

**RESTORING FULL EMPLOYMENT:THE NATURAL RATE OF INFLATION
VERSUS THE NATURAL RATE OF UNEMPLOYMENT**

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Paper presented to the Conference on *Social Policy as if People Matter*, Adelphi
University , Garden City , New York, Nov.12, 2004.

INTRODUCTION: THE DEATH OF INFLATION AND THE RISE OF UNEMPLOYMENT

For the past thirty years ever since the embrace by the central banks and the financial markets of Milton Friedman's counter-revolution in macro-economic theory unemployment has averaged above 7 % in Canada and above 5 % in the United States. Because of this many neo-classical economists who accept the doctrine of the **natural rate of unemployment** argue that the natural rate lies between 7 and 8 % for Canada and 5 to 6 % for the United States. The natural rate argument turns on the notion that any rate of unemployment below this rate is unstable and will cause inflation to accelerate upwards eventually forcing unemployment up as well. I will deal at length with this argument below.

For the time being simply note that most other people who are not pure neo-classical economists (for example: Keynesians, post Keynesians, institutionalists and other heterodox economists as well as the general population) consider these rates of unemployment far too high, imposing far too much hardship, poverty and loss of potential output and income to be acceptable as a backdrop to *a social policy as if people mattered*.

The Nobel prize winning economist, James Tobin argued in 1988 that it was difficult to believe that the natural rate of unemployment could have risen to the level that monetarists argued it had, particularly in Europe.

Why should economies that grew rapidly for twenty or thirty years with 2 or 3 % unemployment and low inflation suddenly have natural unemployment rates of 8, 9, or 10 per cent? What institutional or structural changes ... could have brought this about? (James Tobin, *Monetary Policies in the 1980s and beyond*, in *Full Employment and Growth: Further Keynesian Essays on Policy*, Cheltenham: Edward Elgar, 1997)

I think Tobin was correct. There are no adequate explanations of structural or institutional change that can possibly justify natural rates at these levels. In fact, in recent years all of the changes have moved in the opposite direction: a smaller proportion of the workforce that is unionized, less generous income replacement programs, fiercer

competition from low wage economies and easier mobility of capital due to increased globalization.

My favourite joke about the natural rate of unemployment is that **it is the rate of unemployment above which** the neo-classical monetarist and rational expectations economists would lose **their** own jobs.

The point is that the natural rate is a highly arbitrary rate about which there can be considerable disagreement. Even the inventor of the concept, Milton Friedman admitted in an interview with the *Wall Street Journal* in 1995 that "I don't know what the natural rate is...and neither does anyone else." (quoted in Amanda Bennett, "Business and Academia Clash over a Concept: 'Natural' Jobless Rate," *Wall Street Journal* (Jan. 24, 1995) A8. cited in R. Ehrenberg et al *modern labour economics: theory and public policy*, Toronto: Pearson Education, 2004, p.516.)

During the period 1990 to 2001 in the US the unemployment rate averaged 5.5 %. Since 2001 it rose above 6.0 % and stayed elevated above this level for a period of months. Its current rate of 5.5% according to Joseph Stiglitz, the Nobel prize winning economist underestimates the actual rate by as much as 3.5 percentage points because of the large number of discouraged workers. (*Full employment and Social Well Being in a Global Economy*, Keynote address, Adelphi University, *Social Policy as if People Matter*, Conference, Nov.11, 2004. It is quite revealing that when Alan Greenspan relaxed his tight monetary policy during the second term of the Clinton years between 1997 and 2001 unemployment fell to as low as 4.0 % without any triggering of a significant rise in inflation. The inflation rate peaked at 3.4% during this period.

Unfortunately in Canada monetary policy has been more dogmatic and the central bank governor unwilling to relax his grip on rates more aggressively than the US, even when the Canadian federal government was running large surpluses which began in 1997. These surpluses have amounted to over \$70 billion or close to 7 % of the Canadian GDP. For those years 1997-2001, the unemployment rate in the US averaged 4.5 %, while Canada was mired in unemployment that averaged 7.8 %.

Unemployment rates in the two countries have tended to follow each other closely over the past 60 years with rates tending to be higher in Canada over the past three decades. It is possible to break down the data into periods to get a better sense of trends. One such data set has been assembled and calculated for the years 1947 to 1984 by Peter Sinclair and is incorporated into Table one which partly extends the data set until 2004. The trend to increasing unemployment after the switch in policy regime from Keynesian to monetarist in both countries in the mid 1970s is clear.

It is also clear that prior to any adjustment for labour participation rates that Canada has performed worse on the unemployment front than the United States from

1969 on. Prior to that from 1930 to 1958 its unemployment performance was superior in all but two years. (See Appendix: Table one)

In fact from 1941 after having being sharply in excess of 10 %, unemployment in Canada fell to 4.4 % then to 1.4 % by 1944. For most of the period 1931 to 1940 unemployment was severe. The mean for this period was 13.1 %, the maximum 19.3 in 1933 and the minimum 9.1 in 1937. It remained below 5 % until 1958 when the first serious post-war recession pushed it above 5 %. It returned to below 5 % by 1964 and remained there until 1969 when it began its long upward rise.

The American experience during the depression years was also disasterous .(See Appendix Table one) Unemployment rose to a peak of 22.3 % in 1932 and remained above 15 % for five of the years from 1931 to 1939. The situation in Great Britain was somewhat better. After having experienced very high unemployment during the late 1920s unemployment reached 15.3 % by 1932 and averaged 10.9 %(maximum of 15.3 in 1932 and minimum of 5.8 in 1939) throughout the decade of the thirties.

TABLE ONE:
UNEMPLOYMENT CYCLES IN CANADA AND THE UNITED STATES
1945 -1984

US UNEMPLOYMENT					CANADA UNEMPLOYMENT				
Period	Mean	Maximum	Minimum	Relative to	Period	Mean	Max	Min	Rel.
				OECD average					OECD av.
1948-52	4.3	5.9	3.0	+1.2	1947-50	2.8	3.2	2.0	-0.8
1953-55	4.3	5.5	2.9	+0.8	1951-55	3.5	4.6	2.4	+0.3
1956-59	5.2	6.8	4.1	+4.7	1956-58	5.0	7.0	3.4	+1.3
1960-61	6.1	6.7	5.5	+3.5	1959-65	5.6	7.0	3.9	+2.8
1962-68	4.1	5.7	3.6	+1.4	1966-68	4.1	4.8	3.5	+1.6
1969-72	4.9	5.8	3.4	+1.7	1969-73	5.6	6.2	4.4	+2.4
1973-78	6.5	8.3	4.8	+1.9	1974-78	7.1	8.3	5.3	+2.3
1979-84	7.8	9.5	5.8	+0.8	1979-84	9.4	11.3	7.4	+2.4
1984- 87	7.0	7.5	6.2		1984-86	10.5	11.3	9.6	
1988-90	5.5	5.6	5.3		1987-90	8.0	8.1	7.8	
1991-1992	7.2	7.5	6.8		1991-94	10.8	11.4	10.3	
1993-1998	5.6	6.9	4.5		1995-98	9.1	9.6	8.3	

1999 -2002	4.3	4.8	4.0	1999-02	7.4	7.6	6.8
2003-2004	5.8	6.1	5.4	2003-04	7.4	7.6	7.1

Sources: US Department of Commerce; UN Monthly Bulletin of Statistics; ILO; OECD as cited in Table 1.10 in Peter Sinclair, *Unemployment: Economic Theory and Evidence*, Oxford&New York:Basil Blackwell, 1987); US Bureau of Labour Statistics and StatisticsCanada.; *Ontario Economic Outlook and Fiscal Review 2004*.

During the same period in Europe, for the Euro group which followed the strict monetarist guidelines of the European central bank and its stability pact the rate has averaged above 8 % . Britain, Switzerland, Norway, Sweden and Denmark remain currently outside of the system. As might be expected their unemployment rate is markedly lower. The rate for Britain, Sweden, Norway, Austria and Switzerland currently, for example, averages 5.0 %.(See table two below)

As a consequence of the last American recession that began in the year prior to 9/11, unemployment is still 5.5 % in the United States and remains 7.1 % in Canada. (See table two and table one in appendix for the data) In countries like France, Germany and Spain unemployment is 9.9 % and above.In Belgium it is over 13 % . Only Britain Austria,Switzerland and Japan currently have rates below 5 %.Over the period 1992 to 2004 unemployment in France has averaged 11.7 % . For the same period for Germany unemployment has averaged 7.9 %, Italy 10.6%. For Japan however the rate has averaged 3.5% and for the UK 7.3 %.

While the current British rate is superior performance to Europe and Canada and a major improvement over its performance in the first half of the 1990s it is still a marked decline from what it managed in the years after the war. It is important to recall that unemployment in Britain, for example averaged between 1 and 3 % during the period 1946 to 1960.(J.C.R.Dow,*The Management of the British Economy*, 1945-1960, fig.13.3, p.342,Cambridge :Cambridge University Press, 1964)

Its unemployment performance deteriorated sharply under the monetarist policy regime of Margaret Thatcher promoted by Sir Keith Joseph, ably assisted by the monetarist economists from the LSE like Alan Walters and Harry Johnson and later by other leading monetarists like David Laidler and Michael Parkin from Manchester and Terence Burns and Alan Budd from the London Business School.(David Smith, *The rise and fall of monetarism*, Harmonsworth:Penguin, 1987 pp.47-48.) Mrs. Thatcher came to power in 1979 .

The impact upon unemployment is striking. Unemployment in Britain rose from 5.6 % in 1979 to 6.9 in 1980 to 10.6 in 1981. It continued to rise in 1982 to 12.3 %, to 13.1% in 1983 to 13.2% in 1984. It is true that inflation fell during this period from 13.4 % in 1979 to 5.0 % in 1984. But the cost in terms of lost output and hardship was close to catastrophic. (Peter Hall, *Governing the Economy: The Politics of State Intervention in Britain and France*, Cambridge: Polity press, 1986, p.120 Table 5.6. Unemployment data standardized OECD definition)

Peter Ham, an economist and special assistant to then Chancellor of the Exchequer Dennis Healey put it insightfully in his study of the Treasury in 1981.

The recrudescence of vulgar monetarism in the late seventies has surely laid to rest" the myth of British pragmatism in policy matters." Since 1974 a remarkable degeneration in the formation of British economic policy has taken place. This has been closely associated with what has been hailed by some as the 'monetary revolution' and by others as a return to old values and 'sound' money.

The approach to economic management in the late 1970s and early 1980s more closely resembled the application of the old fashioned Treasury rules of the 1920s than at any time in the fifty preceding years. The phenomena associated with this violent throw back has been stagnation and decline..." (Adrian Ham, *Treasury Rules: Recurrent Themes in British Economic Policy*, Quartet Books, London:, 1981, pp.ix&1)

The apparent fact that both Kenneth Clark the Chancellor under Prime Minister John Major(1992-1997) and to some extent Gordon Brown ,(1997 to present) the current Chancellor under Tony Blair moved some of the way back toward pragmatic Keynesianism with good results ought to be more carefully investigated.

Of course, when making international comparisons of unemployment one ought to take into account different participation rates in order to further standardize the results. But it is clear that international unemployment performance in the leading countries has noticeably weakened since the golden age days of Keynesian dominance from the end of the war until the mid 1970's.

The participation rate currently in the UK is several percentage points below that of Canada and even further below that of the US. For example in 2000 the UK rate was 63.3, 65.9 in Canada and 67.2 in the US.(Source R.Ehrenberg et al table 14.1, p.484)Strictly speaking then if we chose the US participation rate as the norm than Canada's unemployment would be worsened by an additional 1.3 percentage points and that of the UK by an additional 3.9 points. However, it is arguable that lower participation rates do not necessarily imply lower welfare. It might instead reflect more available leisure and less necessity to work in the case of two member households. High participation rates on the other hand usually reflect discouraged workers rejoining the

labour force but might also reflect lower wages and the necessity of more members of a household to work to maintain the standard of living.

From Inflation to Disinflation and Deflation

Whereas unemployment in the post-war years right up until the OPEC price shock in 1973/74 typically averaged 3-5 % the rates moved up sharply in the years that followed.(See Table one)At the same time the inflation rates measured either by the consumer price index or GDP deflator are very much lower than during the 1970s. For example, inflation in Canada ranged between 9.1 and 15.3 % from 1973 to 1976, averaging 11.2% for the four years, as measured by the GNE deflator.A similar sort of sharp rise in inflation occurred in the US during the same period.It was this shock in prices delivered by OPEC and the world wide boom in commodities prices that established the anti-inflationary environment that has dominated the past 30 years in macro-economic policy.

In fact, current evidence points toward the conclusion that we are on the edge of **deflation** or falling prices, a situation that has prevailed in Japan for the past several years, threatens parts of Western Europe and was identified as a threat in North America several years ago. We are so used to fearing inflation and ignoring unemployment that many leaders in the business and political world were blind-sided when deflation suddenly appeared as a real prospect.

If one takes into account globalization, the internet, just in time production and the flooding of markets by goods and services produced in cheap wage countries like India, Bangladesh, countries in South-east Asia and China disinflation and deflation remains a very serious possibility in the years to come.China, like South Korea and Japan before it, will soon be exporting large numbers of cheaper automobiles to the North American and European markets.This will put downward pressure on the price of automobiles. Outsourcing of services and manufacturing has also had the same effect on wages and prices.Only oil prices which are under the control of the OPEC oil cartel have resisted this trend and it is not clear that this resistance can last over the longer term.

Business leaders like Jack Welch ,the president of General Electric, raised the spectre of deflation in 1998 in a letter to shareholders and the problem had been discussed by Alan Greenspan of the Federal Reserve at the January 3rd 1998 American Economics Association Annual Meeting . It had been a major topic of discussion at the Federal Open Market Committee meeting the previous December. (See Alan Greenspan, *Problems of Price Measurement; Meeting of the Federal Open Market Committee*, Dec.16, 1997, Federal Reserve Board. cited in Chris Farrel, *Deflation:What Happens When Prices Fall pp.20ff*New York: Harper Collins, 2004 See also Roger Bootle,*The Death of Inflation, London:Nicholas Brealey, 1996*;and Harold Chorney "In Search of the non Walrasian

labour market model in the age of Globalization" paper presented to the Eastern Economics Association, New York, Feb.23, 2001)

TABLE TWO:
UNEMPLOYMENT AND INFLATION AND BUDGET
DEFICITS IN SELECTED OECD COUNTRIES OCTOBER 2004

Country	Unemployment Rate	Selected Countries Budget deficit as % of GDP(+surplus)	Inflation Rate (Consumer prices)
Australia	5.6 (Sep)		2.5 Q2
Austria	4.5 (Sep)		2.1(Sep)
Belgium	13.2 (Sep)		2.0(Sep)

Britain	4.7(Aug)	-3.4	1.1(Sep)
Canada	7.1 (Sep)	+ 0.6	1.9 (Sep)
Denmark	6.3 (Aug)		1.1(Sep)
France	9.9(Aug)	-4.1	2.2(Sep)
Germany	10.7(Sep)	-3.8	1.8(Sep)
Italy	8.1(Apr.)	-2.4	2.1(Sep)
Japan	4.8(Aug)	-8.2	-0.2(Aug)
Netherlands	6.1(Sep)		1.0(Sep)
Spain	11.0(Aug)		3.2(Sep)
Sweden	5.8 (Sep)		0.6(Sep)
Switzerland	3.7(Sep)		0.9Q2
United States	5.5(Oct)	-4.6	2.5(Sep)
Euro area	9.0(Q2)	-2.8	2.1(Sep)

Source: OECD, *Economist*, Oct.23, 2004 and Bloomberg News cited in *Financial Post*, Nov.22, 2004.

The above data suggest a world in which inflation is very low but unemployment far too high except in Britain, Austria, Japan and Switzerland. It hardly seems like a world in which the operational policy doctrine ought to be one which argues that there is a natural rate of unemployment below which a country experiences accelerating inflation. Interestingly the country with the highest deficit to GDP, Japan also has the second lowest unemployment and the lowest inflation, that is deflation. The Euro region with a low deficit to GDP has one of the highest unemployment rates. The inflation rate for the 8 entities for which budget deficits are given averages 1.7%. But unemployment averages 7.5% for these same entities. France, Germany and the Euro area in general suffer from very high unemployment. Not surprisingly the European Central Bank follows a strict anti-inflation monetary restraint regime.

It is time for a radical shift in doctrine. It is time to abandon the non- accelerating inflation rate of unemployment or the natural rate of unemployment and in its place consider using the concept of the **natural rate of inflation**.

The Natural Rate of Inflation

The **natural rate of inflation** is that rate of inflation just below the rate that is consistent with a growing robust economy. It is also the rate of inflation below which unemployment rises in an accelerating fashion. Just as Friedman's concept built in expectations of inflation, the natural rate of inflation is sensitive to expectations of future rises in the rate of unemployment which can affect the consumption behaviour of consumers, the animal spirits of investors and thereby overall aggregate effective demand.

In other words, if the central bank in its misguided attempt to suppress non-existent or dramatically weakened inflationary impulses tightens interest rates and constricts growth so that the rate of inflation falls below this level it can provoke a sharp rise in unemployment which can become a chronic condition of the labour market in that country. Far better for the central bank to recognize that once inflationary impulses have been so strongly weakened that a steady but low rate of inflation is necessary to lubricate investment decisions in times of uncertainty and provide for a steady growth in employment to provide the necessary consumer confidence to sustain aggregate demand and facilitate keeping unemployment low. (See A.J. Brown, "Accelerating Inflation and the Growth of Productivity" in R.C.O. Matthews ed., *Slower Growth in the Western World*, National Institute of Economic and Social Research, Policy Studies Institute & Royal Institute of International Affairs, Joint Studies in Public Policy 6, London: Heinemann, 1982, pp. 45-60. on how modest inflation can contribute to capital innovation and more rapid growth)

So long as unemployment is significant and deficient aggregate demand is present, monetary and fiscal impulses work largely, though not completely on the output side as opposed to the price side of the price times output nexus. Prices may rise as unemployment is lowered but the amount of price rise will be tolerable until we approach more closely the point where further reductions in unemployment and increases in growth trigger bottlenecks, disproportionalities and therefore sharp upward price rises. This was a position that Keynes developed quite clearly in his chapter on prices in the *General Theory*. Unfortunately Samuelson distorted his argument in a way that would prove nearly fatal to the neo-classical Keynesian synthesis some 35 years later. Samuelson's 45 degree supply curve or helping line directly contradicts Keynes' curvilinear disproportional aggregate supply curve which permits price rise well before the point of full employment. (See J.M. Keynes, *The General Theory of Employment, Interest and Money*, Collected Writings, Vol vii, 1936; Paul Samuelson, *The Interaction between the Multiplier Analysis and the Principle of Acceleration* in *Review of Economic Statistics* xxi (May, 1939) Samuelson's text *Economics, An Introductory Analysis*, New York: McGraw-Hill, 1948, Harold Chorney, *Keynes and the problem of inflation: The Roots of the Return of Sound Finance*, 1987 reprinted in *The deficit papers*, Montreal: 2002. A French version of this paper is published in G. Dostaler & G. Boismenu, ed. *La theorie generale et le keynesianisme*, Montreal: 1987. See also Harold Chorney, *Revisiting Deficit Hysteria* in *Labour/Le travail*, 54 (Fall 2004) pp. 245-258. pp. 250-251 in particular)

To better appreciate the concept of the natural rate of inflation we need first to examine the background to the development of the doctrine that it now should eclipse.

The Natural Rate of Unemployment and the Development of the NAIRU rate

The origins of the natural rate hypothesis can be traced back to the doctrines of the natural rate of interest pioneered by economists like Knut Wicksell, Bohm Bawerk and Hayek during the 1920s. (See Maurice Dobb, *The theory of value and distribution since Adam Smith: Ideology and economic theory*; Cambridge: Cambridge University press, 1973. R.W. Dimand, *The Origins of the Keynesian Revolution*, Aldershot: Edward Elgar, 1988; T.W. Hutcherson, *The Politics and Philosophy of Economics: Marxists, Keynesians and Austrians*, New York: New York University press, 1984. Joseph Schumpeter, *History of Economic Analysis*, David Laidler, *Fabricating the Keynesian Revolution, Studies of the Interwar Literature on Money, the Cycle and Unemployment*, Cambridge: Cambridge University press, 1999 & H. Chorney, *The Theory of the Business Cycle in Keynes, Hayek and Schumpeter*, paper presented to the Society of Heterodox Economists, London, 2000.)

During the 1960s inflation occurred at rates that appeared to contradict the neo-classical notion of Keynesian macro-economics that had come to dominate the discipline under the hegemonic influence of the Samuelson-Hicks synthesis. In Canada, for example, inflation had risen from 0.9 percent in 1961 to 4.0% in 1968 to 7.5 % in 1973 to 10.9 % in 1974. Milton Friedman very cleverly articulated the doctrine of the natural rate of unemployment. He did so most famously in his AEA presidential address, The role of monetary policy in 1968 (*American economic review*, March 1968 reproduced in Brian Snowdon and Howard Vane, *A Macroeconomics Reader*, New York: Routledge, 1999)

Friedman argued exactly as the classics had done many decades before that just as there was a natural rate of interest that corresponded to a stable economic growth rate and a normal rate of return of invested capital over time. This rate could not be lowered without the peril of igniting a crisis of overproduction and overinvestment leading to a crisis of inflation. (See Hayek and Bohm -Bawerk) Similarly there was a natural rate of unemployment that the Walrasian system of general equilibrium ground out over the medium and long haul.

As he put it " every attempt to keep interest rates at a low level has forced the monetary authority to engage in successively larger and larger open market purchases. They explain why historically high and rising interest rates have been associated with rapid growth in the quantity of money, as in Brazil or Chile or as in the United States in recent years and why low and falling interest rates have been associated with slow growth in the quantity of money, as in Switzerland now or in the United States from 1929-1933 "(Friedman, 1968)

He goes on to argue that low rates reflect an initially tight monetary policy and high rates paradoxically a loose monetary policy. In the end he argues a far better predictor

of the tightness or looseness of monetary policy is "the rate of change of the quantity of money. (p.169 in Snowdon and Vale) Friedman poses the question of why we cannot simply target the rate of unemployment and be loose when the rate is above 3 % (How extraordinary that he uses this most reasonable target by contemporary Keynesian standards) and tight when the rate is below this rate. His answer is to appeal to Wicksell's concept of the natural rate of interest and point out the difference between short term effects and long term consequences. The extremely close relationship between Wicksell's classical theory of the natural rate of interest is explicitly developed by Friedman in his article.

Thus Friedman writes "Thanks to Wicksell, we are all acquainted with the concept of a natural rate of interest and the possibility of discrepancy between the 'natural' and the 'market' rate. The preceding analysis of interest rates can be translated fairly directly into Wicksellian terms. The monetary authority can make the market rate less than the natural rate only by inflation. It can make the market rate above the natural rate only by deflation. We have added only one wrinkle to Wicksell - the Irving Fisher distinction between the nominal and the real rate of interest. Let the monetary authority keep the nominal rate below the natural rate by inflation. That in turn will raise the nominal natural rate itself, once anticipations of inflation become widespread, thus requiring still more rapid inflation to hold down the market rate above the initial 'natural' rate" (Friedman, *ibid*, p.170)

Having developed his theory as a logical extension of classical theory Friedman then reorients it to address the contemporary world of rising inflation in the late 1960s. His goal which he largely achieved was to fracture the Keynesian consensus about the wisdom of promoting lower unemployment through the judicious use of fiscal policy and accommodating monetary policy. Friedman's argument became the launch pad for a radical restructuring of economic orthodoxy that has had a huge impact upon the conduct of public policy and I would argue the actual rate of unemployment that is tolerated by the leading G7 countries including the United States and Canada and Western Europe. Only Japan and to a certain extent in recent years Great Britain have refused to sign on.

Any attempt to lower unemployment below this natural rate level through heroic Keynesian stimulus would be doomed to fail as it would ignite inflation. In making this argument Friedman was aided immeasurably by the reductionist Hicks-Samuelson-Hansen model of the Keynes system that distorted Keynes' original conception of how the price system would operate. Whereas Keynes had argued that stimulative fiscal and monetary impulses would work their way through the system by acting largely on output and to a lesser extent on prices so long as the economy was operating with unused capacity, then gradually shifting so that vector forces would operate on the price side more than on the output side and that the factors were often disproportional and non homogeneous (see ch. 21 of Keynes' *General Theory*), Samuelson had unfortunately abandoned this more sophisticated and realistic model for one which claimed that aggregate demand inflation

was the most powerful likely outcome. His 45 degree supply curve (which he first introduced in an article on the multiplier and accelerator in 1939 and later became the standard orthodoxy through his best seller text book) represented the aggregate supply curve which implied linearity and inflation only once full employment output had been reached. In such circumstances Keynesian theory was an easy target for Friedman's monetarist counter-revolution when the time came during the inflationary 60's and stagflationary 70s.

Friedman also posed his argument in the context of the policy framework that dominated in the 1960s. This framework was expressed through the Phillips curve tradeoff that argued that unemployment traded off with inflation. Phillips had compared wage rate changes with rates of unemployment over more than a century. He concluded that there was a tradeoff expressed by the Phillips curve.- a partly convex curve to the origin that traded increases in the unemployment rate on the x axis with decreases in inflation on the y axis. Over time this Phillips curve had drifted out from the origin so that the terms of the trade off had seemed to worsen.

Friedman's position was that the trade off was illusionary once money illusion had been banished. In other words once people built expectations about future price inflation into their wage choices and therefore employment decisions, the trade offs that the Keynesians had theorized about simply disappeared. There was, in fact, a vertical Phillips curve where any rate of inflation was compatible with the natural rate of unemployment. Friedman called this curve the expectations augmented Phillips curve. It was vertical at the point of full employment, the so called natural rate below which the economy would experience accelerating inflation

In practice Friedman's vertical Phillips curve was a utopian concept that could not be sustained by the evidence in the real, as opposed to imaginary world of abstract economics. Instead of a perfectly vertical curve based on the NAIRU rate of unemployment Friedman and his followers accepted that, at least, in the short run there might be some rise in the rate of unemployment as inflation was wrung out of the system. But as this was accomplished the curve would revert to the nearly vertical position in the long run.

Thus the distinction was born between the short run and long run Phillips curve. Whatever unemployment the policy of monetarism caused would be acceptable because it would be a short lived phenomenon. Of course reality was much more unforgiving. Unemployment rose sharply as monetary policy was tightened and unemployment was very slow to fall back to its original position. In fact, in some cases it never did as millions of people in western countries lost their jobs never to return to the labour market again. Economists began to notice that unemployment scarred people for a long time and prevented some of them from finding work again even when the recession that Friedman

inspired policies had induced was over. The notion of hysteresis was developed to speak to this problem.

I also believe that Friedman's curves need to be rethought in a fundamental way. First it seems to me that the experience of countries like Canada and the UK when monetarist policies were applied demonstrated that while the short run experience might initially only raise the unemployment rate a few percentage points at a certain point people would be frightened by the rise in unemployment and these widespread expectations that unemployment was growing would result in an even sharper rise in the rate of unemployment that would accompany the drop in inflation. Hence the long term Phillips curve at the point of deflection where expectations would turn pessimistic would swing out to the right Diagram 2 in the appendix illustrates this argument. (See Appendix: diagrams one and two)

Initially in the short run curve (diagram 2) inflation is brought down and unemployment rises in response to tight monetary policy. Then at point B the long run curve comes into play and unemployment rises much faster than inflation falls. Eventually the economy reaches a point of high unemployment and low inflation. The victory over inflation has been achieved but at a very high cost (not Pareto compensated either), We now have a situation of chronic high unemployment that may last several years coupled with low inflation.

It was only a matter of time for the natural rate argument to become dogma in the form of the NAIRU rate and the classical world of rational expectations to treat chronic unemployment under the rubric of voluntary unemployment and inefficient job search.

It is important to understand how contemporary neo-classicals view unemployment. Armed with the notion of the natural rate of unemployment and the NAIRU rate they have come to see labour markets operating as fairly efficient market clearing mechanisms where involuntary unemployment is limited. The most extreme rational expectations neo-classicals presume that labour markets, like other markets, are super efficient allocators of tastes and preferences and wants. In addition the labour market is a perfect information transfer system. If some one needs a job, efficient job search will match the job seeker with the job at the market clearing wage. Walrasian general equilibrium will hold with little difficulty. Some frictions may be present but they will be overcome in fairly short order and labour will be efficiently allocated. Any remaining unemployment occurs because these workers do not search efficiently for jobs because they have set their reservation wage too high either because of union pressure or the presence of too generous unemployment insurance benefits; or perhaps their intellectual capital in the form of education and training make them unsuitable for available jobs; or perhaps they simply prefer leisure to work and in effect have dropped out of the labour market. Or perhaps other rigidities prevent the labour market from finding the right

market wage to clear the market of all those seeking work. Whatever the reason involuntary demand deficient Keynesian unemployment is banished from their model.

The model of how the labour market works is based upon stocks and flows. There is a stock of employed people, a stock of unemployed people. One measures job separations that is quits or lay-offs and also job findings that is hiring of job seekers from the pool of unemployed workers and the flow of new entrants.

The unemployment rate is the outcome of these contrary flows and can be measured precisely.

Overturing Friedman

My concept of the natural rate of inflation turns Friedman on his head. Imagine a rate of inflation compatible with steady growth and low unemployment. At this rate of inflation much of the curve is close to horizontal implying that any rate of unemployment is compatible with the natural rate of inflation. Of course, over the longer run as we push the unemployment rate down towards 2-3 % we will begin to experience bottleneck inflation and also wage and profit push pressures. In such circumstances inflation may begin to rise above the natural rate if we use aggregate demand to lower the rate of unemployment. The curve thus may not strike the Y axis at the natural rate but turn up before contacting the y axis but at a much less steep angle than Friedman's. Hence, just as in the Friedman case there is a distinction between the short and long run.

The behaviour of this natural rate of inflation is quite straightforward..

Let P^* = the rate of inflation. h = expectations about the future. hU - expectations of future unemployment. hP^* = expectations of future inflation. W^* = the rate of wage increase. U = the rate of unemployment. P^*n = the natural rate of inflation. U^*n = the natural rate of unemployment; s^* = rate of unionization; o^* = degree of oligopoly concentration, a = investor animal spirits. t = state of technological innovation, g = degree of globalization.

Then $P^*n = f(hU, hP^*, w^*, s^*, o^*, a, t, g)$ the greater s^*, o^*, hP^* the sharper the angle of deflection upwards (measured between the vertical Phillips curve and the deflected line from point B) and the higher the rate of inflation that deflection occurs at; hU, g and 'a' have the opposite effect. The greater they are the smaller the angle of deflection. t will work in both directions. On the one hand innovation lowers the price of goods and improves efficiency of output and increases quality. On the other hand, innovation may also raise the rate of unemployment, at least in the short run by substituting capital for labour.

The original Friedman natural rate was modeled as an expectations augmented Phillips curve which rose vertically from the x axis at the natural rate of unemployment. This then became the NAIRU rate, the non accelerating inflation rate of unemployment.

It was modeled as follows: Assume initially that inflationary expectations are zero. Then $(dP/P)^* = 0$ where $(dP/P)^*$ is the expected rate of inflation. Assume that the economy is now at U' . Then $U=U'$ at point A on the x axis and the Phillips curve which cuts the axis at this point. Thus $U=U'$ and $dP/P = (dP/P)^*$ Unemployment is at its natural value and expected and actual rates of inflation are equal. Now assume that an activist government seeks to trade-off some inflation for a reduction in unemployment. It chooses to move to position B. (See diagram 1, appendix 2) Initially, according to Friedman unemployment will drop to U_1 corresponding to point B on the Phillips curve. The unemployment inflation pairing $U_1, (dP/P)_1$, according to Friedman is unstable. Because at B the expected rate of inflation $(dP/P)^*$ will no longer remain at zero but instead climb. $(dP/P)^*$ when $(dP/P)_1 > (dP/P)^*$. More specifically $d/dt(dP/P) = z((dP/P) - (dP/P)^*)$. Expectations are adaptive and the parameter z measures the speed with which expectations adapt to past errors in predicting the rate of inflation. Any attempt, according to Friedman to hold the unemployment level below the point where expected inflation is zero will result in an actual rate of inflation that exceeds the expected rate. (See J.A. Trevithick *Involuntary Unemployment: Macroeconomics from a Keynesian Perspective* Harvester Wheatsheaf: New York, 1992, pp, 132ff)

Friedman was arguing that the rate of inflation could be decomposed into two portions. The first an expectational component had the form $(dP/P)^*$ and second an excess demand component measured by the original Phillips-Lipsey model by $f(U)$ The natural unemployment rate was that unique rate U' where the excess demand component $f(U)$ was zero. Any rate of inflation, positive or 0 or negative is compatible for Friedman with the natural rate U' since the only condition for equilibrium is that inflationary expectations be fully realized so that $dP/P = (dP/P)^*$ (Trevithick, p.134)

Trevithick suggests that one can also regard the accelerationist hypothesis as follows.

$(dP/P) - (dP/P)^* = f(U)$ and because of the assumption of adaptive expectations then $d/dt(dP/P)^* = z f(U)$. As Trevithick points whatever trade-off that Friedman accepts is the trade-off between the rate of unemployment and the "rate of change of the actual and expected rates of inflation.." This is a temporary and not permanent trade-off which comes about from unanticipated inflation. (Friedman, *The role of monetary policy*, *American Economic Review*, vol.58, 1.)

With this background in mind let us construct a parallel set of reasoning for the natural rate of inflation. Assume that the economy is at a rate of inflation compatible with stable unemployment and growth. There are no differences between the expected rate of

inflation and the actual rate. If anything differences may be working in the opposite direction. That is the actual rate is below the expected rate. So that $dP/P < (dP/P)^*$. Similarly $dU/U = (dU/U)^*$ that is the actual rate of unemployment is equal to the expected rate. Any attempt to move the inflation rate below this natural rate will lead to the actual rate of unemployment to exceed the expected rate and unemployment will rise. That is, $dU/U > (dU/U)^*$. Furthermore once we are at position B1 on the y axis and position B on the curve A1BA3, any rate of unemployment will be compatible with the natural rate of inflation provided that the expected rate and the actual rate remain the same. Position B is also a point on the lines DBF and DBB1. At some point, it will vary with each economy, as we attempt to lower unemployment through both monetary and fiscal policy prices may well rise and the curve will turn upwards before touching the Y axis, as in DBF as we move from unemployment U' to U1 and U2.

We can better understand the analysis if we imagine that we begin with a downward descending Phillips curve but not a vertical one. In other words, the line A1BA3 as opposed to the vertical line A2BA, (see diagram 2) the original expectations augmented Phillips Curve which Milton Friedman postulated in 1968. Rather one that many economists have suggested is the short run Phillips curve. As the rate of inflation drops and the rate of unemployment rises we approach position B on the diagram. At this point expectations of unemployment begin to rise as the rate of unemployment increases in response to contractionary monetary and fiscal policy. Below this point which I am arguing corresponds to the natural rate of inflation as measured on the Y axis, unemployment rises sharply as the curve deflects and moves dramatically out to the right. This then results in the actual rate of unemployment exceeding the expected rate which results in a deep prolonged recession. Inflationary expectations at this point vanish and converge around the actual rate of inflation. At this point we have reached the zone of the natural rate of inflation.

Any attempt to push inflation below this level will result in a prolonged period of high unemployment that is largely due to deficient aggregate demand and depressed expectations. Instead, if the monetary authorities avoid squeezing interest rates any higher but reduce them and indeed accommodate some fiscal stimulus we should experience a considerable reduction in the rate of unemployment without significant price rise until our level of unemployment approaches U' at point B. Then once B is reached or possibly even surpassed prices will begin to rise but more gently, that is, less rapidly than the original curve suggests. The curve DBB1 or DBF is the short run curve with DBB1 being the horizontal equivalent to the vertical expectations augmented Phillips curve. A more realistic curve for the longer run is DBF or perhaps DBE.

Unemployment can be pushed below the natural rate of unemployment to either U1 at inflation rate H1 or possibly even lower to U2 at inflation rate H2.

More formally $BB1$ is P^*n , the natural rate of inflation where $dp/P=(dP/P)^*$ and $dU/U>(DU/U)^*$. Then if so, U rises to approach U_c corresponding to point C on the line BC as the central bank continues its contractionary policy to force inflation below $B1$. If the central bank then relaxes its policy and fiscal policy is supportive then U is reduced gradually toward B .

In such circumstances $BCC1$ may be unstable and the curve may rise to $DB1$. The area bounded by BDC is the zone of the natural rate of inflation. The area $BB1F$ is the zone of low unemployment and moderately low inflation. If we push unemployment below OA then price rise will occur but the trade-off will be much more favourable and long lasting than in the past. It is unlikely that the path $B1BD$ can last beyond the short run. Instead DBF is more likely to prevail. This implies some price rise but much more slowly and less drastically than the original curve $A1BA3$.

As we move back toward B the gap between $dU/U - (dU/U)^*$ decreases and approaches zero. It reaches zero at either B or perhaps G a point just to the left of B . Finally $d/dt(dU/U)^{t+1} > d/dt(dU/U)^t$.

Conclusion:

It could be the case that the natural rate of inflation sets the lower boundary to the upper boundary for the natural rate of unemployment and that the economy swings between these two positions over a long period of time and policy paradigmatic shift. But whatever the case, the natural rate of inflation shows promise as a concept whose time has arrived. An understanding of it would permit central banks and governments to address the excessive unemployment rates that now plague most of the western world. They would need to use the levers of monetary and fiscal policy to facilitate significant reductions in unemployment and restore fuller employment. This means both keeping real interest rates low **and** using fiscal stimulus in the form of reduced surpluses or actual

planned ex antedeficits targeted at low and moderate income people and the educational, physical and health care infrastructure. Only when the rates of unemployment have dropped to much lower levels would it be time to work to restore balanced budgets through appropriate taxation measures.

Appendix

TABLE ONE

UNEMPLOYMENT IN CANADA, THE UNITED STATES
and GREAT BRITAIN
1930-2001

	CANADA	UNITED STATES	BRITAIN
1930	9.1 %	8.7 %	11.1 %
1931	11.6	15.2	14.8
1932	17.6	22.3	15.3
1933	19.3	20.5	13.9
1934	14.5	15.9	11.7
1935	14.2	14.2	10.8
1936	12.8	9.8	9.2

1937	9.1	9.1	7.7
1938	11.4	12.4	9.2
1939	11.4	17.2	5.8
1940	9.2	14.6	3.3
1941	4.4	9.9	1.2
1942	3.0	4.7	0.5
1943	1.7	1.9	0.4
1944	1.4	1.2	0.4
1945	1.6	1.9	0.5
1946	2.6	3.9	1.9
1947	1.9	3.9	1.4
1948	1.6	3.8	1.3
1949	2.0	5.9	1.2

	Canada	Unemployment US	Britain
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1950	2.0	5.3	1.5
1951	1.5	3.3	1.2
1952	2.0	3.0	2.0
1953	3.0	2.9	1.6
1954	4.6	5.5	1.3
1955	4.4	4.4	1.1
1956	3.4	4.1	1.2
1957	4.6	4.3	1.4
1958	7.0	6.8	2.1
1959	6.0	5.5	2.2

1960	7.0 %	5.5 %	2.2 %
1961	7.1	6.7	2.0
1962	5.9	5.5	2.8
1963	5.5	5.7	3.4
1964	4.7	5.2	2.5
1965	3.9	4.5	2.2
1966	3.4	3.8	2.3
1967	3.8	3.8	3.4
1968	4.5	3.6	3.6
1969	4.4	3.5	3.0

1970	5.7	4.9	3.1
1971	6.2	5.9	3.7
1972	6.2	5.6	4.7
1973	5.5	4.9	2.9
1974	5.3	5.6	2.9
1975	6.9	8.5	4.1
1976	7.1	7.7	5.5
1977	8.1	7.1	6.2
1978	8.3	6.1	6.1
1979	7.4	5.8	5.8
1980	7.5	7.1	7.3

1981	7.5	7.6	10.4
1982	11.0	9.5	12.0
1983	11.8	9.5	13.2
1984	11.2	7.5	13.6
1985	10.5	7.2	11.8
1986	9.5	7.0	11.8
1987	8.8	6.2	10.6
1988	7.8	5.5	8.4
1989	7.5	5.3	6.3
1990	8.1	5.5	6.0
1991	10.3	6.7	8.4
1992	10.5	7.5	10.3
1993	10.8	7.0	10.7
1994	10.6	6.1	9.8
1995	9.5	5.6	8.8
1996	9.6	5.4	8.2
1997	9.1	4.9	7.1
1998	8.3	4.6	6.3
1999	7.6	4.2	6.1
2000	6.8	4.0	5.5
2001	7.2	4.7	5.1
2002	7.7	5.8	5.2
2003	7.6	6.0	5.0
2004 (Oct.)	7.1	5.5	4.3

Source : Statistics Canada; US Bureau of Labour Statistics; OECD; Ontario Economic outlook and Fiscal Review, 2004.,B.R.Mitchell&P.Deane, *Abstract of British Historical Statistics*,.