Why Has Canada's Unemployment Rate Remained Persistently High?

by

Atul K. Sharma
(051181)

Major Paper presented to the
Department of Economics of the University of Ottawa
in partial fulfilment of the requirements of the M.A. Degree
Supervisor: Professor Mario Seccareccia
ECO 7997

Ottawa, Ontario
August, 1995

Acknowledgements

Without the help of many people this paper would not be possible. I would like to thank my parents for encouraging me to look forward, my in-laws for their help in getting the paper done.

My friends for their assistance and encouragement, Professor Dagum for his assistance in the early years, Professors Grenier and Lavoie on my committee, and Professor Seccareccia for showing me that I could finish what I had started.

Lastly, but most importantly, I would like to thank my wife Rajini for always being there for me, for always giving me her support and encouragement. Without her none of this would be possible.

Any errors and/or omissions in this paper are completely mine.

Table Of Contents

Introduction 1

I. The Current Unemployment Debate In Canada 3

II. Structural Unemployment and Hysteresis: Theories, Concepts and Causes 6
Structural Unemployment 6
A Changing Skills Set 6
Changing Industrial Structure 7
Mismatching 8
Hysteresis 9
Efficiency Wage Theory 10
Insider - Outsider Wage Bargaining 15
Turnover Costs 16
Impact Of Unions 18
Shocks and Resulting Insider Behaviour 20
Impact of Duration Effects 22
Skill Deterioration 23
Declining Search Intensity 24

III. Structural Unemployment or Hysteresis: Why Has Canada's Unemployment Rate Remained Persistently High? 27
Structural Unemployment 27
Changing Skills Set 27
Changing Industrial Structure 29
Mismatching 30
Evidence On Hysteresis 32
The Impact of Duration of Unemployment 32
Empirical Studies 35

IV. Concluding Remarks and Policy Options 40
Policy Options 42

Appendix 44

Bibliography 53

Introduction

Over the past few years there has been a public policy and economic debate regarding the persistence of high unemployment. Concern about the persistence of high unemployment can be seen in virtually every industrialized nation. Another concern is the large number of people joining the ranks of the long term unemployed. In April 1994, the G-7 countries held a conference in Detroit devoted to the creation of jobs.

Canada is no exception to this situation. It has seen two recessions over the past 15 years. Both recessions in 1981 - 1982 and 1990 - 1992 saw large increases in not only the number of people unemployed but also in the duration of unemployment. Unemployment rates returned to their "normal" levels only after a long time.[1]

The central question of this paper is: Why has Canada's unemployment rate remained persistently high?

The paper will discuss two possible reasons for the persistence of high unemployment rates in Canada. One, the persistently high unemployment rates are as a result of structural unemployment. Two, persistently high unemployment rates are a result of hysteresis.

A discussion of the current debate in Canada about the cause of persistently high rates constitutes the first chapter of this paper. The view of the Canadian Government is that Canada's recent unemployment experience is as a result of structural unemployment. The Canadian Government view is articulated in two recent reports by the Ministries of Finance and Human Resources Development (HRD). Academics can be found in both the structural unemployment and hysteresis camps.

---

[1] At the time of writing the unemployment rate for July stood at 9.8 per cent. The most recent peak in the unemployment rate was 11.3 per cent in 1992.

The second chapter of the paper examines the theories, causes, and concepts underlying structural unemployment and hysteresis. It provides the theoretical constructs to assist in answering the central question.

The third chapter of the paper reviews the evidence of structural unemployment and hysteresis in the Canadian context and attempts to answer why Canada's unemployment rate has remained persistently high.

The fourth chapter looks at various policy options that could be considered to alleviate the persistently high unemployment rates in Canada.

I. The Current Unemployment Debate In Canada

The Ministries of HRD and Finance recently released reports regarding the social security system and Canada's economic situation. HRD [1994] stated that structural unemployment was responsible for the recent increase in the unemployment rate. Finance [1994] argues that the core rate[1] of unemployment has risen substantially. Finance [1994:20] believes that the core rate is now 3 per cent higher than in the 1960s. This implies an increase of more than 400,000 in the number of Canadians that remain jobless even near the peak of the business cycle.

The NAIRU (Non-Accelerating Inflation Rate of Unemployment) was approximated to be in the range of 4 - 5 per cent during the 1950s and early 1960s, 6 - 7 in the 1970s and between 6.5 to 8.0 per cent in the mid-eighties. A Royal Commission during the mid-eighties felt that the 6.5 to 8 per cent rate was intolerable (Rose [1988:33]).

An early indicator that the core rate was rising according to the Ministry of Finance was that during the 1970s inflation continued to increase despite unemployment having also risen to 7 per cent and above. In the past accelerating inflation was not triggered unless the unemployment rate had been pushed much lower. This phenomenon of high unemployment coupled with high inflation has been dubbed, "stagflation."

More recently, inflation began creeping up in 1985 when the unemployment rate was still as high as 10 per cent as shown in Figure 1. It appears from Figure 1 that the usual relationship between inflation and unemployment appears to hold, but at a higher unemployment rate than in the past.

---

[1] Finance has defined the core rate as the "rate of unemployment which cannot be forced lower without causing inflation to accelerate." This is also referred to in the literature as NAIRU (Non-Accelerating Inflation Rate of Unemployment).

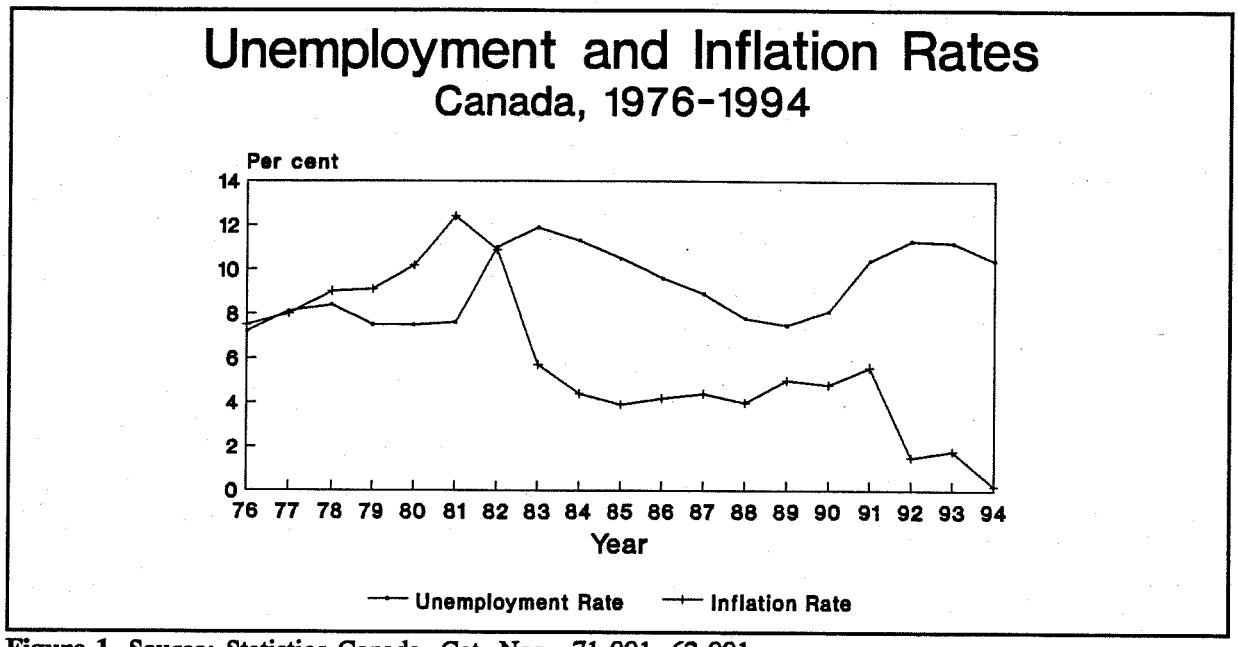

Figure 1, Source: Statistics Canada. Cat. Nos., 71-001, 62-001

Conventional economic theory has been inadequate in being able to explain the persistence of high unemployment rates. Under a classical model any unemployment which existed would be purely voluntary based upon the decisions of individual economic agents who would choose their optimum trade off between labour and leisure. Unemployment, from a Keynesian perspective is a result of a weakening aggregate demand and is involuntary. Under the Keynesian perspective, as aggregate demand[2] increases there should be a corresponding decrease in the unemployment rate. While a decline in the unemployment rate was observed, it took a full 7 years from the end of the 1981-82 recession for the unemployment rate to reach its pre-recession level of 7.5 per cent. Shortly after the unemployment rate reached its pre-recession level, the economy was hit with another recession and the unemployment rate shot back up again.

From Table 1, it can be seen that following both recessions Canada saw robust GDP growth while at the same time experiencing historically high levels of unemployment. From 1983 to 1989 Canada had an average GDP growth of 4.1 per cent, while unemployment averaged 9.6 per cent. In 1984 real GDP growth was 6 per cent (robust growth) while the unemployment rate

---

[2] Annual real GDP growth is used here as a measure of aggregate demand.

stood at 11.3 per cent and in 1994 real GDP growth was 4.2 per cent while the unemployment rate was 10.4 per cent. The high rates of real GDP growth should have translated to into higher rates of employment growth. Table 1 shows that the high rates of real GDP growth did not translate into high rates of employment growth.

Table 1

Unemployment and Real GDP Growth, Canada, 1980 - 1994

	1980	1981	1982	1983	1984	1985	1986	1987
Unemployment Rate	7.5	7.6	11.0	11.9	11.3	10.5	9.6	8.9
Employment Growth		2.9	-3.2	0.6	2.7	3.0	3.0	2.7
Real GDP Growth	1.8	4.0	-3.7	3.2	6.0	4.7	3.1	4.4
	1988	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	--
Unemployment Rate	7.8	7.5	8.1	10.4	11.3	11.2	10.4	--
Employment Growth	3.2	2.1	0.6	-1.9	-0.6	1.4	2.1	
Real GDP Growth	4.5	2.5	-0.3	-1.8	0.7	2.6	4.2	--

Source: Statistics Canada, Canadian Economic Observer 11-010 and Cat. No. 71-001

This paper attempts to answer the question "why Canada's unemployment rate has remained persistently high": structural unemployment or hysteresis. In this, the first chapter of the paper, the current debate around unemployment has been briefly discussed. The government of Canada believes that structural unemployment is the cause of the persistence of high unemployment rates in Canada.

The next chapter of this paper deals with the theories, concepts and causes that underlie structural unemployment and hysteresis.

II. Structural Unemployment and Hysteresis: Theories, Concepts and Causes

It is important to understand the concepts of structural unemployment and hysteresis. This allows for a more definitive answer to the central question of the paper. This chapter examines the concepts, theories and causes of structural unemployment and hysteresis.

Structural Unemployment

Structural unemployment is generally thought of as being caused by non-cyclical factors such as technological change, changes in the industrial mix, sociological factors, etc. (Burns [1991]). Structural unemployment, in other words, is not influenced by the fluctuations of the business cycle.

The major factor thought to cause structural unemployment is a mismatch between jobs available and unemployed workers (Rahman and Gera [1991]; Finance [1994]). When mismatch occurs within an economy a high rate unemployment rate co-exists with a high vacancy rate. It has been argued that there are two major factors which have contributed to the mismatch of jobs to unemployed workers, (i) a changing skills set, and (ii) the increase of the size of the service sector in relation to the rest of the economy (Rahman and Gera [1991]). The next section of the paper briefly discusses how a changing skill set is related to mismatch and to structural unemployment.

A Changing Skills Set

There is little doubt that skill requirements have changed in the workplace over the past 15 years. Many sectors of the economy have seen rapid technological change. This has required many employed workers to upgrade their skills or in fact to attain new skills. Unemployed workers in many cases do not have the opportunity to upgrade their skills, let alone attain new skills. The resulting skills mismatch between the unemployed worker and the workplace is often cited as contributing factor to structural unemployment.

Long term unemployed workers who have not upgraded their skills face a more perilous future than workers whose skills are more up to date. Using educational attainment as proxy for skills requirements, in chapter 3, it is shown how the composition of employment by educational attainment has changed between 1981 and 1989[3].

Once a worker becomes unemployed and experiences long tern unemployment, it has been found that the skill set of the worker is likely to deteriorate, thus further exacerbating the situation. The impact of skills deterioration is discussed later in the chapter.

Changing Industrial Structure

Another factor often cited as contributing to the mismatch between job vacancies and unemployed workers is a changing industrial structure. Changing industrial structure refers to changes in the composition of employment by industry. The industrial sector is believed to have changed over time, as has skill requirements, as discussed above. It is clear how changes in the industrial structure contribute to the mismatch between job vacancies and unemployed workers.

If a particular industry is losing its relative importance within an economy, employment levels will decrease for that industry. On the other hand, if a particular industry is experiencing a relative growth in its importance within an economy then increases in the employment level for that industry will be observed. If the skills required for the increasing industry are different than those required for the decreasing industry then the transfer of laid off workers from one industry to another will not occur easily. The resulting unemployment will be structural and would have been caused by the change in the industrial structure. From this example it is also possible to see how skills and industrial structure can be inter-related.

---

[3] 1981 and 1989 both represent peak employment periods and are good reference years.

Mismatching

To discuss the aggregate picture in relation to mismatching it is necessary to examine the unemployment - vacancy relationship. Unemployment and vacancy rates generally mirror each other when shown graphically over time. Therefore, if a high vacancy rate is observed, then a low unemployment rate should be observed. This would indicate that the labour market was tight. If a high unemployment rate is observed with a low vacancy rate, then it could be argued that the labour market is not tight. A measure of job vacancies in Canada is available through Statistics Canada's Help Wanted Index. In order to make the help wanted index comparable to unemployment rates, the index is divided by total non-agricultural employment[4]. Figure 2 shows that the normalized help wanted index is a mirror image of the unemployment rate.[5]

Normalized Help Wanted Index and Unemployment Rate

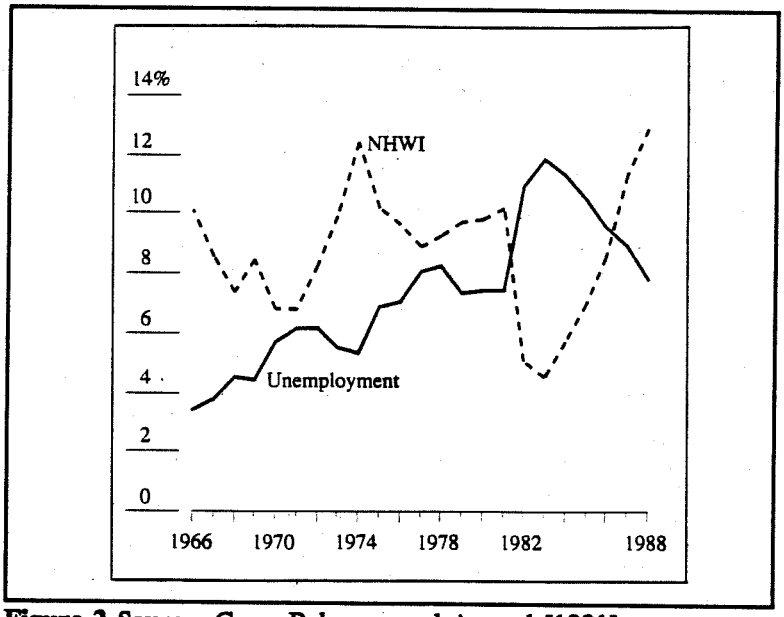

Figure 2 Source: Gera, Rahman, and Arcand [1991]

---

[4] Gera, Rahman, and Arcand [1991] refer to this as the normalized help wanted index.

[5] Table A-1 in the Appendix shows the Help Wanted Index from 1981 to 1993 along with other economic indicators.

This section began by defining structural unemployment. It also discussed the mismatch between job vacancies and unemployed workers and examined the two major contributing factors to mismatch. They are (i) changing industrial structure, and (ii) a changing skills set. Mismatch and its relationship to structural unemployment through the unemployment vacancy relationship was also discussed.

Chapter 3 examines some of the evidence underlying structural unemployment. It shows how skills requirements have changed as well as how the industrial structure has changed. In Chapter 3 there is also an examination of the unemployment-vacancy relationship in Canada. This is used to help determine if structural unemployment is responsible for the persistence of unemployment in Canada.

The next section of this paper examines the concept of hysteresis. It begins with a general definition of hysteresis and it then proceeds to examine (i) efficiency wage theory, (ii) insider outsider wage bargaining, and (iii) duration effects. These three scenarios are examined in the context of how they can lead to persistence of unemployment and to hysteresis within the economy.

Hysteresis

Hysteresis occurs when a temporary shock has permanent effects upon the natural or equilibrium rate of unemployment.[6] Once the shock is removed deviations from the natural or equilibrium rate continue to occur as if the shock were still present. The unemployment rate never returns to its equilibrium rate. Repeated shocks are likely to increase the deviation from the equilibrium further and further.

---

[6] Blanchard and Summers use the term hysteresis more generally to refer to long term persistence. It is used in a similar fashion in the paper except where specified.

The concept of hysteresis is borrowed from the physical sciences, it is defined according to the American Heritage Dictionary as "the failure of a property that has been changed by an external agent to return it to its original value when the cause of the change has been removed" [Gera 1991:153]. Equilibrium in any given period therefore is serially correlated or path dependent on previous periods (Blanchard and Summers [1987]). The concept of hysteresis was first introduced in economics by Phelps [1972], and extensively discussed by Blanchard and Summers [1987; 1988].

The argument is put forward that hysteresis can occur as a result of three scenarios.[7] The first one focuses upon wage bargaining between workers and firms under "efficiency wage" conditions. The second scenario revolves around the existence of an insider-outsider wage bargaining scenario in which workers obtain market power and are able to negotiate their wages in their best interest to the exclusion of outsiders (Blanchard and Summers [1987]; Lindbeck and Snower [1987b;1988a]). The third scenario which is thought to cause hysteresis is duration of unemployment. Duration of unemployment is examined in relation to its impact upon unemployed workers and how it can contribute to the persistence of unemployment.

Each of these theories are discussed below in turn.

Efficiency Wage Theory

Efficiency wage theory assumes that firms have asymmetric information regarding their worker's productivity, i.e., firms are never able to obtain perfect information regarding their worker productivity. Firms are unable to monitor perfectly the productivity of their workers and worker's have better information about their productivity than do firms. Firms are unable to costlessly obtain "job effort" of their employees. This condition shows how the information

---

7 Hysteresis need not be limited to unemployment concerns within economics. It can be thought of occurring wherever present values depend upon past values. Exploration of this phenomena is warranted in other areas of economics.

structure of an employer-employee relationship can explain involuntary unemployment.[8]

It is assumed that employment and wage decisions are made by the firm unilaterally. Since the firm has imperfect information regarding worker productivity, it uses its wage offer as a filtering device for productivity. Efficiency wage theory attempts to explain why firms use wage offers as a screening device and what the impact this has upon unemployed workers.

Lindbeck and Snower [1988a:42] argue that efficiency wage theory can take on two forms. The first form is "adverse selection" and the second is "moral hazard". In the adverse selection manifestation, Lindbeck and Snower argue that efficiency wage theory can be explained through various models which are briefly discussed here.

The first model is the product differential model. In this model firms cannot distinguish between high productivity and low productivity workers and the skills set of the worker is transferable to other firms. Under this scenario the higher the wage offer from the firm the higher the quality of candidate attracted to the position.

The second model is the turnover model. In this model the firm cannot distinguish between stayers and quitters ex ante. Costs associated with quitting are borne primarily by the firm. Within this model, the higher the wage offer results in more workers staying on and this in turn results in lower turnover costs associated with the firm. Turnover costs would have to be very significant for the firm to engage in this type of adverse selection activity. While it is possible it does not seem possible.

---

[8] Efficiency wage theory was originally postulated in the area of developmental economics. For a review of efficiency wage theory literature see Akerlof and Yellen [1986]. For a review of efficiency wage theory as applied to developmental economics see Liebenstien in Akerlof and Yellen.

The second general manifestation taken by efficiency wage theory is moral hazard - workers productivity depend on their effort at work which cannot be directly observed by the firm. The moral hazard view of efficiency wage theory also has a number of models which are discussed below.

The first moral hazard model is the shirking[9] model. In this model workers caught goofing off (ie. shirking) on the job are immediately fired. Lindbeck and Snower argue that the probability of shirking is a function of the income differential between employment and unemployment.[10] By increasing the income differential between employment and unemployment through an increase in the wage offer firms can obtain greater productivity from their workers.

In the shirking model, if the economy is at full employment then there is little consequence to shirking. At full employment workers will be immediately re-hired and therefore workers will shirk. In an attempt to induce workers not to shirk, firms will pay more than the "going rate" (Shapiro and Stiglitz [1986]), thereby increasing the income differential.

If a worker loses his job and the economy is not at full employment, then a worker will not be immediately re-hired. "The equilibrium unemployment rate must be sufficiently large that it pays workers to work rather than to take the risk of being caught shirking" (Shapiro and Stiglitz [1986:45]).

The second model is the search model. In this model the worker's productivity is inversely related to the amount of time a worker spends searching for another job while at work. Under this model the firm can reduce the amount of time spent searching by increasing its wage offer and thereby making it unattractive for the worker to seek alternative employment options.

---

9 For a comprehensive description of the shirking model the reader may want to refer to Shapiro and Stiglitz [1986].

10 Examples of income at unemployment could include unemployment insurance benefits, general welfare assistance, etc.

The third model is a sociological model. In this model work effort is related to how workers feel they are being treated, fairly or unfairly. Akerlof [1986] argued that workers will be more productive within a firm if they feel an attachment to the firm. Workers will offer a gift to the firm. This gift will be in the form of increased productivity. In exchange, firms will also offer a gift to the employees, the gift from the form will be higher wages than they would receive if they left their current position for another job.

Akerlof [1986] examined a 1950s studies of a group of women who did a job called "cash posting". The study found that workers in the group developed a sentimental attachment towards one another within the group but also the group collectively developed an attachment towards the firm. The group and the firm had, what is referred to as, a "partial gift exchange". The gift given by the workers in the group was an higher than "normal" productivity. The gift given by the firm was higher wages than the workers could receive at another job.

In all of the models discussed above an increase in the wage offer results in greater productivity from its workers. The efficiency wage theory appears to be useful in looking at the relationship between new workers and the firm. However, over time one has to think that firms are able to track the productivity of a worker ex post. This historical productivity record can then be used in negotiations with current workers. This implies that over time firms have fairly good, although perhaps not perfect information about the productivity of their workers. As mentioned earlier though the efficiency wage theory does appear to be helpful in explaining why firms offer higher wages to attract better quality new workers.

How high will the wages be that are offered by the firm under the efficiency wage theory? If it is assumed that the firm engages in profit maximizing behaviour then the wage offer will be no greater than the profit maximizing wage at which marginal revenue is equal to marginal cost. The wage offer will also not be below that amount even though there are unemployed workers who are willing to work for less than the firm's wage offer.

The question that can be asked here is why would the firm not accept a worker who is willing to work for a lower wage offer?[11] Under the efficiency wage theory it is not in the firm's best interest to accept the lower wage worker. Lindbeck and Snower [1988a] argue that accepting the lower wage worker would cause the marginal revenue to decline more than the marginal cost. The firm's refusal to accept underbidding leads to involuntary unemployment. The involuntary unemployment exists as a result of "profit maximizing wage decisions under asymmetric information" made by the firm (Lindbeck and Snower [1988a:58]). The unemployment is involuntary because the unemployed worker faces a limited choice set of employment opportunities through no fault of their own.

The relationship between efficiency wage theory and insider - outsider wage bargaining is that the theories identify different "microeconomic sources of involuntary unemployment" (Lindbeck and Snower [1988a: 64]). Efficiency Wage theory shows why it is beneficial for the firm to pay higher than "normal" wages. The reason for the firm's willingness to pay higher wages is because of the firm's inability to obtain perfect information regarding a worker's productivity. The payment of the higher wage and firm's unwillingness to accept underbidding leads to involuntary unemployment.

If one couples Blanchard and Summers' [1987] general reference to hysteresis as the existence of long term persistent unemployment with path dependency one can see how efficiency wage theory can contribute to hysteresis through the creation of involuntary unemployment. Efficiency wage theory appears to exist as a necessary (albeit not the only) condition, but not as a sufficient condition, for hysteresis.

The next section of the chapter examines how insider - outsider wage bargaining can lead to persistent involuntary unemployment as a result of the worker's ability to exert market power.

---

[11] The act of offering to work at lower than the current wage is referred to as "underbidding".

Insider - Outsider Wage Bargaining

In the insider-outsider wage bargaining world there are two types of people, (i) insiders - these are people who work for the firm, and (ii) outsiders - these are people who are unemployed. In this world insiders have market power which they are able to use to their advantage. By exercising their market power insiders are able to protect their jobs and this in turn results in persistent involuntary unemployment for outsiders (Lindbeck and Snower [1988a]; Solow [1985]) and more strongly that it leads to hysteresis (Blanchard and Summers [1987; 1988] Blanchard [1991]).

The discussion begins by looking at individual bargaining between workers and firms and gradually moves to bargaining between unions and firms.

In the pure insider case the assumption is made that wage bargaining determines the nominal wage and firms are able to choose workers ex-post. Only workers who are employed currently - at the time of wage negotiations - are considered to be insiders. They have priority in terms of employment and only when all insiders are employed can the firm hire outsiders. Implicit in the pure insider model is that there is no pressure exerted from unemployed workers.

The assumption is made that the group of insiders is sufficiently strong to set the wage unilaterally. Insiders set the wage at a level such that the expected employment level is equal to the size of the membership (Blanchard and Summers [1987]). In other words, the insider group will set the wage at a point where the firm will retain all current workers at the firm and no outsiders will be hired. Outsiders will face involuntary unemployment and the unemployment will be persistent as long as insiders are able to exercise their market power.[12] This is a pure hysteresis result.

---

[12] It can be argued that the pure insider case may be too rigid. Lindbeck and Snower [1988a] show that membership rules (ie. determination of insiders versus outsiders) can have an impact upon the bargaining position of insiders and appears to change the hysteresis result only in magnitude.

How are insiders able to obtain their advantage over outsiders? Lindbeck and Snower [1988a] argue that insiders are able to gain an advantage over outsiders because thy possess market power. The market power arises from the existence of turnover costs, which are faced by the firm, and from the fact that insiders are able to exploit these costs.

Turnover Costs

Turnover costs are the costs associated with the firing of insiders and the hiring and training of entrants. Entrants are newly hired outsiders that have not yet become full fledged insiders. Other turnover costs include behaviour of insiders towards other insiders and insiders' behaviour towards entrants. These others cost can be described as "cooperation" and "harassment". Cooperation generally occurs amongst insiders and harassment generally occurs between insiders and entrants.

The turnover costs are also grouped in terms of being production related costs and rent related costs. The hiring, training cooperation, and harassment are associated with production related activities. Firing is associated with rent related activities.

These costs generate an economic rent that insiders are able to capture either in part or in full. Intuitively, the larger the rent the higher the insider wage can go (Lindbeck and Snower [1988a:78]). How much insiders are able to capture determines the magnitude of the result. In the pure insider case described above, in which insiders set the wage unilaterally, insiders are able to capture all of the rent associated with the costs and are able to set the wage such that all of their current members retain their employment. Insiders will raise their wages to the point just below where the insider wage is less than outsider wage plus turnover costs.

Lindbeck and Snower [1988a] propose that the following model shows that, given the ability of insiders to capture rent associated with turnover costs, outsiders will face involuntary persistent unemployment if insiders are able to set their wages higher than entrant wages but not greater than the marginal firing cost. In this model entrants have yet to or are in the process of

consuming the hiring costs, while insiders have already consumed the hiring and training costs and the removal of insiders precipitates a series of firing costs.

In the model W_I and W_E are the wages for insiders and entrants, respectively. R is the reservation wage for outsiders. H is the marginal costs for hiring and training and F is the marginal cost of firing.

The model begins with $W_E < W_I < (W_E + F)$. $W_I > W_E$ because insiders have some bargaining power and $W_I < (W_E + F)$ since a wage greater than this would cause the firm to dismiss the insider and replace the insider with an entrant. Similarly, $R < W_E < (R+H)$, the entrant's wage is bounded by the reservation wage on the lower end and by the reservation wage plus the marginal hiring costs on the upper end. $W_E > R$ because entrants have some bargaining power related to hiring costs. The distinction is made, as described earlier, between production related costs and rent related costs and the economy is described as one in which all wages are determined in this manner and it is also assumed that there is an excess supply of labour in the economy.

In order to normalize for labour efficiency, Lindbeck and Snower assume that insiders provide A units of efficiency while entrants provide 1 unit of efficiency, where $A > 1$ (ie. insiders provide greater efficiency than entrants). Outsiders will become involuntarily unemployed when $(R+H) < (W_I/A)$, that is, outsiders face involuntary unemployment because the reservation wage plus the marginal cost of hiring is less than insider wage divided by their efficiency. Since $A > 1$, W_I is less than R+H.

Lindbeck and Snower argue that unemployment persists "whenever the outsiders reservation wage plus the marginal hiring, firing, and training costs exceed the insider wage, normalized for skill differences" [1988a:79]. Persistent unemployment is shown to occur when:
$R+H+F > (W_I/A)$.

In this situation firms have no incentive to hire outsiders. The higher the H+F cost the greater the bargaining power of the insiders. To reduce persistent unemployment, H+F have to be reduced such that $R+H+F < (W_I/A)$.

Under this type of bargaining scenario why is underbidding not observed? Why do outsiders not offer a lower H or F and lower R in hopes of reversing the sign in the above equation showing persistent unemployment?

Lindbeck and Snower argue that underbidding has an "adverse influence" [1988a:49] upon the worker who gets hired as a result of underbidding. Underbidding does not occur under this model because insiders are able to engage in harassment techniques and non-cooperation with entrants to discourage underbidding. In the efficiency wage theory it was shown how underbidding was not in the firms' best interest. In the insider - outsider model underbidding does not occur because it is known to the firm that entrants that are hired as a result of underbidding will cause insiders to force up production costs by non-cooperation and harassment.

Impact Of Unions

In the preceding discussion of the insider - outsider wage bargaining model it was presumed that insiders bargained individually with the firm. The next section of the paper examines the effects and impacts of a union bargaining on behalf of the firm's workers.

Generally speaking, the existence of unions in the insider - outsider model does not change the results of involuntary and persistent unemployment, however, the existence of unions does underscore the magnitude of the result (Lindbeck and Snower [1988a:83; 1988b]).

In their examination of the impact of unions upon persistent and involuntary unemployment, Lindbeck and Snower [1988b] distinguished two types of insiders within the insider - outsider framework. The first type of insider is a union member, the second is an employed non-union member. The importance of this distinction is that union members have an influence upon wage

determination while non-union members do not.

Two "salient, distinguishing" (Lindbeck and Snower [1988b: 119]) features of the model are that firms bear some labour turnover costs whenever current employees are terminated and when new employees are hired and that union members exert market power in the wage determination process. As in the case where individual workers negotiate with the firm, union member market power exists because of the ability to capture a portion of the economic rent generated by the existence of hiring, firing, and training costs.

In this respect, unions operate in a manner consistent with that of individualistic insiders. Unions operate for the benefit of all insiders and do not take into account other workers, i.e., workers outside of their bargaining unit.

They have been shown to be effective at capturing a greater portion of the economic rent created by the turnover costs. They are also effective in increasing the turnover costs and thereby increasing the boundary to which the insider wage can be pushed.[13] Lindbeck and Snower [1988b:124] found that union power affected the ability of an economy to recover from a recession.

Lindbeck and Snower [1988b:121] argue that the existence of the union's ability to impact upon wage determination leads to a "resilience" in the labour market towards cyclical fluctuations in unemployment.

They specify the resilience to cyclical fluctuation as an "unemployment persistence effect" and as a "wage ratchet effect". The unemployment persistence effect exists when random fluctuations in labour demand leads to a persistent change in unemployment. The wage ratchet effect effects exists when random changes in labour demand lead to increases in wages and in

---

[13] Poloz [1994:11] estimated that the unionization rate in Canada has increased from approximately 30 to 38 per cent over the last thirty years.

the unemployment rate.

If the union's only concern is the workers who are present at the time of bargaining (ie. insiders), then the implication of such a membership rule for employment is that employment follows a random walk (Blanchard and Summers [1987]). The significance of a random walk hypothesis is that any point can be an equilibrium point. Innovations are due to unexpected movements in aggregate demand. There is no natural rate of unemployment under this scenario. "For a given labour force, equilibrium unemployment is equal to last period's value of actual unemployment. The economy shows no tendency to return to fixed equilibrium value" (Blanchard and Summers [1987:291]).

Lindbeck and Snower [1988b] found that unions hinder the economy from recovering from a recession, to a certain degree, and that the stronger the union power - as reflected in their ability to capture a portion of economic rent from turnover costs - the "bleaker" the prospects of economic recovery.

The next section of the paper discusses the effects of shocks upon the insider - outsider framework and it is shown how a temporary shock may have a persistent and permanent effect upon wages and employment.

Shocks and Resulting Insider Behaviour

If there are a series of positive and negative shocks this will cause the average unemployment to change and the mean unemployment rate will not return to its equilibrium position. It will however change again when hit by another series of shock (Blanchard and Summers [1988]).

A labour demand shock, for instance, would lead to a change in the number of workers that a firm employs and this resulting change would affect the insider's future wage negotiations (Lindbeck and Snower [1988a]).

If a negative demand side shock lowers the amount of insiders in a work force then the next periods natural employment is equal to last period's actual level. This is a case of pure hysteresis.

How workers react to a shock is dependent upon whether the shock is unforeseen or foreseen.[14] If the shocks to insiders are unforeseen then workers do not have time to adjust their relative wages. The result of an unforeseen shock is 'symmetric persistence'. In other words, a positive or negative shock will effect employment by the same magnitude.

If the shock is unforeseen and negative what one would expect to see is a decrease in the number of insiders. If the remaining insiders believe that no further shocks will occur and as a result believe their job security is intact, one would expect to see the remaining insiders push for higher wages under the insider - outsider wage bargaining scenario.

If the shock to insiders, however, is foreseen the results then will be an 'asymmetric persistence' of unemployment (Lindbeck and Snower [1988a]). This is dependent upon the existence of a seniority system and how quickly insiders become outsiders. Generally, the quicker insiders become outsiders the higher and faster the increase in wage is likely to occur. The existence of a seniority system works to protect more senior workers from being dismissed during a foreseen shock.

It has been observed that insiders do have an impact upon the persistence of unemployment through their wage bargaining power and the fact that insiders are likely to look after themselves and disregard the prospects of outsiders . Membership rules determine the boundaries to insiders' bargaining wage position, as does the foreseeability of the shock.

---

[14] It is not difficult to imagine that some shocks may in fact be foreseeable. In the case of labour demand shocks, if the economy is in a downturn workers may very well expect their industry or firm to "downsize", the argument could then be made that the downsizing was a foreseen negative labour demand shock.

The next section of this chapter examines the impact of duration upon the persistence of unemployment and upon the unemployed workers.

Impact of Duration Effects

From the above discussion of insider outsider bargaining, it appears that the wage bargaining process occurs without any reference to what occurs in the economy in which the firms operate and the workers work. Blanchard [1991] argues that in fact the outside world does have an impact upon the wage negotiation process. It does not change the result of persistence or of hysteresis but it does have an impact on the relative bargaining power of firm and workers. There are two effects occurring. One is the threat effect, and the other is the fear effect.

As a bargaining chip, firms can always go to unemployed workers to find replacements for current employees with whom they cannot reach an agreement. This "threat effect" can be used by the firm as their bargaining chip. However, the credibility of such a bargaining chip is a function of the turnover costs within a firm.[15] If a firm has an ability to control turnover costs, then the firm's threat will be seen as more credible. If the firm cannot have an effect upon costs, then the firm has no threat bargaining chip and will likely result in workers being able to capture economic rents generated by the existence of the turnover costs.

The state of the economy can generate a "fear effect" which workers must deal with. If the economy has a low unemployment rate and workers are likely to find other employment quickly then workers are in strong bargaining position and are likely abe to extract a benefit from the economy around them in the form of a higher wage. However if unemployment rates are high and the likelihood of finding other employment is low then workers would face what Blanchard termed a fear effect. The fear effect will impact upon the wage determination process so that workers are in a weaker bargaining position and may accept lower wages in order to continue

---

[15] For a discussion on turnover costs see the previous section. The discussion focused upon the types of turnover costs faced by the firm and how employees are able to obtain market power through the manipulation of the turnover costs.

their employment.[16] Conversely, the high unemployment and low likelihood of alternative employment conditions strengthen the bargaining position of the firm.

The impact of unemployed workers upon wage bargaining process appears to be dependent upon the duration of unemployment (Blanchard [1991], Layard and Bean [1989], Layard and Nickell [1986]).

As the duration of unemployment increases among workers, their impact upon wage determination dissipates. Why does this occur? How is it that workers reach a point where they are irrelevant in affecting the level of wages?

There are two major factors that are thought to contribute to the ineffectiveness of outsiders, (i) as duration of unemployment increases the skills of workers deteriorate, and (ii) a decrease in search intensity occurs as duration of unemployment increases.

Skill Deterioration

In almost every imaginable field (construction, manufacturing, service sector, professional fields, etc.) a long period of unemployment will result in some skill deterioration. Technological change is occurring at such a rapid pace that long term unemployed workers have little hope of becoming re-employed without having to upgrade their skills through re-training.

The duration of unemployment becomes a signal to employers. Employers use duration to signal the amount of training costs the worker is likely to utilize. The longer the worker has been unemployed the more training is likely to be required to bring the worker to the level of current employees. Employers, given a choice among unemployed workers, may rank workers according to their duration of unemployment. If the employer believes that high duration

---

16 In the previous section it was discussed why insiders do not need to worry about underbidding by outsiders.

unemployed workers are likely to incur greater costs than low duration unemployed workers, then the employer may hire the workers on this basis (Blanchard [1991]). Duration of unemployment may also be used by the employer as a signal of the quality of the worker. The employer may feel that the longer the duration spell the less productivity the firm is likely to receive from the worker.

In the third chapter of the paper, the evidence relating to structural unemployment is discussed. The composition of employment by educational attainment is examined. Educational attainment is used as a proxy for the skill set that the worker has. The discussion revolves around how the skills requirement has changed over the past 15 years.

Declining Search Intensity

The second explanation for longer term workers not being able to exert pressure upon the wage settlement lies in the relationship between a worker's intensity of search and the duration of unemployment. The longer the duration of unemployment the lower the search intensity.

Many workers reach a critical duration point where they may give up search completely. What happens as workers near this point? If the worker does not want to adjusts their life to a lower standard of living by relying upon Unemployment Insurance and General Welfare Assistance then it is likely that the fear factor will spur workers on to continue their search and perhaps even increase their intensity. However the search intensity is likely to decline over time as search becomes less effective.

This decline in search or its complete cessation has very serious implications. It will eventually lead to the *de facto* exclusion of the worker from the labour market (Blanchard [1991]). This is related to the effects discussed earlier with regards to insiders taking into account the economic conditions surrounding them when bargaining with firms. Employed workers will have to take into account the search patterns prevalent in the economy at the time of bargaining and

this consideration may impact upon the bargaining position of the worker. "High unemployment will first exert substantial pressure on wages, but the pressure will decrease as more workers give up effective search" (Blanchard [1991:286]).

In summary, the impact of duration of unemployment upon the wage determination process has been reviewed in this section. It has been shown through various studies that the impact of unemployed workers upon the wage determination process is a function of the duration of unemployment that the worker has experienced.

Layard and Bean [1989] concluded that most if not all of the wage pressure caused by outsiders was produced by unemployed workers who had been unemployed for one year or less. They concluded that long term unemployed had little effect upon wages. Layard and Bean [1989] also argue that the ineffectiveness of outsiders has a greater impact upon the wage bargaining process than insiders. Blanchard and Summers argue that outsider's impact upon wage setting is a function of the length of time they are unemployed. The longer the outsider is unemployed the less degree of impact the outsider has.

Blanchard [1991] showed how threat and fear effects impacted upon wage bargaining. The effects of increasing duration of unemployment were discussed. The major impacts of duration are (i) skills deterioration and (ii) declining search intensity.

How can outsiders be brought into the wage determination process ? It can be argued that if outsider ineffectiveness is improved (ie. outsiders are more effective) then there is a likelihood that there may be an increased employment or at the least an impact upon the wage bargaining process. An increase in the effectiveness of outsiders is likely to result in more downward pressure on insider wages. Insiders will not be able to demand as high increases in their wage rate and may consider lower wages in order to maintain their employment, assuming insiders prefer employment to unemployment.

The long term unemployed outsider ineffectiveness and the insider effect are "mutually reinforcing". Groups of workers negotiating using a variation of the insider model will bargain such that outsiders are permitted to be hired by the firm only once the insider membership has been exhausted. The longer an outsider has to struggle to gain membership, the more likely it is that the outsider's skills will become obsolete and the lower the search intensity. In chapter four policy options to alleviate the impacts of long term unemployment are discussed. Before looking at the policy options available to alleviate the impacts of long term unemployment, it is important to determine why Canada's unemployment rate has remained persistently high. Is it as a result of structural unemployment or hysteresis. The next chapter presents some of the evidence related to structural unemployment and hysteresis and attempts to answer the central question of the paper.

III. Structural Unemployment or Hysteresis: Why Has Canada's Unemployment Rate Remained Persistently High?

In this chapter of the paper, the evidence related to structural unemployment and hysteresis is discussed. The chapter also attempts to answer the central question of the paper: why has Canada's unemployment rate remained persistently high?. The chapter begins with a discussion of structural unemployment.

Structural Unemployment

This section examines structural unemployment and its related causes. The section follows a similar format to chapter 2. The first part begins with an examination of the changing skills set in Canada.

Changing Skills Set

To ascertain if skills requirements are changing a proxy for skills is used, employment by educational attainment. The rationale for using educational attainment as a skills requirement is fairly straightforward. If greater skills are required to obtain employment and people acquire more skills the more education they have then educational attainment will serve its purpose as a proxy. The weakness in this type of measure is that it does not account for on the job training.

From Table 2, it is clear that composition of employment by educational attainment has shifted towards workers with college and university degrees. University degree holders increased their proportion of total employment by 34.5 per cent between 1981 and 1989 , from 11.6 per cent of total employment to 15.6 per cent. College degree holders saw the greatest increase in relation to total employment. They saw their proportion increase from 12.2 per cent to 16.8 per cent, an increase of 37.7 per cent. This is especially interesting. It is at the college level where more "work-specific" skills are obtained rather than at the secondary or university level.

Table 2 **Composition of Employment by Educational Attainment, 1981 and 1989**

	1981	% of Tot Emp	1989[17]	% of Tot Emp	% Chge
0 - 8 yrs of school (M)	1,649	15.0	1,160	8.9	-40.7
9 - 13 yrs of school (M)	5,757	52.3	6,310	48.2	-7.8
Some Post Secondary (M)	969	8.8	1,387	10.6	20.5
Post Sec. Certificate or Diploma (M)	1,347	12.2	2,192	16.8	37.7
University Degree (M)	1,279	11.6	2,037	15.6	34.5
Total Employment (M)	11,001	100.0	13,086	100.0	0.0

Source: Calculations by author based upon Statistics Canada, Cat. No. 71-529

From this table it can been seen that skills requirements are changing and from the discussion in the previous chapter the changing skills environment was a contributing factor to mismatch and to structural unemployment. It is possible to envisage how long term unemployed workers would be affected by this structural factor. Long term unemployed workers would get left behind in such a changing skills environment.[18]

Table 2 uses peak to peak employment periods in order to make the comparisons more meaningful. The unemployment rate for both of these years (1981 and 1989) is identical (7.5 per cent). If the years had different unemployment the results may be affected by other factors. Both years also represent peak employment periods prior to a recessionary period. This allows a comparison based upon relatively lower levels of unemployment. The next section of the chapter examines how the industrial structure has changed in Canada.

---

17 It should be noted that the 1989 numbers incorporate changes made to the Labour Force Survey made by Statistics Canada. The results may be slightly exaggerated.

18 For an examination of unemployment rates by educational attainment see Table A-9 in the Appendix.

Changing Industrial Structure

Table 3 shows how the composition of employment has changed from 1981 to 1989. The service industry now employs 33 per cent of all the workers in the economy. It has grown from 29.7 per cent of total employment in 1981. This is a 12.1 per cent increase. The trend line for the service industry is positive.[19]

The manufacturing sector, on the other hand, has decreased to 17 per cent of total employment from nearly 20 per cent in 1981, a decrease of 11.4 per cent. Not surprisingly perhaps the primary sectors show the sharpest decline in proportion of total employment.

It is possible to see how the change in the composition of employment by industry would lead to workers experiencing structural unemployment. Workers who are not able to transfer from one industry to another as each industry changes in relative importance are likely to be affected by structural unemployment.[20]

---

[19] The fact that the trend line is positive should be interpreted carefully for future years. Fully half of the jobs categorized under the service industry are part of the public and boarder public sector. These sectors clearly are unlikely to see major job growth in the current political and economic climate.

[20] For employment by industry from 1980 to 1994 see Table A-3 in the Appendix.

Table 3

Composition of Employment by Industry, Canada, 1981 and 1989

	1981	% of Total Emp	1989[21]	% of Tot Emp	% Change
Agriculture (M)	488	4.4	438	3.4	-22.7
Other Primary (M)	321	2.9	304	2.3	-20.7
Manufacturing (M)	2,124	19.3	2,235	17.1	-11.4
Construction (M)	551	5.0	809	6.2	24.0
Transportation (M)	911	8.3	1,008	7.7	-7.2
Trade (M)	1,884	17.1	2,293	17.5	2.3
Finance (M)	594	5.4	769	5.9	9.3
Service (M)	3,262	29.7	4,351	33.3	12.1
Public Administration (M)	767	7.0	879	6.7	-4.3
Total Employment (M)	11,001	100.0	13,086	100.0	0.0

Source: Calculations by author based upon Statistics Canada, Cat. Nos. 71-529 and 71-201

Mismatching

Structural unemployment, as a result of mismatching, occurs when a high vacancy rate is observed simultaneously with a high unemployment rate.[22] This can be observed from the graph below for part of the period. It can be seen that mismatching did occur in the 1970s up until the late 1980s. However, since then unemployment has returned to its "normal" pattern and has not been affected by structural unemployment (Seccareccia [1995]). The unemployment - vacancy relationship for the late 1980s to mid-1990s exhibits high unemployment low vacancy rates. This is what one would expect to observe in the absence of mismatching. In other words

---

21 It should be noted that the 1989 numbers incorporate changes made to the Labour Force Survey made by Statistics Canada. The results may be slightly exaggerated.

22 Complete mismatch between job vacancies and unemployed workers occurs when the number of job vacancies is equal to the number of unemployed workers (CLMPC [1988]).

structural factors have little impact upon the unemployment rate from the late 1980s to the mid-1990s. Seccareccia [1995] argues that it may very well be the severity of the recessions themselves and the persistence of high unemployment that cause the increase in the duration of unemployment.

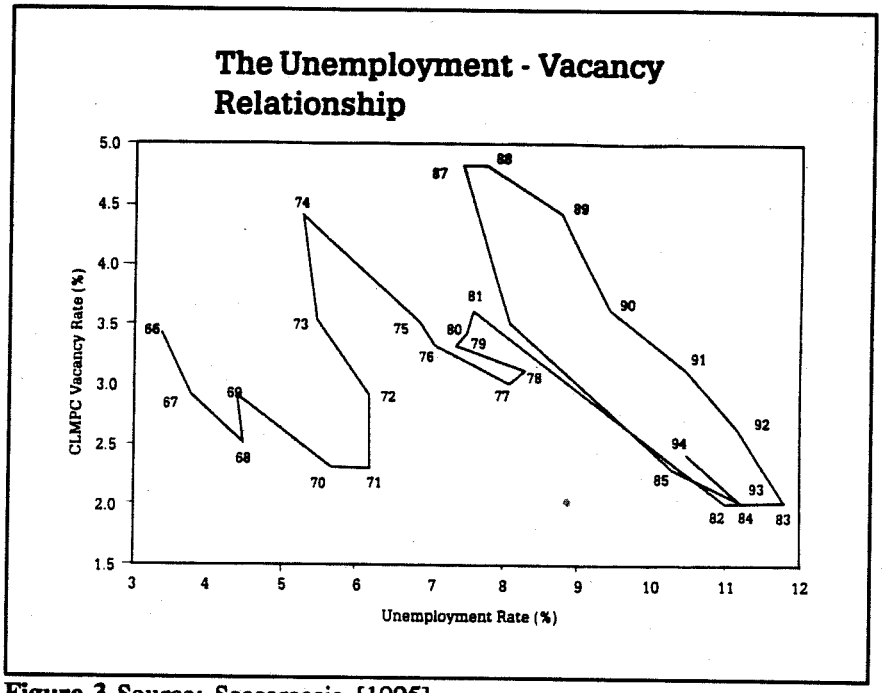

Figure 3 Source: Seccareccia [1995]

From the discussion above it seems that structural unemployment did play a role in keeping Canada's unemployment rates high but the impact of structural unemployment has weakened in Canada's recent experience with unemployment. In the next section of the chapter the evidence relating to hysteresis is discussed.

Evidence On Hysteresis

This section of the chapter focuses upon the evidence related to hysteresis. It shows how duration of unemployment has changed in Canada from 1981 to 1989 and examines some empirical evidence related to hysteresis.

The Impact of Duration of Unemployment

In the previous chapter it was discussed how an increasing duration of unemployment could have an impact upon the persistence of unemployment. The persistence of unemployment is caused by the skills deterioration, and the declining search intensity on the part of the worker, as well as, the results of the insider - outsider wage bargaining.

The change in composition of employment by educational attainment was demonstrated earlier in this chapter. It is clear that unemployed workers are likely to experience a deterioration in their skills as a result of the changing skills requirements. Incidence of long term unemployment is also shown to be increasing.

Table 4 shows the change in the incidence of long term unemployment. A comparison is made of peak to peak employment periods 1981 and 1989. Long term unemployment[23] has increased by over 53 per cent. In 1981, long term unemployed workers represented 4.3 per cent of total unemployed workers, by 1989 long term unemployed workers as a proportion of total unemployed workers reached 6.6 per cent.[24] By the end of 1994, it reached a level of 14.8 per cent.[25]

---

23 Long term unemployment is defined as unemployment greater than 52 weeks.

24 This was considered historically high by Rahman and Gera [1991].

25 For a more detailed look at the incidence of duration of unemployment see Table A-10 in Appendix. For changes in duration of unemployment by age group see Tables A-5 to A-7.

Table 4

Changes in Average Duration of Unemployment, Canada, 1981 and 1989

	1981	% of Tot unemp	1989[26]	% of Tot unemp	% Chge
No. of people unemployed for:					
4 weeks	297	33.1	330	31.0	-6.3
5-13 wks	265	29.5	294	27.6	-6.4
14-26 wks	164	18.3	197	18.5	1.1
27-52 wks	101	11.3	144	13.5	19.5
53 + wks	39	4.3	70	6.6	53.5
Total Employment (M):	898	100.0	1,065	100.0	0.0

Source: Calculations by author based upon Statistics Canada, Cat. Nos. 71-529

It would be expected that as long term unemployment increases there should be a corresponding decrease in the probability of exit from unemployment. Corak [1993], Rahman and Gera's [1991], and Budd et al [1987] studies on exit probabilities and duration of unemployment bear this out.[27] Budd et al [1987] found that duration of unemployment and exit probability from unemployment are inversely related. The longer the duration of unemployment the lower the exit probability.

Corak [1993] found that the exit rate from unemployment decreases for all age groups the longer the worker remained unemployed. This is shown in Table 5. He also found that the average completed duration[28] of unemployment has increased significantly for workers 45 years and older. Between 1983 and 1992, average completed duration increased to 26.2 weeks from 22.8

---

[26] It should be noted that the 1989 numbers incorporate changes made to the Labour Force Survey made by Statistics Canada. The results may be slightly exaggerated.

[27] Hughes and Hutchinson [1988] found that older workers faced bleaker re-employment prospects in Britain.

[28] It is important to note that Corak's average completed duration an extrapolation from Statistics Canada data. Statistics Canada published an average duration figure which show average duration in progress. The paper uses average duration in progress unless specified.

weeks for workers 45 years old and older. This was a 15 per cent increase. Workers 25 - 44 years old remained relatively constant at 21 weeks, while youth (15 -24 years old) actually experienced shorter duration in 1992 than in 1983, 14.8 weeks from 17.7, respectively (Corak [1993:4.8]).

Table 5 **Monthly Exit Rate From Unemployment, Canada, Selected Years**

	1980	1983	1989	1992	% Change
1st month	0.39	0.33	0.41	0.33	0.00
2nd month	0.32	0.22	0.33	0.27	22.73
3rd month	0.34	0.28	0.30	0.26	-7.14
4th to 6th	0.27	0.21	0.22	0.20	-4.76
7th to 12th	0.20	0.16	0.21	0.14	-12.50
13th to 14th	0.13	0.09	0.10	0.08	-11.11
Ave Duration (wks)	14.1	19.5	14.8	19.6	0.51

Source: Corak [1993:4.5]

What is occurring in the Canadian economy is that the proportion of long term unemployment is increasing over time and that as expected the related exit rate from unemployment is decreasing. The next section of the chapter reviews the empirical evidence relating to hysteresis.

Empirical Studies

In this section of the chapter the empirical evidence with respect to hysteresis is examined. The information is drawn primarily from three studies, Fortin [1993], Preston et al [1992], and Jaeger and Parkinson [1994].

Fortin [1993] shows that Canada's policy to fight inflation through the use of demand side shocks (ie. manifested as a recession) is not in the best interests of Canada's unemployed because of the existence of hysteresis in Canada. He begins by describing a theory of the "determinants of inflation" (Fortin [1993:7], $I^d = -a(U - U_n) + S$. This equation states that the annual rate of growth for inflation, I^d (I^d = change in I) is a function of demand and supply, "a" reflects the demand pressure. When a is positive inflation will decline by the difference between the actual rate, U, from the natural rate, U_n. From the equation, one can see that the "unemployment gap" varies negatively with the demand pressure (Fortin [1993]).

Fortin found that the "a" value is 0.5 - a is the slope of the Phillips curve. With a = 0.5 Fortin calculated a "sacrifice ratio". The sacrifice ratio is how much national income is lost as a result of an inflation fighting policy. Fortin found that a one point inflation reduction results in a sacrifice ratio of 5. This means that 5 per cent of national income would be lost. Under a natural rate scenario, the national income sacrifice would be only temporary. Once the threat of inflation has disappeared, unemployment would return to its natural level and GDP would return to its trend before the inflation fighting policy was implemented.

What would happen if inflation was beaten but unemployment did not return to its natural level and was in fact dependent upon the actual rate of previous periods. What would this look like?

Using Fortin's model above, $U_n = U_{-1}$, then $U - U_n = U - U_{-1} = U^d$. Demand pressure in the Phillip's curve relationship is now represented by a change in the annual unemployment rate and no longer represented by the difference between the actual rate and the natural rate. The Phillips curve now takes the form of $I^d = -AU^d + S$. This has very meaningful implications, (i) once

the inflation fighting policy of increasing unemployment to reduce inflation has been pursued unemployment "can no longer return to its initial level without rekindling inflation" (Fortin [1988:10]). This is the effect of having negative U^d. What this means is that a permanent reduction in unemployment can only be achieved at the expense of a permanent increase in inflation. If the objective is to permanently reduce unemployment this can be achieved by a finite but nevertheless permanent increase in the inflation rate.

Fortin combined the zero inflation objective with the pure hysteresis scenario. The result is $U = U_{-1} + S/a$. "Depending on how quickly the zero inflation target is established and maintained unemployment would essentially follow a 'random walk' driven by the history of supply-side influence. This is similar to the result found by Blanchard and Summers [1987] for the pure hysteresis scenario.

What would happen if the pure hysteresis scenario was varied so that the natural rate would follow the actual rate albeit temporarily?

Fortin postulated that the natural rate would then look as follows: $U_n = (1 - h)U_e + hU_{-1}$. The natural rate is a function of a weighted average of a short term equilibrium rate, U_e, plus the actual unemployment rate of previous periods.

If $h = 0$ then there is no hysteresis. The natural rate is unaffected by the unemployment rate of previous periods and is at the short run equilibrium rate. As h moves towards 1 the influence from past periods increases. If $h = 1$ then the pure hysteresis scenario exists. The natural rate is completely path dependent on the previous period's unemployment rate.

If the natural rate equation above is substituted into the original Phillips curve equation, $I^d = -a(U - U_n) + S$, then this yields: $I^d = -a[(1-h)(U-U_e)+hU^d]+ S$. The equation shows that hysteresis plays a crucial role in determining the costs of unemployment. A temporary rise in the unemployment cannot bring down inflation. Fortin conducts a least squares regression on the above equation to determine the value of h. Fortin found that the degree of persistence

determined by the regression is quite high. The hypothesis h = 0 is rejected for Canada and Fortin cannot reject the hypothesis h = 1[29].

Preston et al [1992] in their analysis of the Canadian economy also focused upon the costs of combatting inflation through increasing the output gap. If, as is conventionally believed, the natural rate is only subject to fluctuations caused by structural change then there would be no permanent effects to combatting inflation by causing unemployment. The long run benefits of a lower inflation rate would outweigh the short run costs. However if there are long run consequences to pursuing this type of inflation reduction policy then the costs of combatting inflation through increased unemployment may be more costly than is currently believed.

Preston et al outline three levels of "problems" that could arise in relation to a permanent static equilibrium such as the natural rate of unemployment. The first level that Preston et at begins with is persistence.

At this level, when a demand shock drives the economy away from its equilibrium point, it take several years for the economy to return to its equilibrium point. They estimate five to ten years.

The second level is referred to as pseudo-hysteresis. Under this scenario, the return back to the equilibrium level can take approximately thirty years. The difference between the two levels appears to be only the length of time required to return to the original level.

The third level is pure hysteresis. In this scenario, once the demand shock has occurred and dissipated the economy never returns to its original equilibrium. This scenario is the random walk scenario in which all points may be equilibrium points.

---

[29] The results of the regression are reproduced in Table A-11 of the Appendix.

In their analysis, Preston et al found a significant degree of pseudo-hysteresis within the Canadian economy. If one applies the thirty year approximation to this finding, it could be argued that given the length of time it takes to return to the equilibrium point there may be a degree of hysteresis at play here.

Preston et al also observed another interesting result in their analysis. They found that the unemployment experience of a particular generation was related to the previous unemployment experience of the same generation [1992:4]. This has very significant implications for workers in the Canadian economy, especially youth workers.

If a generation of workers is scarred by long term unemployment upon entering the workforce then according to Preston et al there is a significant likelihood that they will be affected throughout their working lives. It also means that if the youth unemployment rate is allowed to drift upwards then it is likely to have impact upon unemployment rates for all generations.

While Table A-5 in the Appendix shows that the incidence of long term youth unemployment has in fact decreased from 1981 to 1989, it does not mean that there is a serious consequence to allowing youth unemployment to drift upward.

Preston et al argue that their finding of generational dependence upon previous unemployment experiences give "support for labour market policies directed at training, solid educational achievement prior to labour force entry" [1992:4]. Fortin and Preston both found that it is important to find another means of fighting inflation other than increasing unemployment.

Jaeger and Parkinson [1994] attempted to determine to what extent hysteresis played in determining the course of unemployment for four countries, Canada, Germany, United Kingdom and the United States. They ran a model using seasonally adjusted quarterly data.

Jaeger and Parkinson found that there is a great deal of hysteresis for Canada, Germany, and U.K. and that an increase in the cyclical rate by 1 percent leads to a permanent increase of 0.20 per cent in the actual unemployment rate. Therefore, extended periods of high or low cyclical unemployment will lead to substantial changes in the natural rate (Jaeger and Parkinson [1994: 337]).

They also found that the hysteresis test rejects the null hypothesis, alpha = 0 (no hysteresis) at a significance level of 1 per cent for Canada, Germany, and the U.K. For the U.S., Jaeger and Parkinson found that the hysteresis test was statistically insignificant at the 10 per cent level. The United States, therefore, according to Jaeger and Parkinson, did not exhibit a significant degree of hysteresis. Fortin [1993] also concluded, as discussed earlier, that Canada displayed a significant degree of hysteresis. However, he found that the U.S. also displayed a significant degree of hysteresis.

The next chapter provides concluding remarks and examines various policy options available.

IV. Concluding Remarks and Policy Options

This paper began by asking the fundamental question of how could Canada's persistence of unemployment be explained? Is the persistence of unemployment a result of structural unemployment as suggested by the federal Government or is it a result of hysteresis. The paper then examined the underlying theories, concepts, and causes of structural unemployment and hysteresis. Armed with a basic grasp of the two possibilities the evidence related to the two possibilities were examined in the previous chapter, chapter 3.

In summary, the previous chapter began with a review of some of the evidence related to structural unemployment. It was shown how the skill requirements had changed from the early eighties to the late eighties. The change in the industrial structure was also shown. Both of these indicators would lead to the conclusion that structural unemployment was a factor in the persistence of high unemployment rates in Canada at least up until the late 1980s. When one examines the unemployment - vacancy relationship, presented earlier in the chapter, it is clear from the pattern that structural unemployment is less of a factor in the persistence of high unemployment in Canada. The more recent experience, post 1980s does not appear to be caused by structural unemployment.

The evidence related to the possibility that hysteresis is responsible for the persistence of high unemployment in Canada is examined. The first part of that section examines duration of unemployment and its impact upon unemployed workers. It is shown that the incidence of duration of unemployment has increased dramatically from the beginning of the eighties to the end of the eighties. Table 4 shows how duration of unemployment changed between 1981 and 1989. Long term unemployment increased from 4.3 per cent in 1981 to 6.6 per cent in 1989. This is an increase of long term unemployment by approximately 35 percent. The comparison in Table 4 shows the change peak to peak, by the end of 1994 14.8 per cent of total unemployed workers were long term unemployed. It will be interesting to see how the long term unemployment trend develops in the future.

The possibility, therefore, exists that hysteresis being generated in the Canadian economy as a result of duration of unemployment. In the previous chapter it was demonstrated that increasing duration of unemployment can lead to skill deterioration and declining search intensity on the part of the worker.

The discussion of hysteresis moves on to focus on some empirical studies done to determine the extent of hysteresis on the economy. In the three studies discussed it is concluded that the null hypothesis, no hysteresis in the Canadian economy, has been rejected. One of the studies showed that the null hypothesis was rejected at the 1 per cent significance level.

From this it is concluded that while structural unemployment may be a factor in the explanation of Canada's unemployment experience, it appears that there is a significant degree of hysteresis within the Canadian economy. Qualitatively it is argued that the hysteresis exhibited was a result of the type of insider - outsider wage bargaining hypothesis and a result of the impacts of increasing long term unemployment upon unemployed workers.

Policy Options

If the hysteresis is accepted as a plausible reason for Canada's experience of persistently high unemployment rates and the previous chapter attempted to establish that, then it is important to discuss what options are available to reduce the amount of hysteresis in the Canadian economy and to assist those who have become victims of persistent involuntary unemployment.

Blanchard and Summers [1993] argue that hysteresis theories result in different policy options than more currently accepted theories. This does appear to be the case. The implication that they found using a hysteresis model was that policies which decrease the actual rate of unemployment would also decrease the equilibrium rate of unemployment. This is intuitively true since by definition the equilibrium rate is path-dependent upon the actual rate.

The interesting argument that Blanchard and Summers (1987) make is that for these policies to be successful in reducing the actual and therefore the equilibrium rates of unemployment, policy makers must address the issue of long term unemployed workers. They argue that the long term unemployed workers must be "re-enfranchised". Corak [1993] argued that long term unemployed workers suffered from "battered worker syndrome". In other words, once they were trapped as long term unemployed they would find it near impossible to break out. It was demonstrated earlier how insider effects worked to cause persistent involuntary unemployment for outsiders and more particularly long term unemployed outsiders.

Lowering the turnover costs faced by firms would give them more bargaining power to bring in outsiders. This can also be accomplished through making outsiders more attractive by government subsidized training programs. The training programs will act to ensure that the skills set of long term unemployed workers do not deteriorate.

Layard and Bean [1989] also favoured measures which would re-integrate workers into the labour force, especially long term unemployed workers.

According to Davidson [1990], legislation should be changed to make it easier to fire workers[30]. He argues that it should result in lower wages, increase employment and production. It is difficult to see how it would increase employment. It is likely to impact upon wages such that insiders would not be able to push their wages higher and may accept lower wages in order to keep jobs.

It appears that the consensus among authors is that if hysteresis exists it can have devastating impact upon unemployed workers, from scarring upon workforce entry and the resulting affects upon generations as they move through their working lives to more sociological impacts like acceptance of a lower standard of living because skill deterioration and declining search intensity. The other consensus appears to be that it is of vital importance that long term unemployed workers are re-enfranchised within the labour force and a mechanism is available from them to maintain their "attractiveness" as potential employees so that they do not get caught in the trap of long term unemployment and so that there is a future available for them.

---

30 This course of action is likely to encounter many hurdles. The current Ontario government is proposing to rescind labour legislation brought in by the previous NDP government. The attempt to repeal "Bill 40" is likely to result in labour unrest in Ontario.

Appendix

Table A-1

Economic Indicators, Canada, 1976-1994

	Unemployment	CPI[31] Inflation	HWI[32]	GDP[33]
1976	6.2	7.5	--	6.0
1977	7.0	8.0	--	3.2
1978	7.2	9.0	--	3.1
1979	6.5	9.1	--	3.9
1980	6.9	10.2	--	1.8
1981	6.6	12.4	148	4.0
1982	9.7	10.9	77	-3.7
1983	10.4	5.7	78	3.2
1984	9.0	4.4	103	6.0
1985	8.1	3.9	128	4.7
1986	7.0	4.2	152	3.1
1987	6.1	4.4	191	4.4
1988	5.0	4.0	209	4.5
1989	5.1	5.0	208	2.5
1990	6.3	4.8	154	-0.3
1991	9.6	5.6	100	-1.8
1992	10.9	1.5	86	0.7
1993	10.6	1.8	87	2.6
1994	9.6	0.2	--	4.2

---

31 Consumer Price Index

32 Help Wanted Index

33 Gross Domestic Product

Table A-2

Labour Force Indicators, Canada, 1980 - 1994

	1980	1981	1982	1983	1984	1985	1986	1987
Labour Force	11,983	12,332	12,398	12,610	12,853	13,123	13,378	13,631
Labour Force Growth		2.9	0.5	1.7	1.9	2.1	1.9	1.9
Employment	11,082	11,398	11,035	11,106	11,402	11,742	12,095	12,422
Employment Growth		2.9	-3.2	0.6	2.7	3.0	3.0	2.7
Unemployment	900	934	1,363	1,504	1,450	1,381	1,283	1,208
Unemployment Rate	7.5	7.6	11.0	11.9	11.3	10.5	9.6	8.9
Real GDP Growth	1.8	4.0	-3.7	3.2	6.0	4.7	3.1	4.4

Source: Calculations by author based upon Statistics Canada, Cat. No. 71-001

Table A-2 (cont.) **Labour Force Indicators, Canada, 1980 - 1994**

	1988	1989	1990	1991	1992	1993	1994
Labour Force	13,900	14,151	14,329	14,408	14,482	14,663	14,832
Labour Force Growth	2.0	1.8	1.3	0.6	0.5	1.3	1.2
Employment	12,819	13,086	13,165	12,916	12,842	13,015	13,292
Employment Growth	3.2	2.1	0.6	-1.9	-0.6	1.4	2.1
Unemployment	1,082	1,065	1,164	1,492	1,640	1,649	1,541
Unemployment Rate	7.8	7.5	8.1	10.4	11.3	11.2	10.4
Real GDP Growth	4.5	2.5	-0.3	-1.8	0.7	2.6	4.2

Source: Calculations by author based upon Statistics Canada, Cat. No. 71-001

Table A-3

Employment By Industry, 1980 - 1994

	Agri	Oth. Prim	Mfg.	Const	Trans.	Trade	Fin.	Service	Pub. Admin	Total
1980	479	300	2,111	624	906	1,837	611	3,096	744	10,708
1981	488	321	2,124	551	911	1,884	594	3,262	767	11,001
1982	465	267	1,928	595	882	1,843	601	3,273	765	10,618
1983	480	277	1,879	562	865	1,839	601	3,395	778	10,675
1984	480	285	1,954	564	852	1,916	633	3,458	791	10,932
1985	475	289	1,960	679	876	1,985	629	3,630	798	11,221
1986	467	285	1,989	618	891	2,064	657	3,765	796	11,531
1987	461	284	2,018	673	899	2,097	698	3,918	813	11,861
1988	444	294	2,104	726	904	2,168	728	4,062	812	12,245
1989[34]	438	304	2,235	809	1008	2,293	769	4,351	879	13,086
1990	441	298	2,105	824	995	2,356	790	4,487	869	13,165
1991	457	295	1,956	732	961	2,276	794	4,572	873	12,916
1992	437	267	1,879	717	971	2,267	804	4,621	879	12,842
1993	450	260	1,893	694	961	2,253	810	4,790	903	13,015
1994	425	277	1,949	750	978	2,314	788	4,932	877	13,292

[34] Figures for 1989 and beyond reflect changes made to the Labour Force Survey by Statistics Canada.

Table A-4 **Average Duration By Age, Canada, 1989 - 1994**

	1989	1990	1991	1992	1993	1994	Chge[35]
15 - 24 yrs old	11.2	11.9	14.2	15.8	17.1	17.3	54.5
24 - 44 yrs old	19.0	17.5	20.1	24.0	26.2	27.1	42.6
45 + yrs old	25.4	22.8	24.8	28.4	32.4	32.5	28.0
Ave Duration (wks)	17.8	16.8	19.3	22.6	25.1	25.7	44.4

Source: Calculations by author based upon Statistics Canada data, Cat. No. 71-529

Table A-5

Changes in Duration of Unemployment, Canada, 1981 and 1989
15 - 24 years old

	1981	% of Tot Emp	1989[36]	% of Tot Emp	% Chge
4 weeks	148	36.4	131	41.3	13.5
5-13 wks	128	31.5	98	30.9	-1.9
14-26 wks	69	17.0	48	15.1	-11.2
27-52 wks	38	9.3	26	8.2	-11.8
53 + wks	12	3.0	6	1.9	-36.7
Total	407	100.0	317	100.0	0.0

Source: Calculations by author based upon Statistics Canada, Cat. Nos. 71-529

---

35 This column shows the total percentage change to 1994 from 1989. Average Annual change of course can be found by dividing by the number of years.

36 It should be noted that the 1989 numbers incorporate changes made to the Labour Force Survey made by Statistics Canada. The results may be slightly exaggerated.

Table A-6

Changes in Duration of Unemployment, Canada, 1981 and 1989
25 - 44 years old

	1981	% of Tot Emp	1989[37]	% of Tot Emp	% Chge
4 weeks	111	31.5	153	27.6	-12.4
5-13 wks	102	29.0	149	26.9	-7.2
14-26 wks	67	19.0	114	20.5	7.9
27-52 wks	42	11.9	85	15.3	28.6
53 + wks	17	4.8	37	6.7	39.6
Total	352	100.0	555	100.0	0.0

Source: Calculations by author based upon Statistics Canada, Cat. Nos. 71-529

Table A-7

Changes in Duration of Unemployment, Canada, 1981 and 1989
45 + years old

	1981	% of Tot Emp	1989[38]	% of Tot Emp	% Chge
4 weeks	38	27.5	45	23.3	-15.3
5-13 wks	36	26.1	47	24.4	-6.5
14-26 wks	28	20.3	35	18.1	-10.8
27-52 wks	21	15.2	33	17.1	12.5
53 + wks	10	7.3	26	13.5	84.9
Total	138	100.0	193	100.0	0.0

Source: Calculations by author based upon Statistics Canada, Cat. Nos. 71-529

---

37 It should be noted that the 1989 numbers incorporate changes made to the Labour Force Survey made by Statistics Canada. The results may be slightly exaggerated.

38 It should be noted that the 1989 numbers incorporate changes made to the Labour Force Survey made by Statistics Canada. The results may be slightly exaggerated.

Table A-8

Age Structure of total unemployed and long term unemployed,
Per cent of Total Unemployed and Long Term Unemployed

	1989	1990	1991	1992	1993	1994	Change[39]
15-24 yrs old	29.8	29.7	28.6	27.7	26.8	26.7	-10.4
25-44 yrs old	52.1	52.2	52.5	52.3	52.0	51.6	-1.0
45 + yrs old	18.1	17.0	18.8	19.9	21.1	21.7	19.9
Long Term Unemployed (53 weeks +)							
15-24 yrs old	8.6	10.9	14.0	13.3	12.8	10.1	17.4
25-44 yrs old	52.9	51.6	54.2	57.5	54.6	55.3	4.5
45 + yrs old	37.1	37.5	31.8	28.7	33.0	32.0	-13.8

[39] ibid

Table A-9

Unemployment Rates by Educational Attainment, Canada, 1980 - 1994

	1980	1981	1982	1983	1984	1985	1986	1987
0 - 8 years		9.1	13.3	13.4	13.4	13.0	12.1	12.1
9 - 13 years		8.7	12.7	13.8	13.0	12.3	11.3	10.5
Some Post Sec		6.7	10.0	11.7	11.1	9.5	8.8	8.1
Post Sec Certificate or Diploma		4.9	7.5	8.9	8.3	7.5	6.5	6.0
University Degree		3.2	4.9	5.2	5.3	4.9	4.6	4.2
Total		7.5	11.0	11.8	11.2	10.5	9.5	8.8
	1988	**1989[40]**	**1990**	**1991**	**1992**	**1993**	**1994**	--
0 - 8 years	10.6	11.1	12.6	15.4	16.1	16.7	15.7	--
9 - 13 years[41]	9.1	8.9	12.2	15.4	17.6	17.0	16.4	--
Graduated high school	--	--	7.7	10.3	10.9	11.4	10.0	--
Some Post Sec	7.4	7.2	8.0	10.2	11.4	11.6	10.8	--
Post Sec Certificate or Diploma	5.5	5.2	6.3	8.2	9.4	9.5	8.9	--
University Degree	4.0	3.7	3.7	4.9	5.5	5.7	5.4	--
Total		7.5	8.1	10.4	11.3	11.2	10.4	--

Source: Statistics Canada, Cat. No. 1-529, 1981-1988 and 1989-1994

[40] Numbers reflect changes made to labour force survey effective January 1, 1995 with revisions made to historical data back to 1989.

[41] As of 1990 the unemployment rate reflects "Some secondary education".

ble A-10 **Unemployment Rate and Incidence of Duration of Unemployment**

	1980	1981	1982	1983	1984	1985	1986	1987
Unemployment Rate								
Incidence[42] (%):								
4 weeks		33.1	27.1	23.0	25.8	26.2	28.1	27.9
5-13 wks		29.5	29.5	25.9	26.2	26.2	26.7	26.8
14-26 wks		18.3	21.4	21.1	20.0	19.8	19.4	19.4
27-52 wks		11.3	14.7	18.4	16.2	15.6	14.7	14.3
53 + wks		4.3	5.1	9.6	9.9	10.1	8.8	9.2
Ave. Duration (wks)		15.1	17.3	21.8	21.6	21.7	20.3	20.5

	1988	1989	1990	1991	1992	1993	1994	--
Unemployment Rate		7.5	8.1	10.4	11.3	11.2	10.4	--
Incidence (%):								
4 weeks	30.4	30.9	31.0	26.2	24.5	23.4	24.0	--
5-13 wks	27.3	27.6	28.7	27.7	25.5	24.6	24.7	--
14-26 wks	19.5	18.5	19.5	21.1	20.4	19.5	18.9	--
27-52 wks	13.1	13.5	12.8	16.1	17.1	17.0	15.4	--
53 + wks	7.1	6.6	5.4	7.2	11.0	13.8	14.8	--
Ave. Duration (wks)	18.3	17.8	16.8	19.3	22.6	25.1	25.7	--

[42] Totals do add up to 100 because the "other" category has be omitted from the calculations.

ble A-11

Estimated equations for annual change in CPI inflation (excluding food and energy): Canada 1973 - 1990

	Canada, 1973 - 1990
Right Hand Variable	
Constant	0.677
	(0.370)
Unemployment rate, current level	-0.098
	(0.058)
Unemployment rate, one year lagged change	-0.322
	(0.089)
Unemployment rate, two year lagged change	-0.303
	(0.080)
Real food-energy prices, one year lagged change	0.100
	(0.015)
Real import prices, current change	0.085
	(0.022)
Indirect tax rate, current change	0.254
	(0.064)
Wage-price controls, current level	-1.326
	(0.229)
Summary Statistics	
Adjusted R^2	0.98
Standard error of regression	0.24
Durbin-Watson statistic	2.60
Degree of hysteresis	0.77
	(0.13)

Source: Fortin [1993:12]

Bibliography

Adams, C. [1988] "Hysteresis Effects and Unemployment." In R. Cross, ed., Unemployment, Hysteresis and the Natural Rate Hypothesis: Proceedings of a Conference Held at the University of St. Andrews (New York: Basil Blackwell)

Akerlof, G. [1986] "Labor Contracts as Partial Gift Exchange." In Akerlof, G. and Yellen, J. Efficiency Wage Models of the Labor Market (Cambridge University Press, Cambridge)

Akerlof, G. and Yellen, J. [1986] Efficiency Wage Models of the Labor Market (Cambridge University Press, Cambridge)

Bentolila, S. and Blanchard, O. [1990] "Spanish Unemployment." Economic Policy 5(1), 234-281

Blanchard, O. [1991] "Wage Bargaining and Unemployment Persistence" Journal of Money Credit and Banking 23(3), 277-292

Blanchard, O. and Summers, L. [1987] "Hysteresis In Unemployment." European Economic Review 31, 288-295

_____ [1988] "Hysteresis and the European Unemployment Problem." In R. Cross, ed., Unemployment, Hysteresis and the Natural Rate Hypothesis: Proceedings of a Conference Held at the University of St. Andrews (New York: Basil Blackwell)

Budd, A., Levine, P., and Smith, P. [1987] "Long Term Unemployment and the Shifting U-V Curve: A Multi-Country Study." European Economic Review 31, 296-305

Burns, A. [1991] "The Natural Rate of Unemployment: Canada and the Provinces." In S. Gera, ed., Canadian Unemployment: Lessons from the 80s and Challenges for the 90s (Ottawa: Supply and Services Canada)

CLMPC [1988] "The Nature of Current Unemployment: Evidence from Job Vacancy Information." Quarterly Labour Market and Productivity Review Spring, 31-36

Corak, M. [1991] "Unemployment Comes of Age: The Demographics of Labour Sector Adjustment in Canada." In S. Gera, ed., Canadian Unemployment: Lessons from the 80s and Challenges for the 90s (Ottawa: Supply and Services Canada)

_____ [1993] "The Duration of Unemployment During Boom and Bust." Canadian Economic Observer September, 4.1 - 4.20, Statistics Canada, Catalogue Number 11-010

Creigh, S. [1988] "Characteristics of the Long Term Unemployed: Evidence from the Labour Force Survey." In R. Cross, ed., Unemployment Hysteresis and the Natural Rate Hypothesis (New York: Basil Blackwell)

Davidson, C. [1990] Recent Development in the Theory of Involuntary Unemployment (Kalamazoo, Michigan: W.E. Upjohn Institute for Employment Research)

Finance, Ministry of [1994] A New Framework for Economic Policy (Ottawa: Ministry of Finance Canada)

Fortin, P. [1993] "The Unbearable Lightness of Zero-Inflation Optimism." Canadian Business Economics Spring, 3-11

Gera, S. and Grenier, G. [1991] "Interindustry Wage Differentials in Canada: Evidence and Implications." In S. Gera, ed., Canadian Unemployment: Lessons from the 80s and Challenges for the 90s (Ottawa: Supply and Services Canada)

Gera, S., Rahman, S.S., and Arcand, J. [1991] " Unemployment and Job Vacancies: Matching People and Jobs." In S. Gera, ed., Canadian Unemployment: Lessons from the 80s and Challenges for the 90s (Ottawa: Supply and Services Canada)

Hasan, A. and de Broucker, P. [1985] Unemployment, Employment, and Non-Participation in Canadian Labour Market (Ottawa: Supply and Services Canada)

Hughes, P. and Hutchinson, G. [1988] " Unemployment Irreversibility and the Long Term Unemployed." In R. Cross, ed., Unemployment Hysteresis and the Natural Rate Hypothesis (New York: Basil Blackwell)

Jaeger, A. and Parkinson, M. [1994] "Some evidence on hysteresis in unemployment rates." European Economic Review 38, 329-342

Layard, R. and Bean, C. [1989] "Why Does Unemployment Persist?" Scandinavian Journal Of Economics 91(2), 371-396

Leibenstein, H. [1986] "The Theory of Underemployment in Densely Populated Backward Areas." In Akerlof, G. and Yellen, J. Efficiency Wage Models of the Labor Market (Cambridge University Press, Cambridge)

Lindbeck, A. and Snower, D. [1987a] "Union Activity, Unemployment Persistence and Wage - Employment Ratchets." European Economic Review 31(1/2), 157-167

_____ [1987b] "Efficiency Wages Versus Insider and Outsiders." European Economic Review 31 (1/2), 407-416

_____ [1988a] The Insider-Outsider Theory of Employment and Unemployment (Cambridge, Massachusetts: The MIT Press)

_____ [1988b] "Union Activity, Unemployment Persistence and Wage - Employment Ratchets." In R. Cross, ed., Unemployment, Hysteresis and the Natural Rate Hypothesis: Proceedings of a Conference Held at the University of St. Andrews (New York: Basil Blackwell)

McGregor, P. [1988] "Hysteresis and Unemployment Policy: The Case for Activism." In R. Cross, ed., Unemployment, Hysteresis and the Natural Rate Hypothesis: Proceedings of a Conference Held at the University of St. Andrews (New York: Basil Blackwell)

Miller, M. [1988] "Hysteresis in Output and Employment: A Comment." In R. Cross, ed., Unemployment, Hysteresis and the Natural Rate Hypothesis: Proceedings of a Conference Held at the University of St. Andrews (New York: Basil Blackwell)

Phelps, E. [1972] Inflation and Unemployment Theory: The Cost Benefit Approach to Monetary Planning (Toronto: Macmillan)

Poloz, S. [1994] "The Causes of Unemployment in Canada: A Review of the Evidence." University of Toronto, Institute For Policy Analysis, Policy and Economic Program (PEAP), Policy Study 94-5

Preston, R.S., Saiyed, H., and Burns, A. [1992] "The Natural Rate, Scarring, Persistence, and Hysteresis." Economic Council of Canada, Working Paper No. 44

Rahman, S.S. and Gera, S. [1991] "Long-Term Unemployment in Canada: Its Causes and Policy Implications." In S. Gera, ed., Canadian Unemployment: Lessons from the 80s and Challenges for the 90s (Ottawa: Supply and Services Canada)

Rose, D. [1988] "The NAIRU In Canada: Concepts, Determinants and Estimates" Bank Of Canada, Technical Report No. 50

Seccareccia, M. [1995] "The Case Against A Two-Tier Benefits System For Canada's Unemployed." Canadian Business Economics Spring, 53-61

Shapiro, C. and Stiglitz, J. [1986] "Equilibrium Unemployment as a Worker Discipline Device." In Akerlof, G. and Yellen, J. Efficiency Wage Models of the Labor Market (Cambridge University Press, Cambridge)

Solow, R. [1985] "Insiders and Outsiders in Wage Determination." Scandinavian Journal of Economics 87(2), 411-428

Statistics Canada, Labour Force Survey, Catalogue Number 62-001

Statistics Canada, Inflation, Catalogue No. 71-001

Statistics Canada, Annual Averages, Catalogue No. 71-529

Stanton, D. [1988] "Hysteresis: Some Policy Implications." In R. Cross, ed., Unemployment, Hysteresis and the Natural Rate Hypothesis: Proceedings of a Conference Held at the University of St. Andrews (New York: Basil Blackwell)