PROVINCIAL DISPARITIES AND STRUCTURAL UNEMPLOYMENT IN CANADA

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Abstract
We examine Canadian provincial structural unemployment by estimating the unemployment-vacancy relationship (Beveridge curve) for ten provinces and find that from 1988 to 2002 structural unemployment fell primarily in western provinces. A breakdown of the causes of provincial structural unemployment using a SURE estimation reveals that the generosity of the employment insurance is an important variable in the West while the mix of structural variables appear to be important for central and eastern Canada. We are unaware of any other studies evaluating the Beveridge curve at the provincial level for this period which was one of historically high unemployment for Canada.

Key Words: Beveridge curve in Canada, Structural unemployment in Canada, Provincial unemployment in Canada
JEL Classification: E00, E24, J60, R23

1. Introduction

We examine Canadian provincial unemployment by estimating the unemployment-vacancy (*u-v*) relationship, also known as the Beveridge curve (BC), in ten provinces from 1988 to 2002 and find that structural unemployment declined in Western provinces primarily; secondly, we proceed to identify some of the causes of changes in structural unemployment using a SURE estimation. We find that the generosity of unemployment insurance affects structural unemployment in western provinces while a mix of structural variables appear to be important in central and eastern Canada.

Canada has historically experienced vast economic differences among provinces. For instance, unemployment rates east of Ottawa are typically higher than Ontario and western Canada, western provinces enjoy higher income levels than eastern provinces, and western provinces tend to have a more mobile labor market. We are unaware of any studies examining provincial *u-v* relationships for the 1990s time period. This paper is an attempt to fill that void.

The study of the *u-v* relationship in Canada during the 1990s is of interest because during this time period Canada experienced historically high unemployment rates, with rates fluctuating between 9.3% and 12%. Lars Osberg and Zhengxi Lin (2000), using aggregate data and a dummy variable for the period where the BC seems to have shifted as indicated by visual observation of the *u-v* graph, find that the *u-v* relationship for Canada shifted inward in the early to mid-1990s indicating a decrease in structural unemployment in the midst of historically high and persistent unemployment rates. Osberg and Lin find similar results using pooled provincial data. However, Sandra Hanson McPherson and Oscar Flores (2011), using a fixed-effects panel estimator, to

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allow for differences among provinces, and annual dummies to directly estimate when the *u-v* shifted, find that the BC shifted outward during the 1990s, suggesting that increases in structural unemployment may have contributed to the high unemployment rates in Canada. While both papers take into account provincial disparities in estimating the aggregate *u-v* relationship, neither attempts to estimate this relationship at the provincial level. Again, this paper is an attempt at filling that void.

We estimate the BC for ten Canadian provinces and find that from 1988 to 2002, structural unemployment decreased in western provinces: the BCs for Alberta, British Columbia, Saskatchewan, and Manitoba shift inwards from the mid-1990s onward. However, the *u-v* relationship for the middle and eastern provinces (Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador) did not experience the same inward shift during that time period. When examining reasons for disparities among the regional *u-v* relationships, we find that the generosity of the employment insurance system is important for the western provinces while a mix of other structural variables are important for the middle and eastern provinces. Thus, aggregate studies that examine the BC in Canada ignoring provincial disparities can be misleading. Moreover, the analysis provides evidence that national policies should consider regional differences.

2. Provincial Beveridge Curves

The BC (the relationship between unemployment and job vacancies) is generally thought to be negative and convex. Shifts in the curve are typically interpreted as reflecting underlying changes in structural unemployment[2] Moreover, movements along the BC (normally seen as counterclockwise loops) are typically associated with cyclical labor dynamics. For a theoretical matching model underlining the BC and a detailed study of the dynamics of the BC, see Olivier Blanchard and Peter Diamond (1989). [3]

Typical analysis of the Beveridge curve follows a common methodology developed by Katherine Abraham (1987) which relies on visual identification of periods when the *u-v* relationship may have shifted and running a regression of unemployment on vacancy rates where dummies are added for the periods when the curve is observed to have shifted. McPherson and Flores (2011) demonstrated that there are two significant problems with the aggregate, ad-hoc dummy approach for Canada. First, since dummy variables are added based on visual identification, they do not allow for direct estimation of when shifts occur nor distinguish patterns in those shifts to determine if the curve is experiencing a permanent or temporary shift. Secondly, using aggregate data does not allow for regional heterogeneity in the *u-v* relationship. In the current paper, we further

[2] In the context of BC analysis, the definition of structural unemployment is inefficiencies in the labor market. Thus, in this paper, we refer to structural unemployment and job market inefficiencies interchangeably.

[3] Further studies of the Beverdige curve include D.R. Jones and D. N. Manning (1992) and Howard J. Wall and Gylfi Zoega (2002) for Great Britain; Katharine Abraham (1987), S. P. Hannah (1983), Olivier Blanchard and Peter Diamond (1989), Hoyt Bleakley and Jeffrey C. Fuhrer (1997), and Valleta (2005) for the US; Jerome Fahrer and Andrew Pease (1993) for Australia; Axel Börsch-Supan (1991) for then West Germany; McPherson and Flores (2011), Frank Reid and Noah M. Meltz (1997), Lucie Samson (1994), Lars Osberg and Zhengxi Lin (2000), and Richard Archambault and Mario Fortin (2001) for Canada.

investigate provincial disparities in the Canadian BC relationship by disaggregating the data to estimate provincial BCs. Equation 1 is estimated for each province where u is the provincial unemployment rate, v is provincial job vacancies, v^2 is added to determine the convexity of the curve, and to eliminate the problems associated with the ad-hoc dummy approach we add dummies for each time period (D).

$$u_t = \beta_0 + \beta_1 v_t + \beta_2 v_t^2 + \beta_3 D + \varepsilon_t; \qquad (1)$$

We use monthly data for ten provinces for the years 1988-2002. The data were obtained from Statistics Canada. Our dataset begins in 1988, the first full year of available provincial employment data. We use the Help Wanted Index as a proxy for vacancies since there are no data available for vacancies from 1988-2002 (though Statistics Canada did estimate a quarterly vacancy rate series from 1970:3-1978:3).[4] Starting in 1981, the Help Wanted Index (HWI) for Canada counts the number of help wanted ads, as The Conference Board does to estimate the United States' HWI. The HWI series for Canada ends in 2002. Hence our data spans the period from 1988, the beginning of the provincial employment series to 2002, the end of the HWI series.[5] The help wanted index is normalized by dividing it by the total labour force.

The adjustments outlined above are applied to the data for British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. Statistics Canada does not estimate a Help Wanted Index for the Yukon, the Northwest Territories, or for Nunavut, thus these regions are not included in the analysis.

3. Shifts in Provincial Beveridge Curves

We first graph the unemployment vacancy relationship for each of the provinces. Beveridge curves for Canada and the ten provinces are displayed in figures 1-11. The graphs are arranged in order of west coast provinces to east coast provinces. Based on a visual analysis only, in the west, British Columbia's, Alberta's, Saskatchewan's, and Manitoba's *u-v* relationships appear to have shifted inward in or around the early to mid-1990's time period. While, Ontario, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador do not appear to be shifting at all. In the east, the exception is Quebec where the inward shift does appear to have occurred.

The results of the linear regressions of equation (1) are included in Table 1. To avoid collinearity, the dummy for 1988 is excluded. As a result, the coefficients on the time dummies determine the position of the Beveridge curve relative to 1988. Due to the presence of serial correlation, standard errors are estimated using the Newey-West heteroscedasticity and autocorrelation consistent (HAC) covariance matrix: *t*-statistics are

[4] Using the Help Wanted Index as a proxy for job vacancies is a common approach for analysis done with United States data. See for instance Abraham (1987) and Blanchard and Diamond (1989).

[5] Statistics Canada also estimated the HWI counting the number of inches dedicated to help wanted ads. This series ran from 1962 to 1988. Samson's (1994) analysis of the Canadian Beveridge curve for the 1966-88 time period uses only the old Help Wanted series, where inches were measured. In contrast, Archambault and Fortin (2001) combine the two series using a reverse forecasting technique.

computed using these robust standard errors and are reported in parenthesis in all of the tables.[6]

We examine the coefficients on the yearly time dummies to determine the timing and direction of shifts in the provincial BCs. The results differ slightly from the visual inspection of the graphs. The yearly dummies for British Columbia are negative and statistically significant at the 5% level starting in 1990 for every year except in 1992 (though 1992 is significant at the 10% level): indicating that the *u*-*v* relationship has been left of 1988 curve for most of the period. Alberta's BC follows a similar pattern, the curve shifts inward from 1989-1992, then for 1992 and 1993 it reverts to 1988 levels, only to move left again for the remaining of the period starting in 1994.

The BC for Saskatchewan moves left of 1988 levels for the entire period starting in 1991, while Manitoba's BC moves left of the 1988 curve from 1989 to the end of 1992 and then again starting in 1995 for the remainder of the time period.

Taken together, the results suggest that in western Canada, a significant decline in structural unemployment occurred first with some hesitation in the early 1990s, but rather solidly from the mid-1990s on.

There are four distinct periods in New Brunswick labor market dynamics: First, the BC remains at its 1988 position until 1992; then there is a shift inward during 1993, 1995, and 1996 at the 5% level, and 1994 as well at the 10% level; third, a period of zigzag from 1997 to the end of 1999; lastly a shift inward in 2001 and 2002 (2000 at the 10% level).

The BCs for Nova Scotia, Quebec, and Newfoundland and Labrador do not display the inward movement during the early to mid-1990's that is evident in the western provinces; although they all do show an inward movement starting in 1999 through 2002.

Ontario and Prince Edward Island are the only provinces whose BCs move out and not once shift inward. Ontario's yearly dummies are positive and significant at the 5% level for 1991-1995 and 1997 and significant at the 10% level from 1991 to 1998. Prince Edward Island's BC curve also moved outward, but later than Ontario's, from 1997 to 2000 at the 5% level of significance (and to 2001 at the 10% level).

It is worth highlighting that the Beveridge curves for all provinces expect Ontario and Prince Edward Island moved inward during 2001 and 2002. Unfortunately, as mentioned above, the HWI for Canada ends in 2002 and hence we do not know if this shift remained past 2002.

4. Examining Provincial Disparities in Structural Unemployment

To further examine the disparities in structural unemployment between provinces, we estimate equations for the unemployment rate for each of the provinces adding variables that may explain the structural differences in the provincial labor markets. We use Zellner's (1962) seemingly unrelated regression equation (SURE) technique which allows for the residuals among the equations to be contemporaneously correlated and thus increases the efficiency of the estimates.

[6] Preliminary regressions using OLS produced a Durbin-Watson statistic that suggested serial correlation. The Newey-West (1987) procedure is done by estimating the coefficients with OLS, but then computing the HAC covariance matrix which is robust to serial correlation and heteroscedasticity. The Newey-West method was chosen over GLS methods because in order to correctly apply the GLS methodology we would need to know the form of the serial correlation.

The independent variables in the estimation include HWI and HWI^2 to represent the BC relation and an array of variables typically associated with structural unemployment. The first structural variable that might shift the BC is the share of women in the labor force (WLF). We expect this variable to be positively related to the unemployment rate as women may be less attached to the labor market. According to Statistics Canada's summary of the 2001 Census, the growth in the labor force for most provinces during the 1990s was due to an increase in the participation rate of women, accounting for two thirds of the overall gain in the labor force. In addition, we added the share of people over 55 in the labor force (OLF). Darby, Haltiwanger and Plant (1985) suggested that an aging population might raise structural unemployment because "older workers tend to have longer spells of unemployment than younger ones." Thus, we expect an increase in the share of people over 55 in the labor force to increase the unemployment rate. Another variable that could explain changes in provincial BCs is the generosity of the employment insurance (EI) system. Following Cote and Hostland (1996), we calculate the unemployment insurance replacement rate (UIRR) to represent the generosity of the EI system. UIRR is calculated as the ratio of average weekly EI benefit per province to the average weekly earnings per province and that ratio is multiplied by the ratio of the number of people covered in Canada to the Canadian Labor force. In Canada, the amount of employment insurance that unemployed workers receive varies across provinces as benefits are tied to the unemployment rate in each region. Thus, we expect that an increase in UIRR would increase provincial structural unemployment rate. The relative price of oil (OIL) is added as well. Western Canada produces a great deal of oil (particularly Alberta) and experienced an oil boom in the 1990s. Moreover, Newfoundland and Labrador experienced new developments in offshore oil the late 1990s, making oil and important component of its economy. The expected sign for OIL is unclear, being dependent on regional industry mix and regional dependence on oil. The last structural variable that we added is the real minimum wage (RMW). Although Canada has a national minimum wage, provincial minimum wages also exist, creating a wide dispersion in minimum wages from province to province. We expect that an increase in the provincial RMW to have a positive effect on unemployment. All the data were obtained from Statistics Canada except for the provincial minimum wage data which were obtained from the Minimum Wage Database, Human Resources and Skills Development, Canada's Department of Labour.

To account for cyclical unemployment, we added the natural log of real GDP for Canada (LGDP).[7] It is expected that an increase in the growth of real GDP will decrease unemployment. Additionally, we added two lags of the dependent variable for each equation to capture feedback effects.

Using the SURE technique we estimated the following equation for each province:

$$u_t = \beta_0 + \beta_1 HWI_t + \beta_2 HWI^2_t + \beta_3 LGDP_t + \beta_4 OIL_t + \beta_5 WLF_t + \beta_6 OLF_t + \beta_7 UIRR_t$$

$$+ \beta_8 RMW_t + \beta_9 u_{t-1} + \beta_{10} u_{t-2} + \varepsilon_t; \qquad (2)$$

[7] Although our focus is on structural unemployment, we add a cyclical variable to represent the business cycle effects on the unemployment rate, reducing the chance of omitted variable bias in our results.

We estimate equation (2) for the years 1991-2002 using monthly data. The estimation of the SURE starts in 1991 rather than 1988 (like the estimation of equation (1)) because in the construction of UIRR, the data for average weekly earnings per province on a monthly basis are available starting in 1991. The results of the SURE estimation for the unemployment rates are presented in Table 2. The coefficients on our cyclical variable, LGDP, are significant and the expected sign for every province except New Brunswick. Overall, the results indicate that the unemployment rate in each region is affected by fluctuations in the Canadian business cycle.

The coefficients on the HWI and the square of the HWI are significant and the correct sign for British Columbia, Saskatchewan, Manitoba, and Ontario. Thus, when adding the structural variables, the u-v relationship holds for those provinces. The HWI coefficients are not significant for the remaining provinces.

To evaluate the structural variables, we group the provinces into four groups according to the results of the Beveridge curve evaluation. According to the results of the previous section, the following provinces behaved in a similar manner; Group 1: British Columbia, Alberta, Saskatchewan, and Manitoba; Group 2: New Brunswick; Group 3: Nova Scotia, Quebec, Newfoundland and Labrador; and Group 4: Ontario and Prince Edward Island.

The BC analysis for Group 1 showed that the four western-most provinces all showed an inward or leftward shift from the mid-1990's onward, suggesting a decline in structural unemployment during that time period. The results of the SURE estimation indicate that unemployment insurance generosity (UIRR) is an important structural factor for this region. UIRR is significant and the expected sign for all of the provinces in this group except Manitoba. The Canadian Employment Insurance system is complex (put in place in 1940) and has gone through two major periods of reform. The reforms of 1977 tightened the national system's benefits. From 1975 to 1994 eight acts were introduced that tightened entrance requirements, decreased benefit levels, and increased restrictions on people who were fired or quit. However, the benefits on a regional level became more generous. The minimum qualification for receiving benefits was tied inversely to regional unemployment rates. Thus, regions with relatively high unemployment received a larger portion of the overall unemployment benefits – effectively reallocating income from one region to another. Since the eastern provinces have historically experienced higher unemployment rates than the western provinces, they have also received higher relative benefits. The employment insurance system went through further changes in 1996. The Employment Insurance Act of 1996 kept the regional component of the system intact, but included an "intensity rule" that reduced benefits for repeat claimants. Moreover, reforms throughout the 1990s lowered the replacement rate from 60% to 57% in 1993. In 1994, this rate was raised for low income claimants to 60%, but lowered further to 55% for all others.[8] Because the western provinces have lower unemployment rates and higher incomes, the system effectively remained generous to the east but became more restrictive to the west. Thus, it would follow that the generosity of the program is an important structural factor for the western provinces during the 1990s time period. The other two structural variables that appeared to be important for the region were the proportion of people over 55 in the labor force (OLF) and women in the labor force (WLF). OLF was significant and the expected sign for Manitoba, while WLF was

[8] For more details on the changes in the Employment Insurance system in Canada, see Lin (1998).

significant and the expected sign for all the provinces in the group except Alberta.

Group 2 consists of one province – New Brunswick. New Brunswick's Beveridge curve behaves differently than all other provinces. Even the results the SURE indicate New Brunswick is in a class of its own. New Brunswick's BC shifts inward in the mid-1990s (93-96), then zigzags for awhile and shifts in again in 2001-02. The movements indicate that structural unemployment decreases in the mid-90s and then again at the end of the time period. The results of the SURE estimation indicate that the relative price of oil (OIL), generosity of the employment insurance system (UIRR), and the real minimum wage (RMW) are important structural factors affecting the unemployment rate in the region. OIL was significant and positive. Largely a resource based economy; New Brunswick's main industries are forestry, mining, and fishing, all transportation dependent industries. Thus, increases in oil prices will have a negative effect on the economy, pushing up the unemployment rate. The generosity of the employment system appears to have a significant effect on the unemployment rate in New Brunswick, however the sign of UIRR is negative and not what was expected. Finally, RMW is positive and significant for New Brunswick. As mentioned earlier, under the Canadian system, both a national minimum wage and a provincial minimum wage exist. Of all the provinces, New Brunswick's provincial minimum wage experienced the largest overall increase during the time period examined. It steadily increased from $5.00 per hour in 1991 to $8.00 per hour in 2002 which is a 6% overall increase. Most other provinces experienced a steady provincial wage over the time period with the exception of Ontario and Quebec where provincial minimum wages did increase over the time period but by a smaller percentage than New Brunswick.

Group 3 experienced no movement in their BC in the mid-1990's and an inward movement at the end of the time period starting in 1999. The SURE estimation revealed that the important structural variables for these regions were demographics, either the percentage of women in the labor force (WLF) or percentage of people over 55 in the labor force (OLF). For instance, in Quebec, WLF was positive and significant. In Nova Scotia, WLF and OLF were positive and significant. In Newfoundland and Labrador, OLF was positive and significant. Although the unemployment rate in each province seems to be affected by demographics, this could be coincidence since the economies of these provinces are dissimilar. Quebec is the largest province in area and the second largest in population. It is the only province where French is the official language. Its economy is very diverse, having transformed from a manufacturing based economy (pre World War II) to a leader in pharmaceuticals, aeronautics, transportation, communications and other services. Some oil fields exist in southern Quebec, although not as important to the economy as the oil fields in the west. Nova Scotia's and Newfoundland and Labrador's economies are not as diversified as Quebec's economy. Both have experienced a large decline and outmigration in the last century. Nova Scotia is largely dependent on fishing, forestry and mining - industries that have experienced decline. However, tourism and service industries are on the rise in the province. Newfoundland and Labrador's economy, like Nova Scotia, has historically been heavily dependent on fishing – particularly cod fishing. During the1990's the cod fishing industry in Newfoundland and Labrador imploded. The provincial economy experienced resurgence in the late 1990's however due to developments in offshore oil drilling. In 1997, the Hibernia Oil platform was constructed and in 2002 the Terra Nova oil field was developed, generating economic growth in Newfoundland and Labrador which has

continued beyond the time period we are evaluating. Thus, although the provinces in this group display similar BC patterns, it appears as though the structural factors behind those movements are specific to each province.

The provinces in Group 4 never experience an inward movement in their BC's during the time period examined. In fact, Ontario experiences an outward movement in its BC for most of the time period and Prince Edward Island experiences an outward movement from 1997 onward. The rightward shifts of the BCs suggest an increase in structural unemployment for both provinces. The results of the SURE estimation suggest that OIL is important for both provinces over the time period. It is significant for both with a positive sign for Ontario and a negative sign for Prince Edward Island. WLF is also significant for Ontario while OLF is significant for Prince Edward Island. Although the BC's of both provinces display an increase in structural unemployment, the economies of the provinces are not similar. Ontario is the largest province in population and the second largest in area. It is home to one third of Canada's population, Canada's national capital resides in Ontario, and it is the nation's wealthiest, most mature and diversified economy. The economy is a rich mix of mineral reserves, forestry, hydroelectric power to the north and manufacturing, oil and service industries to the south. Prince Edward Island, on the other hand, is the smallest province in the nation, although the most densely populated. Its economy is not nearly as diversified, depending mainly on Agriculture, Fishing and Tourism as well as is heavily dependent on federal aid to assist economic development. Thus, although job market efficiencies deteriorated for both provinces, oil prices seems to be the only structural variable they have in common.

5. Conclusion

We have examined the *u-v* relationship for each province in Canada for the 1990's. Our analysis reveals significant differences in structural unemployment across Canada. The West experienced improvements in structural unemployment in the mid 1990's while the central and eastern provinces did not. Some eastern provinces appear to be improving at the end of the time period however. Results of the SURE estimation suggest that the generosity of the employment insurance system is important in the West, having gone through changes in the mid-1990's that may have made benefits more restrictive for the West in comparison to the East. In the central and eastern provinces, the unemployment rate appears to be affected by a mix of structural variables including proportion of women in the labor force, proportion of old in the labor force, the relative price of oil, and provincial real minimum wage.

The analysis demonstrates that regional disparities should be considered when using the Beveridge curve analysis to examine structural unemployment. Moreover, we have shown that Canada has vast differences in not only the behavior of structural unemployment between regions but also in the potential causes of the structural unemployment. Thus, these disparities should be an important consideration in aggregate policy making decisions.

Further investigation into the generosity of the system would be an interesting and desirable addition to the analysis. Also, further analysis would include breaking the provinces down by industrial sector and/or further geographical disaggregation to gain more insight into the regional heterogeneity within the provinces.

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Figure 1
Beveridge Curve for Canada

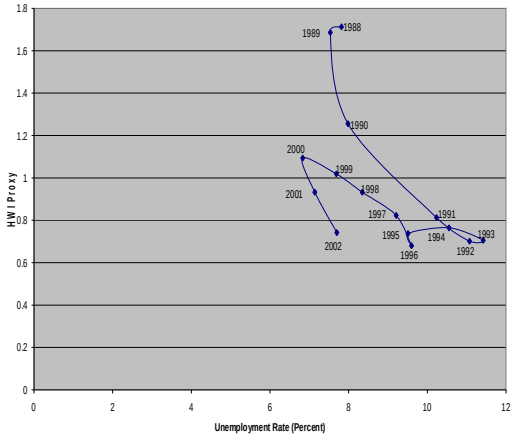

Figure 2
Beveridge Curve for British Columbia

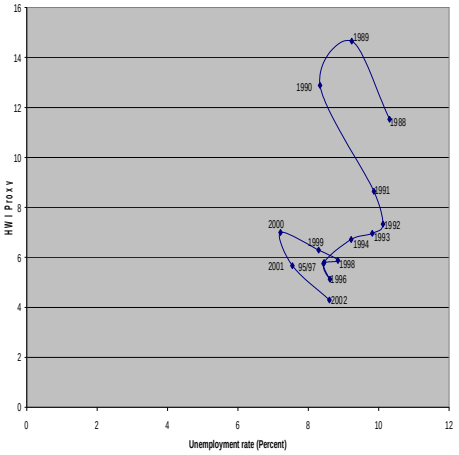

Figure 3
Beveridge Curve for Alberta

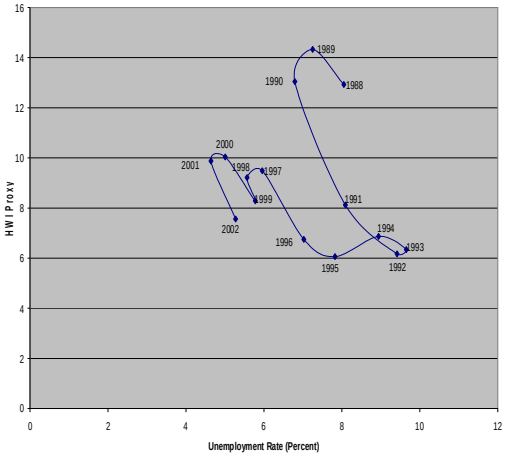

Figure 4
Beveridge Curve for Saskatchewan

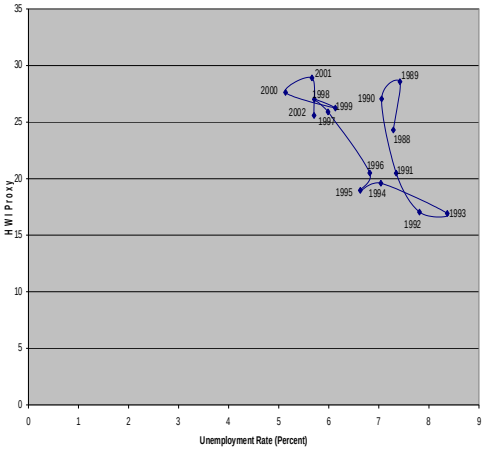

Figure 5
Beveridge Curve for Manitoba

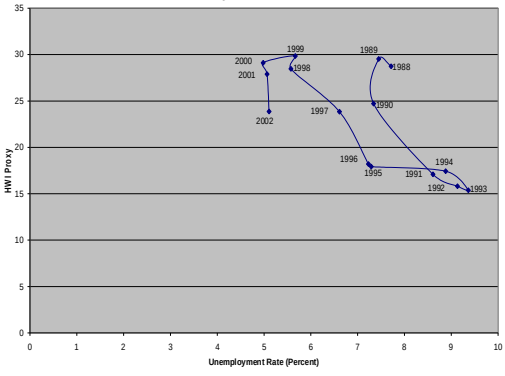

Figure 6
Beveridge Curve for Ontario

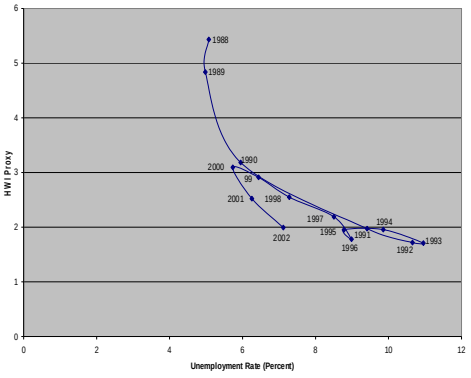

Figure 7
Beveridge Curve for Quebec

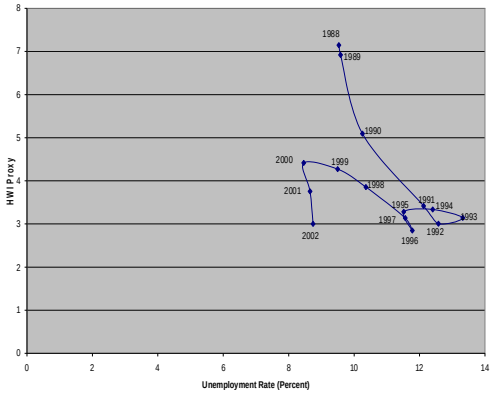

Figure 8
Beveridge Curve for New Brunswick

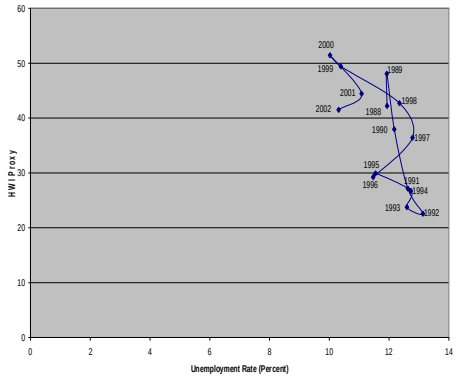

Figure 9
Beveridge Curve for Nova Scotia

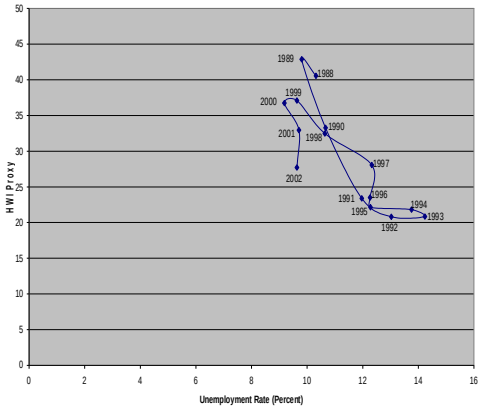

Figure 10
Beveridge Curve for Prince Edward Island

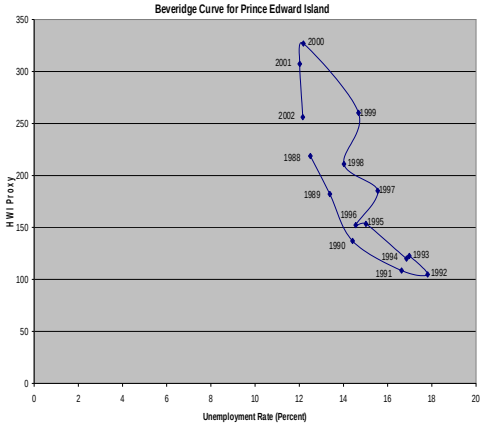

Figure 11
Beveridge Curve for Newfoundland and Labrador

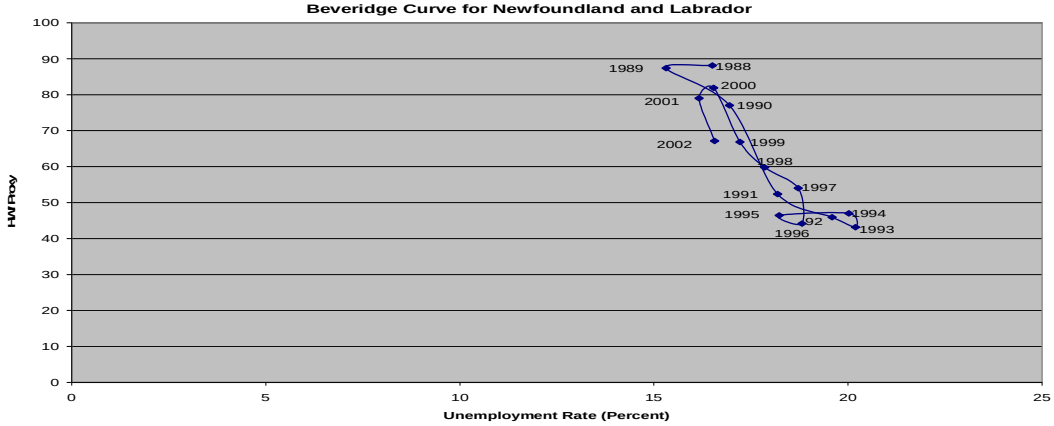

Table 1 a. Provincial Regressions with Yearly Dummies - 1988-2002 Monthly Data
Dependent Variable is Provincial Unemployment Rate (robust t-statistics in parenthesis)

Independent Variable	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario
Constant	11.145	12.901	25.486	17.834	13.644
	(3.693)	(11.706)	(5.084)	(5.657)	(9.910)
Help Wanted Proxy	0.098	-0.570*	-1.364*	-0.007*	-3.784*
	(0.200)	(-3.391)	(-3.520)	(-2.756)	(-4.416)
Help Wanted Proxy^2	-0.015	0.015*	0.025*	0.0000012*	0.406*
	(-0.744)	(2.135)	(3.379)	(2.373)	(3.558)
1989 Dummy	-0.185	-0.572*	0.239	-0.270*	0.111
	(-0.957)	(-3.517)	(1.469)	(-2.562)	(0.514)
1990 Dummy	-1.594*	-1.259*	-0.098	-0.672*	0.078
	(-29.355)	(-21.621)	(-0.820)	(-4.783)	(0.233)
1991 Dummy	-1.023*	-1.187*	-0.857*	-0.822*	1.651*
	(-3.810)	(-4.734)	(-2.548)	(-1.991)	(4.499)
1992 Dummy	-0.950**	-0.543	-1.784*	-0.673	2.316*
	(-1.922)	(-1.454)	(-3.176)	(-1.297)	(4.956)
1993 Dummy	-1.294	-0.242	-1.281*	-0.579	2.592*
	(-2.291)*	(-0.666)	(-2.015)	(-1.119)	(6.273)
1994 Dummy	-1.921	-0.757*	-1.442*	-0.448	2.052*
	(-2.979)*	(-2.077)	(-4.341)	(-1.082)	(4.829)
1995 Dummy	-2.767*	-2.179*	-2.090*	-1.898*	0.972*
	(-3.281)	(-5.581)	(-5.318)	(-5.490)	(2.523)
1996 Dummy	-2.645*	-2.724*	-1.375*	-1.897*	0.790**
	(-2.563)	(-7.946)	(-5.127)	(-5.556)	(1.932)
1997 Dummy	-2.790*	-2.897	-1.172*	-1.458*	1.193*
	(-3.275)	(-16.299)*	(-12.097)	(-7.581)	(3.411)
1998 Dummy	-2.371*	-3.365*	-1.381*	-2.150*	0.641**
	(-2.831)	(-18.232)	(-7.085)	(-35.709)	(1.797)
1999 Dummy	-2.885*	-3.437*	-0.972*	-2.062*	0.366
	(-3.972)	(-14.832)	(-4.271)	(-27.073)	(0.969)
2000 Dummy	-3.898*	-3.693*	-1.965*	-2.735*	-0.089
	(-7.044)	(-21.524)	(-13.128)	(-31.652)	(-0.231)
2001 Dummy	-3.676*	-4.110*	-1.519*	-2.674*	-0.464
	(-4.068)	(-18.654)	(-8.950)	(-32.436)	(-1.280)
2002 Dummy	-2.696*	-4.181*	-1.471*	-2.930*	-0.603
	(-2.269)	(-14.976)	(-12.164)	(-15.304)	(-1.607)
Centered R^2	0.875	0.978	0.905	0.965	0.978

Table 1b. Provincial Regressions with Yearly Dummies - 1988-2002 Monthly Data
Dependent Variable is Provincial Unemployment Rate (robust t-statistics in parenthesis)

Independent Variable	Quebec	New Brunswick	Prince Edward Island	Nova Scotia	Newfoundland & Labrador
Constant	14.846	18.528	21.573	18.800	18.508
	(6.521)	(5.449)	(6.631)	(3.415)	(3.564)
Help Wanted Proxy	-1.071	-0.217	-0.058*	-0.364	0.024
	(-1.063)	(-1.165)	(-2.386)	(-1.101)	(0.173)
Help Wanted Proxy^2	0.046	0.001	0.000076**	0.004	-0.001
	(0.464)	(0.550)	(1.702)	(0.781)	(-0.562)
1989 Dummy	-0.048	0.496	-0.130	-0.408	-1.246*
	(-0.267)	(1.295)	(-0.207)	(-1.648)**	(-4.770)
1990 Dummy	-0.354	-0.216	-0.649	-0.286	-0.234
	(-0.756)	(-0.608)	(-0.826)	(-0.723)	(-0.665)
1991 Dummy	0.398	-1.075**	0.470	-0.412	-0.132
	(0.770)	(-1.928)	(0.416)	(-0.570)	(-0.158)
1992 Dummy	0.534	-1.231	1.491	0.159	1.092
	(0.950)	(-1.553)	(1.224)	(0.164)	(1.046)
1993 Dummy	1.386*	-1.587*	1.385	1.368	1.630
	(2.591)	(-2.080)	(1.421)	(1.462)	(1.482)
1994 Dummy	0.618	-1.032**	1.150	1.085	1.557*
	(1.147)	(-1.724)	(1.167)	(1.210)	(1.647)
1995 Dummy	-0.313	-1.778*	0.569	-0.330	-0.257
	(-0.563)	(-3.481)	(0.966)	(-0.407)	(-0.264)
1996 Dummy	-0.386	-1.946*	0.069	-0.087	0.274
	(-0.684)	(-3.012)	(0.107)	(-0.114)	(0.275)
1997 Dummy	-0.377	0.236	2.127*	0.729	0.458
	(-0.695)	(0.770)	(5.938)	(1.285)	(0.559)
1998 Dummy	-1.039**	0.459*	1.320*	-0.371	-0.205
	(-1.921)	(2.022)	(7.130)	(-0.859)	(-0.321)
1999 Dummy	-1.610*	-0.940	3.057*	-0.917*	-0.529
	(-2.891)	(-1.622)	(6.630)	(-2.963)	(-1.049)
2000 Dummy	-2.552*	-1.153**	1.473*	-1.394*	-0.378
	(-4.621)	(-1.685)	(2.176)	(-4.262)	(-1.092)
2001 Dummy	-2.826*	-0.652*	1.093**	-1.261*	-0.940*
	(-5.391)	(-2.826)	(1.858)	(-3.014)	(-2.389)
2002 Dummy	-3.304*	-1.690*	0.477	-2.010*	-1.163*
	(-5.522)	(-7.489)	(1.286)	(-3.472)	(-2.172)
Centered R^2	0.955	0.836	0.880	0.930	0.827

Statisitically significant at the 5% level denoted by * ($t_c = 1.960$). Statisitcally significant at the 10% level denoted by ** ($t_c = 1.645$)

Table 2. SURE Estimation with Structural Unemployment Variables - 1991-2002 Monthly Data
Dependent Variable is Provincial Unemployment Rate (t-statistics in parenthesis)

Independent Variable	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario
Constant	21.035	21.740	11.921	21.864	17.187
	***(2.670)	***(3.759)	***(3.059)	***(4.364)	***(4.761)
HWI	-29.653	3.905	-0.184	-0.145	-0.690
	***(-2.611)	(0.309)	***(-2.878)	***(-2.664)	**(-2.437)
HWI^2	221.615	-40.163	0.004	0.003	0.107
	***(2.611)	(-0.519)	***(2.585)	**(2.539)	*(1.910)
LGDP	-1.964	-1.772	-0.958	-1.779	-1.526
	***(-2.866)	***(-3.349)	***(-2.717)	***(-4.345)	***(-4.884)
OIL	-0.244	0.087	-0.105	0.108	0.171
	(-1.445)	(0.484)	(-0.754)	(0.733)	*(1.670)
WLF	0.174	0.022	0.093	0.101	0.099
	***(3.775)	(0.402)	*(1.839)	**(2.373)	**(2.159)
OLF	-0.019	0.066	-0.046	0.050	0.026
	(-0.325)	(1.613)	(-1.311)	*(1.776)	(0.590)
UIRR	3.161	2.419	2.577	-0.358	1.429
	**(2.481)	**(2.319)	**(2.295)	(-0.293)	(1.338)
RMW	-0.018	0.116	0.048	0.041	0.026
	(-0.204)	(1.391)	(0.407)	(0.428)	(0.590)
UR(t-1)	1.276	1.123	1.194	1.123	1.300
	***(19.281)	***(14.390)	***(15.665)	***(15.955)	***(19.454)
UR(t-2)	-0.463	-0.232	-0.375	-0.282	-0.416
	***(-7.143)	***(-2.952)	***(-5.123)	***(-4.278)	***(-6.790)
DW	2.074	1.833	2.217	1.957	1.857

Independent Variable	Quebec	New Brunswick	Prince Edward I.	Nova Scotia	Newfoundland & Labrador
Constant	34.284	12.360	50.018	19.742	24.373
	***(5.326)	(1.496)	***(2.811)	***(2.823)	**(2.539)
HWI	-0.654	0.011	-0.003	0.017	-0.043
	(-1.491)	(0.447)	(-0.385)	(0.329)	(-1.371)
HWI^2	0.084	-0.0003	0.000	-0.001	0.0002
	(1.369)	(-1.071)	(0.631)	(-0.716)	(0.837)
LGDP	-2.977	-0.745	-3.537	-1.918	-1.493
	***(-5.110)	(-1.063)	**(-2.532)	***(-3.049)	*(-1.895)
OIL	0.072	0.438	-1.191	0.058	0.452
	(0.479)	**(2.215)	**(-2.269)	(0.334)	(1.097)
WLF	0.191	-0.059	0.023	0.181	0.025
	***(3.459)	(-1.473)	(0.407)	***(4.252)	(0.476)
OLF	0.012	0.062	0.107	-0.127	0.121
	(0.233)	(1.246)	*(1.771)	**(-2.367)	**(2.113)
UIRR	0.429	-3.338	1.091	2.349	-2.915
	(0.268)	*(-1.699)	(0.454)	(1.188)	(-1.234)
RMW	0.047	0.406	-0.002	0.017	0.003
	(0.505)	**(2.334)	(-0.009)	(0.107)	(0.010)
UR(t-1)	1.166	1.105	1.175	1.240	1.257
	***(16.158)	***(14.190)	***(17.604)	***(18.697)	***(18.479)
UR(t-2)	-0.299	-0.243	-0.368	-0.387	-0.461
	***(-4.347)	***(-3.269)	***(-5.611)	***(-5.902)	***(-6.970)
DW	2.023	2.054	2.055	2.000	1.855