantage claimed for fiscal policy over monetary policy as a means of combatting unemployment in a general business recession is that fiscal policy can be regionally differentiated, whereas monetary policy cannot. Under a system of properly functioning financial markets, interest rates must of necessity be practically the same in all areas of the country. The Bank of Canada cannot therefore take monetary actions to produce lower interest rates in one area of the country than in another. By contrast, taxes can be reduced or government expenditures increased more in the high than in the low unemployment regions to provide the greatest stimulus to demand where it is needed the most.

The 1981-82 recession represents an interesting period in Canada's postwar economic history for examining the validity of these arguments. The recession was very severe and had all the usual characteristics of cyclical downturns in Canada, with unemployment rates being much higher in the lower income, less industrialized regions than in Central Canada.

The 1981-82 recession was largely produced by a strongly restrictive monetary policy implemented by the Bank of Canada sometime in 1981 to combat double digit inflation. This policy was continued until 1984 even though recovery from the recession, which began in 1983,

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was weak and incomplete, with unemployment rates remaining well above their pre-recession levels.

Given this preoccupation of monetary policy with combating inflation, the important issue examined in this paper is whether regionally discriminating fiscal policies might not have played an effective role in combatting unemployment in the regions, and particularly in the high unemployment regions, in the 1982 recession.

In order to measure the effectiveness of regional fiscal policy it is necessary to have measures showing the quantitative impact of tax or government expenditure changes on regional unemployment. Unfortunately such measures are not available at a regional level in Canada, so another major purpose of this paper is to provide them. To do this, quantitative estimates of the elasticity of the unemployment rate with respect to total government expenditures are calculated for the regions, the Atlantic Provinces, Quebec, Ontario, the Prairies, and British Columbia, using the following procedure.[1] First, a simple model is developed to calculate the elasticity of the unemployment rate with respect to total output for each of the regions. The structure of this model is described in the following section. Second, these unemployment rate-output elasticities are multiplied by elasticities showing the sensitivity of total output to changes in government expenditures to obtain the direct link between the unemployment rate and government expenditure policies. The third section explains how these later elasticities are calculated using estimates of regional government expenditure multipliers that allow for interregional feedback effects. The fourth section uses the unemployment rate-government expenditure elasticities to calculate the percentage increases in total government expenditures that would have been required to eliminate cyclical unemployment in the regions in the 1981-82 recession and discusses the implication of these findings for the potential use of regionally discriminating government expenditure policies in combatting unemployment. The final section summarizes the major findings of the study.

The Model

The following model was used to estimate the impact of changes in total output on the unemployment rate in each of the regions:

[1]Elasticity measures could also be obtained for taxes; however, the focus of this paper is on obtaining elasticities for government expenditures, since several studies (Miller 1980; Miller and Wallace 1983) have shown that government expenditures are a more effective means of implementing a regional fiscal policy than the personal income tax.

$$l_nN = a_0 + a_1 l_n Q + a_2 l_n N_{-1} + a_3 T + \epsilon \quad (1)$$

$$l_n(L/P) = b_0 + b_1 l_n(N/P) + b_2 T + \epsilon \quad (2)$$

where N, L, and P are the labour force survey definitions of total employment, the labour force, and population respectively. Q is gross domestic product at factor cost in constant $1971, and T is a time trend.

The specification of equation (1) follows the work of Neil Swan (1972), who used a theoretical model developed by Ball and St. Cyr (B&S) to estimate nonagricultural labour demand functions for each of the five regions and for Canada, using annual time series data covering the period from 1948 to 1968.[2]

B&S postulated a short-period production function of the following form:

$$Q_t = Ae^{pt}(Nh)_t^{\alpha} \quad (3)$$

where Q_t is the exogenously determined level of output; e^{pt} is a time trend to absorb the influence of increases in the capital stock and technical progress, N is the level of employment in men, and h is productive hours worked per man.

B&S then add a cost equation of the following form to their model:

$$C_t = W_h(Nh)_t + F_t \quad (4)$$

where C is the total costs net of material and fuel; F is the fixed cost, and W_h is the effective wage per man hour. By assuming that the effective wage per man hour varies quadratically with hours worked per man (h) the cost minimizing, or equilibrium level of employment, N*, is found by minimizing the firm's cost function subject to its production constraint (equation 3). This yields the following expression for the cost minimizing employment level, N*:

$$N_t^* = \frac{2c}{A'b} e^{-pt/\alpha} Q_t^{1/\alpha} \quad (5)$$

The model is then completed by postulating an adjustment function of the form:

$$\frac{N_t}{N_{t-1}} = \left(\frac{N_t^*}{N_{t-1}}\right)^{\lambda} \quad (6)$$

[2]Unfortunately Swan's (1972) short-run employment elasticity estimates could not be used in this study because these estimates show only the sensitivity of changes in non-agricultural employment with respect to changes in some but not all of the goods-producing industries. In addition, these estimates are now badly out of date.

where λ is the adjustment coefficient ($0 < \lambda \leqq 1$). By substituting equation (5) into (6), solving for N_t, and taking natural logs we obtain the estimating equation:

$$l_n N_t = a_0 + \frac{\lambda}{\alpha} l_n Q_t + (1-\lambda) l_n N_{-1} - \frac{\lambda p}{\alpha} T + \epsilon \quad (7)$$

This equation can be rewritten as (1) above where $a_1 = \lambda/\alpha$, $a_2 = (1-\lambda)$ and $a_3 = -\lambda p/\alpha$. Our *a priori* expectation is that the sign of a_1 and a_2 will be positive. The sign of a_3 is predicted to be negative, since from equation (3) $\alpha > 0$, and $p > 0$, and from equation (6) $\lambda > 0$.

The second equation of the model states that the aggregate participation rate depends on the employment population ratio for all age-sex groups in the labour force and a time trend (T).[3]

The variable (N/P) is included in the equation to capture the effects of cyclical changes in the labour market on the participation rate operating through both added and discouraged worker effects. Participation rates may fall for some groups of workers if a decline in job opportunities causes these workers to give up looking for work and to withdraw from the labour force, believing that no jobs are available. This is the discouraged worker effect. On the other hand, participation rates may increase for secondary workers like married women, who may enter the labour market looking for jobs to bolster family income when other members of the household become unemployed. This is the added worker effect. If discouraged worker effects offset added work effects then the sign of b_1 will be positive, and it will be negative if added worker effects are greater than discouraged worker effects. The sign of b_1, therefore, cannot be predicted *a priori*.

The time trend (T) is included in the equation to capture secular changes in the participation rates. There are no *a priori* expectations concerning the sign of b_2.

The model consists of two equations including two endogenous variables, N and L, and four exogenous variables, Q, N_{-1}, T and P, and the structural parameters a_0, a_1, a_2, a_3, and b_0, b_1, b_2.

The first structural equation consists of only exogenous variables on the right hand side and is identified. The second structural equation is overidentified. Consequently the application of indirect least squares will not yield unique estimates of the structural parameters. To obtain unique estimates the model was estimated using two stage least squares. In the first stage l_n (N/P) was regressed against the exogenous variables of the model (Q, N_{-1}, T and P). The R^2 for these first stage regressions was very high, so that a large proportion of the variation in l_n (N/P) was accounted for. In the second stage the calculated values of l_n (N/P) were subtituted into the participation rate equations, and the equations were estimated using O.L.S.

The model was estimated using annual time series data covering the period from 1966 to 1986. The two stage least squares regression results are shown in Table 1. These results show that the fit of the employment equations is good, R^2 being above 80 percent in all regions. In addition, the coefficients on output and lagged employment have the correct signs and are statistically significant at least at the 5 percent level in all regions. The coefficients on time, however, generally have the wrong sign and are statistically insignificant in all regions.

The results indicate that there are significant differences in the regional adjustment process between regions, with employers in the high unemployment regions being able to make these adjustments faster than employers in the low unemployment regions. These adjustments seem reasonable, given the larger pool of unemployed workers that employers could draw upon to eliminate any gap between desired and actual unemployment.

With respect to the participation rate equations, the fit of the equations is good, and all variables were significant at least at the 1 percent level in all regions. The positive coefficient on (N/P) indicates that discouraged worker effects dominated added worker effects in all regions.

The Output Elasticity of the Unemployment Rate

The coefficients on output and per capita employment in the employment and participation rate equations can be used to calculate the elasticity of the unemployment rate with respect to total output using the following expression, the mathematical derivation of which is explained in the appendix to this paper:

$$\eta_{UQ} = \frac{1 - \bar{U}}{\bar{U}} (\eta_{LF} - \eta_N)$$

[3]This specification follows the work of Kuch and Sharir (1978), who develop a straightforward technique for isolating the added and discouraged worker effects. For the ten age-sex groups in the labour force that they studied they found "a net though quite small discouraged worker effect for most age-sex groups with hardly any clear evidence of a net added-worker effect for any." These findings are at odds with other Canadian time-series studies, which show a general tendency towards a net added worker effect, although they are consistent with Canadian cross-sectional studies as well as with cross-sectional and time series for the U.S. For a more detailed summary of these and other empirical studies see Gunderson (1945, 53-54).

where

η_{UQ} = the short-run elasticity of the unemployment rate with respect to total output;

η_{LF} = the short-run elasticity of the labour force with respect to total output;

η_{N} = the short-run elasticity of employment with respect to total output; and

$\bar{U}$ = the mean rate of unemployment over the sample period, 1966-86.

Table 1

TWO STAGE LEAST SQUARES REGRESSION RESULTS, REGIONS, 1966-86*

Region	Results**
Atlantic	ln N = 1.687 + 0.281 + ln GDP + 0.365 ln N_{-1} + 0.003T
	(1.609) (3.438) (2.175) (0.933)
	h = 1.77, $\hat{p}$ = 0.359, R^2 = 0.99
	ln(L/P) = -0.329 + 0.529 ln (N/P) + 0.008T
	(-2.601 (3.171) (10.990)
	DW = 1.09, $\hat{p}$ = 0.429, R^2 = 0.92
	(2.069)
Quebec	ln N = 2.214 + 0.296 ln GDP + 0.331 ln N_{-1} + 0.003T
	(1.924) (3.795) (2.045) (0.941)
	h = 1.6225 R^2 = 0.98
	ln (L/P) = 0.289 + 0.395 ln (N/P) + -0.0012T
	(5.988) (3.441) (-0.9202)
	DW = 1.057, $\hat{p}$ = 0.424, R^2 = 0.83
	(2.038)
Ontario	ln N = 0.772 + 0.271 ln GDP + 0.552 ln N_{-1} + 0.0021T
	(1.087) (5.795) (5.898) (0.9308)
	h = 1.076 R^2 = 0.99
	ln (L/P) = -0.191 + 0.340 ln (N/P) + 0.00894T
	(-3.862) (2.439) (5.4370)
	DW = 0.800, $\hat{p}$ = 0.717, R^2 = 0.92
	(4.488)
Prairies	ln N = -0.249 + 0.313 ln GDP + 0.624 ln N_{-1} - 0.00183T
	(-0.289) (4.576) (5.357) (- 0.4859)
	h = 1.649, $\hat{p}$ = 0.464, R^2 = 0.99
	ln (L/P) = -0.660 + 0.532 ln (N/P) + 0.00897T
	(3.843) (4.496) (4.1062)
	DW = 0.793, $\hat{p}$ = 0.767, R^2 = 0.85
	(5.217)
British Columbia	ln N = -0.076 + 0.493 ln GDP + 0.347 ln N_{-1} + 0.00033T
	(-0.170) (7.099) (3.454) (0.14864)
	h = 1.55 R^2 = 0.99
	ln (L/P) = -0.461 + 0.526 ln (N/P) + .00735T
	(-4.027) (4.745) (7.0582)
	DW = 1.125, $\hat{p}$ = 0.592, R^2 = 0.88
	(3.203)

*The h and DW statistics are reported from the O.L.S. and two stage least squares regression results for the employment and participation rate equations respectively. In the employment and participation rate equations for which a value of $\hat{p}$ is given the equations have been adjusted for serial correlation using the maximum likelihood iterative technique and the Cochrane-Orcutt procedure respectively. $\hat{p}$ is the value of the autocorrelation coefficient in the first order Markov scheme.

**t ratios are given in brackets below in regression coefficients and the coefficient of $\hat{p}$.

Source: Labour force survey data for the population, the labour force, and total employment are taken from Statistics Canada, *Historical Labour Force Statistics*, (Cat. No. 71-201). The data on real provincial product are not published but were supplied to the author on request by the Conference Board in Canada.

The coefficient a_1 from equation (1) is η_N. The product of a_1 from equation (1) and b_1 from equation (2) is η_{LF}. This can be proven as follows:

$$\frac{\partial l_n L}{\partial l_n Q} = \frac{\partial l_n N}{\partial l_n Q} \cdot \frac{\partial l_n L}{\partial l_n N} = a_1 b_1$$

The calculated values of η_{LF}, η_N and η_{UQ} for each of the five regions are shown in Table 2.

These figures show that the unemployment rate-output elasticity measures ranged from a low of minus 1.2 percent in the Atlantic Provinces to a high of about minus 3 percent in Ontario. In general, the estimates of η_{UQ} were significantly lower in the eastern provinces than they were in Ontario and the western provinces. This suggests that demand deficiency is a more important explanation of unemployment in the latter provinces than it is in the Atlantic - Quebec region, where there is a good deal of empirical evidence that shows that labour market inefficiencies are a major cause of unemployment.[4]

Table 2

ESTIMATES OF η_{LF}, η_N AND η_{UQ} FOR THE REGIONS (in percentages)

Region	η_{LF}	η_N	η_{UQ}
Atlantic	.149	.281	-1.18
Quebec	.117	.296	-1.83
Ontario	.092	.271	-2.78
Prairies	.166	.313	-2.62
British Columbia	.259	.493	-2.51

The lower estimates of η_{UQ} in the Atlantic Provinces and Quebec have important implications for the success of regionally discriminating fiscal policies in combatting cyclical unemployment in the high unemployment regions in the 1981-82 recession. Further discussion of these policy implications is postponed, however, until the link is made between the regional estimates of η_{UQ} and government expenditures.

The Unemployment Rate Elasticity of Government Expenditures

To make this link it is necessary to multiply the regional estimates of η_{UQ} by regional elasticities showing the responsiveness of output changes to changes in government expenditures (η_{QG}). η_{QG} is defined to be equal to:

$$\frac{\Delta Q}{\Delta G} \cdot \frac{\bar{G}}{\bar{Q}} = k_G \frac{\bar{G}}{\bar{Q}}$$

where

k_G = the total government expenditure multiplier;

$\bar{G}$ = the mean value of real total government expenditure over the sample period 1966-86; and

$\bar{Q}$ = the mean value of gross domestic product at factor cost in $1971 over the same period.

[4]See in particular Thirsk (1973, ch. 5).

There are a number of estimates of the regional government expenditure multipliers that could be used to calculate η_{QG}. Three of these are shown below in Table 3. Estimates by Miller (1980) and Fortin (1982) are static multipliers, while the estimates of Miller and Wallace (1983) are impact multipliers that show the first year increase in income in a region following a $1 permanent injection of government expenditures in the region.

A comparison of the multipliers shows that they differ considerably in size. Miller's estimates are larger than the estimates by Miller and Wallace, and Fortin's estimates are larger than the impact multipliers computed by Miller and Wallace. These differences arise because of different theoretical assumptions made in constructing the models.

In deciding which of these multipliers should be used to calculate η_{QG} it is useful to compare the national open economy multipliers computed from simple Keynesian models, Table 4, with the Canadian multipliers computed from four large scale dynamic Canadian econometric models, Table 5.

Table 3

REAL GOVERNMENT EXPENDITURE MULTIPLERS FROM SIMPLE KEYNESIAN MODELS, REGIONS

Region	Miller	Miller and Wallace	Fortin
Atlantic	1.42	.75	1.027
Quebec	1.64	.88	1.155
Ontario	1.61	1.01	1.206
Prairies	1.50	.94	1.176
British Columbia	1.90	.85	1.196

Source: F. C. Miller (1980, 22); F. C. Miller and D. J. Wallace (1983, 268); Pierre Fortin (1982, 13).

Table 4

REAL GOVERNMENT EXPENDITURE MULTIPLIERS FROM SIMPLE KEYNESIAN MODELS, CANADA

Region	Miller	Miller and Wallace	Fortin
Atlantic	2.59	1.04	1.068
Quebec	2.26	1.06	1.663
Ontario	1.99	1.13	1.21
Prairies	2.19	1.14	1.371
British Columbia	2.46	1.02	1.279
Canada	2.18	1.18	1.75

Source: See source reference for Table 3.

Table 5

DYNAMIC REAL GOVERNMENT EXPENDITURE MULTIPLERS FROM FOUR CANADIAN ECONOMETRIC MODELS

Model	First Year Results	Third Year Results
Candide	1.70	1.65
QFM	1.37	2.73
RDX2	0.96	1.41
Trace	1.87	1.24

Source: Helliwell, Maxwell and Waslander (1979, 186, Table 1, and 189, Table 2). Candide and RDX2 are models constructed by the Economic Council of Canada and the Bank of Canada respectively. The QFM and Trace models are constructed by the University of Toronto.

The multiplier estimates in Table 4 show the total increase in income in Canada resulting from a $1 initial injection of government expenditures made in a particular region, assuming government expenditures are unchanged in the other regions. Thus a $1 increase in government expenditures in the Atlantic region increases income by $1.42 in the Atlantic region, and by $1.17 in the other regions, producing a total increase of income in Canada of $2.59 when these calculations are made using Miller's estimates of the multipliers. The national multipliers for the other two Keynesian models are interpreted in the same way. The Canada multipliers shown in Table 4 are the weighted average of the national multipliers for the regions using gross domestic product for the regions as weights.

Miller's estimate of 2.18 for the weighted government expenditure multiplier for Canada is much larger than the first-year multipliers shown in Table 5 for all four econometric models, and is greater than the three-year multipliers, with the exception of the QFM. These comparisons suggest that using Miller's estimates of the regional multipliers would overestimate the effectiveness of regional fiscal policy.

On the other hand, Miller and Wallace's estimate of 1.2 for the Canada multiplier is lower than the first-year multipliers computed from three out of the four large-scale econometric models, Table 5. These low estimates are principally explained by the fact that both consumption and investment are specified to be functions of permanent income. Making consumption and investment functions of permanent rather than current income tends to greatly reduce the size of the first-year multipliers, since the multiplier effects of an increase in government spending are spread over a very long period. Using the impact multipliers computed by Miller and Wallace, therefore, would bias the case against regional fiscal policy.

Fortin's estimate of 1.75 for the national multipler is more in line with the first-year multiplier results shown in Table 5 and probably represents a better approximation of the short-run impact of government spending on the economy than the estimates by Miller and Miller and Wallace. Consequently, Fortin's estimates of the regional government expenditure multipliers are used to calculate η_{QG} for the regions. However, the multipliers that are used for this purpose are not the multipliers that are shown in column 3 of Table 3. These multipliers show only the increase in income in a region following a $1 increase in government expenditures in the region, assuming that policy variables remain unchanged in the other regions. For the fiscal policy experiments reported on below, the multipliers that show the total increase in income in each of the regions as the result of simultaneous $1 injections of expenditures made in every region are used. These multipliers, which are shown in Table 6, are computed from the matrix of regional and interregional government expenditure multipliers contained in Fortin (1982, 10).

Table 6

TOTAL MULTIPLIER EFFECTS OF A $1 INJECTION OF GOVERMMENT EXPENDITURES INTO A GIVEN REGION WITH PARALLEL $1 INJECTIONS INTO THE OTHER REGIONS

Region	K_G
Atlantic	1.517
Quebec	1.472
Ontario	1.406
Prairies	1.585
British Columbia	1.616

Source: Pierre Fortin (1982, 10).

The calculation of the regional elasticities η_{QG} using the multipliers in Table 6 are shown in Table 7, along with the regional estimates of η_{UG}. η_{UG} is the product of η_{QG} and η_{UQ}, where the figures for η_{UQ} are taken from column 3 of Table 2.

Policy Experiments

The regional estimates of η_{UG} shown in Table 7 are less than unity in all of the regions and are lowest in the Atlantic Provinces and Quebec. These low elasticities have important implications for the effectiveness of government expenditure policies in combatting unemployment. To demonstrate this, each of the estimates of η_{UG} shown in Table 7 is used to calculate the percentage increases in total government expenditures that would have been required to eliminate cyclical unemployment in each of the regions in the 1981-82 recession. This is done in two steps. First, estimates of the natural rate of unemployment for the regions published in a recent study by Miller (1987) are used to calculate the percentage declines in measured unemployment rates required to achieve the natural rate of unemployment in each of the regions. Second, these percentage reductions are divided by the regional estimates of η_{UG} to calculate the percentage increases in total government expenditures that would have been required in each case to achieve the non-inflationary or full employment equilibrium rate of unemployment. These increases are shown in Table 8.

Table 7

REGIONAL ESTIMATES OF η_{QG} AND η_{UQ}
(in percentages)

Region	η_{QG}	η_{UQ}	η_{UG}*
Atlantic	.557	-1.18	-.657
Quebec	.373	-1.83	-.682
Ontario	.297	-2.78	-.825
Prairies	.360	-2.60	-.943
British Columbia	.354	-2.51	-.888

*η_{UG} is the product of η_{QG} and η_{UQ} where the figures for η_{UQ} are taken from column 3, Table 2.

Table 8

ESTIMATED INCREASE IN TOTAL GOVERNMENT EXPENDITURES ON GOODS AND SERVICES IN CONSTANT $1971 REQUIRED TO ELIMINATE CYCLICAL UNEMPLOYMENT IN THE 1982 RECESSION
(in percentages)

Region	Increase in Total Government Expenditures*
Atlantic	51
Quebec	36
Ontario	27
Prairies	18
British Columbia	28

* The percentage increases in government spending are estimated from the equation: $\eta_{UG} \times \%\Delta G = \%\Delta U$, where ΔU are the percentage reductions in measured regional unemployment rates calculated using estimates of the natural rate of unemployment found in Miller (1987).

In conducting these experiments it is assumed that the provinces actively support the federal government's attempt to use countercyclical expenditure policies to combat unemployment. Provincial involvement in stabilization policy would appear to have been essential, since the provinces have much greater fiscal leverage over both expenditures and revenues than the federal government. The provinces and municipalities, for example, account for 85 percent of total government capital spending in Canada. This is a flexible form of spending whose multiplier effects are high, since it is highly labour intensive and has a low import content. In addition, as Lacroix and Rabeau (1979) have noted, more items of provincial expenditure are nonrecurrent or flexible and are, therefore, more suitable for stabilization purposes than federal expenditures, much of which is recurrent and cannot be easily modified for countercyclical purposes.

The figures in Table 8 show that enormous increases in government spending would have been required to eliminate cyclical unemployment in the regions. The increases range from a high of 51 percent in the Atlantic Provinces to a low of 18 percent in the Prairie Provinces. The increases are much larger in the eastern provinces than they are in the other regions, reflecting larger percentage gaps between the measured and the natural rate of unemployment and the lower estimates of η_{UG} in comparison to the other regions (Table 7).

Given the magnitude of these increases in government spending, neither the federal government nor the provinces and municipalities would have had available already planned public works projects of the number and size required to meet the needs of the economy, and new capital projects could not have been planned or implemented quickly enough to combat the recession. Moreover, these large increases in government spending would have raised significantly the ratio of government expenditures to output in the regions and could not have been justified unless there were compelling economic reasons or a political consensus for a still further rapid growth in the size of the public sector.

One could, of course, operate short of attempting to eliminate all cyclical unemployment in the regions. But even an attempt, for example, to eliminate half of the gap between the measured and the natural rate of unemployment in the Atlantic Provinces and Quebec in 1982 would have required 25 and 18 percent increases in government spending, which would still have been very large judged by past rates of increase in spending in these regions. For example, the average annual rate of increase in real government spending in the Atlantic Provinces and Quebec amounted to only 3.6 and 4.1 percent respectively over the whole sample period from 1966 to 1986.

In order to avoid large increases in the government expenditure/output ratios in the regions, which would not have been justified on economic grounds, government expenditure increases in real terms would have had to be kept fairly moderate, on the order of say 3-5 percent. But these increases would have had only a small impact on reducing cyclical unemployment in the regions. It is estimated, for example, that in 1982 a 5 percent increase in government expenditures in the Atlantic Provinces and Quebec would have reduced the measured rate of unemployment in these provinces from 14.3 to 13.8 and from 13.8 to 13.3 percent respectively, reductions that would have fallen considerably short of providing for full employment.

The previous analysis has ignored entirely the question of how increases in government spending would have been financed. Money financing was ruled out for the period examined here because Bank of Canada monetary policy was restrictive and was aimed at combatting inflation. In the absence of new money issues, increases in government expenditures would have had to be financed by new federal and provincial issues of debt securities, which would have pushed up interest rates and reduced interest-sensitive expenditures such as expenditures on new residential construction, expenditures on consumer durables such as cars, and some provincial and municipal government expenditures. In addition, in the absence of a policy of monetary accommodation, an expansionary fiscal policy would have raised interest rates, inducing a short-term inflow of capital and an appreciation of the exchange rate, which would have reduced exports and increased imports, thereby further reducing aggregate demand. Given the size of the increases in government spending that would have been required to achieve any significant reductions in cyclical unemployment in the regions, these portfolio and exchange rate crowding-out effects on private expenditures would have been very substantial and would have substantially blocked or nullified any attempt to use stimulative fiscal policies to combat unemployment.

Summary and Conclusions

The model used in this paper indicates that there was some vector of government demands that could have been used to attain full employment simultaneously in all the regions in the 1981-82 recession. The increases in government demand that were required to attain this objective were, however, beyond anything that could have been justified either economically or politically; consequently, more moderate countercyclical expenditures policies would have had to be implemented to combat cyclical unemployment in the regions. But these

policies would not have been very effective in achieving this objective, given the low sensitivity of the unemployment rate to changes in government spending in the regions and particularly in the Atlantic Provinces and Quebec. Moreover, the success of these policies would also have depended crucially on the type of monetary policy pursued by the Bank of Canada. They would have been most successful if the Bank of Canada had relaxed its restrictive monetary policy to combat inflation. Easier money policies would have provided the kind of money and credit conditions that the provinces and the federal government would have needed to finance budget deficits without pushing up interest rates unduly. In the absence of an accommodating monetary policy, however, the crowding-out effects of federal and provincial budget deficits would have seriously reduced the limited effectiveness of using moderate countercyclical expenditure policies to reduce cyclical unemployment in the regions in the 1982 recession.

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Appendix

The Calculation of the Elasticity of the Unemployment Rate With Respect to Total Output (η_{UQ})

The unemployment rate (U) is defined to be equal to the number unemployed divided by the labour force (LF) where the number unemployed is equal to the difference between the labour force and total employment (N) or,

$$U = \frac{LF-N}{LF} = 1 - \frac{N}{LF} \quad \text{Let} \quad \frac{N}{LF} = E$$

Then $U = 1 - E$ and $E + U = 1$

Total differentiation of this last expression with respect to total output (Q) gives,

$$\frac{dE}{dQ} + \frac{dU}{dQ} = 0$$

$$= \frac{Q}{E}\frac{dE}{dQ} + \frac{U}{E}\frac{Q}{U}\frac{dU}{dQ} = 0$$

$$= \eta_{EQ} + \frac{U}{E}\eta_{UQ} = 0$$

$$\eta_{UQ} = -\frac{E}{U}\eta_{EQ}$$

$$\text{But } E = \frac{N}{LF}$$

$$\eta_{UQ} = \frac{-N/LF}{U}\eta_{EQ}$$

$$\text{and } \eta_{EQ} = \frac{\partial (N/LF)}{\partial Q} \cdot \frac{Q}{N/LF}$$

$$= \frac{Q}{N}\frac{\partial N}{\partial Q} - \frac{Q}{LF}\frac{\partial LF}{\partial Q}$$

$$= \eta_N - \eta_{LF}$$

$$\therefore \eta_{UQ} = -\frac{E}{U}(\eta_N - \eta_{LF})$$

$$= \frac{(1-U)}{U}(\eta_{LF} - \eta_N).$$