

Concepts of Unemployment and the Structure of Employment*

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Section 1 notes that a continuing reason for dissatisfaction with the economics literature on unemployment is its focus on the decision-making of workers, rather than that of firms, and its neglect of shifting structures of employment. Section 2 outlines a model of endogenous change in employers' decisions on the structure of employment, in which the rate of unemployment is partly determined by the percentage of firms who follow a casualized "just in time" employment strategy, while the profitability of such a strategy increases as aggregate unemployment increases. Section 3 asks how the vocabulary of analysis of unemployment can be interpreted if firms make structural decisions on employment. Section 4 concludes that increased "labour market flexibility" may largely mean lower average real wages and greater insecurity for workers.

L'auteur note une insatisfaction grandissante à l'encontre du concept traditionnel du chômage, axé sur le choix du travailleur plutôt que sur celui de l'entreprise. Un modèle de décision des employeurs

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est donc présenté, avec une évolution endogène des décisions des entrepreneurs. Le taux de chômage est en partie déterminé par le pourcentage d'entreprises qui favorisent des emplois occasionnels plutôt que des emplois permanents. La profitabilité d'une stratégie de postes occasionnels augmente lorsque le taux de chômage national s'accroît. De ce modèle, l'auteur tire des conclusions négatives quant à la signification des concepts traditionnels comme le taux de chômage naturel, et il conclut qu'une «flexibilité» accrue du marché du travail signifie surtout des salaires réels plus faibles et une insécurité accrue pour les travailleurs.

I. INTRODUCTION

The past twenty years have seen substantial change in the vocabulary of discussions of unemployment, but the underlying analytics have had some remarkably consistent elements. Although economists used to categorize unemployment as cyclical, structural, seasonal and frictional¹, in the 1970s "frictional" unemployment was repackaged as "search" unemployment and, clothed in newly glamorous mathematics, marched from a minor role to central stage in the explanation of unemployment. By the 1970s there was also an important shift in the professional debate on unemployment, as its focus shifted from the determinants of the actual rate of unemployment to concern over the "natural" rate of unemployment and the level of the "non-accelerating inflation rate of unemployment" (NAIRU). In the vocabulary of the 1980s, new terms such as "hysteresis", "partial hysteresis" and "persistence" appeared, new distinctions were drawn (*e.g.* between the short-run natural rate and the long-run natural rate) and new controversies (*e.g.* over unit roots) arose. In the 1990s, some began to speak of the "quasi-equilibrium rate of unemployment", or QERU (Lindbeck, 1993, p. 61), while the diminished aspirations of policy makers have taken refuge behind the term "jobless growth". Throughout all these changes in vocabulary, however, there have been some underlying continuities in analysis – and some continuing reasons for dissatisfaction.

Among economists, there seems to be primal urge to end up, whatever the route taken, with a labour market equilibrium defined by the intersection of an upward sloping curve and a downward sloping curve,

¹ For an extended discussion, see Osberg (1988).

both denominated in terms of the real wage. Originally, the former was simply the "labour supply" curve and the latter was just the "labour demand" curve. However for modern authors such as Layard, Nickell and Jackman (1991) there is now a downward sloping "price setting curve" and an upward sloping "wage setting curve" while Lindbeck (1993) refers to the intersection of the "wage setting curve" with a more traditional "labour demand function". The common denominator of both new formulations is the direct link which is asserted between price inflation in product markets and quantity imbalance (unemployment) in labour markets but the starting point remains the same as ever – that wage bargains set in real terms determine equilibrium labour market employment and unemployment.

Why then do we have unemployment at all? Since greater "generosity" of unemployment insurance benefits is seen as shifting upwards the wage-setting/labour-supply curve, unemployment insurance has had a consistently bad press among macroeconomic theorists², and continues to be assigned a major causal role – yet the comprehensive review by Atkinson and Micklewright concludes;

Our review began with the effect of unemployment benefit levels, or replacement rates, on the probability of exit from (and entry to) unemployment. This has been the principle focus of much of the literature, but we concluded that the findings are far from robust. One has to look carefully to find significant replacement rate co-efficients, and their size is typically small (1991, p. 1721).

In Canada, Myatt (1994) has surveyed the 14 published studies which have used macroeconomic time series evidence to assess the impact of the 1971 unemployment insurance revisions on aggregate unemployment. Since seven studies found a significant positive effect, but five did not and two found significant effect in only three of the ten provinces (not the same ones), he comments, "A more evenly divided result could not be imagined"³. In Canada, it is over 20 years since unemployment insurance was liberalized and the intervening years have

² See, for example, Lindbeck (1993); Layard, Nickell and Jackman (1991); or, in the Canadian context, Milbourne, Purvis and Scoones (1991) – the latter convincingly demolished by Corak and Jones (1993).

³ Myatt's discussion emphasizes that the limited number of observed data points in macro economic time series make it extremely difficult to distinguish alternative hypotheses, due to the collinearity of major data series, the surfeit of possible explanatory theories, the endogeneity of unemployment insurance instruments and the dangers of specification search. Devine and Kiefer (1991, p. 304) emphasize the uncertainty surrounding estimates of the unemployment insurance benefit effect using micro data, and the evidence that it varies across samples, with labour market conditions, duration of unemployment, age, reason for entry into unemployment, etc.

seen UI “generosity” steadily going down, while unemployment has been fitfully going up. Indeed, unemployment trends in other countries (*e.g.* the U.S. and Australia) have closely mirrored Canadian trends, despite the fact that they typically did *not* liberalize UI in the early 1970s – the continued focus on UI is puzzling.

In looking for an explanation of unemployment, most models of unemployment⁴, focus on the determinants of the decisions of labour *suppliers*. Search models emphasize the choice of reservation wage for unemployed job-seekers while real business cycle models talk about inter-temporal substitution of the labour supply of workers. The “insider-outsider” perspective asserts that harassment and non-cooperation behaviour on the part of insiders prevents the hiring of unemployed workers, and union models stress real-wage resistance and maximization of the security and wages of incumbent workers. In all of this, the behaviour of firms is seen as reactive – individual firms (and the summation of all firms) are seen as hiring homogeneous labour up to the point where a rising marginal labour cost curve meets a downward sloping marginal revenue product of labour function⁵.

If firms are thought to simply react in their hiring to the market level of wages, excessively high real wages might be thought to be an explanation of high unemployment⁶. However, average hourly real wages in Canada peaked in 1976 (see ECC, 1991, p. 137) while labour productivity has continued to increase – *i.e.* there is no long-run upward trend in real wages cost to explain the upward trend in unemployment. In both international and in Canadian data, *fluctuations* in the real wage are poorly correlated with fluctuations in employment – Kniesner and Goldsmith (1987, p. 1258) conclude their survey of the evidence, “For a theoretical model of the aggregate labour market to be taken seriously it must imply at least approximately *independence* between the aggregate real wage and employment”.

The upward *trend* in unemployment rates also cannot be explained by unionization rates, minimum wages, the youth percentage of the labour force and oil price shocks since all these trends have been going in the

⁴ Layard, Nickell and Jackman (1991) are an example.

⁵ Appendix 2 presents an example of how a negative aggregate correlation of wages and employment may represent purely compositional changes in the work force.

⁶ Indeed, some observers *define* the problem of unemployment (an imbalance of quantities) in terms of the wage – Lindbeck (1993, p. 28) frames the fundamental problem as “In order to explain why the labour market does not clear, it is necessary to answer a fundamental question: why is there so little underbidding of existing wages by unemployed workers?”

“wrong” direction to explain rising Canadian unemployment. The intertemporal wage elasticity of labour supply is much too small, and too unstable, to explain changes in employment of the magnitude observed in the early 1990s (see Lin and Osberg, 1993a and b). The structural shifts/real business cycle argument proposed by Lilien (1982) and Samson (1985) never did succeed in explaining away the co-existence of *larger* sectoral reallocation of labour and much *lower* unemployment in Canada in the 1950s, or the unequal industrial impact of demand side business cycle fluctuations (Abraham and Katz, 1986)⁷.

While the “insider-outsider” framework of Lindbeck and Snower (1988) uses wonderfully evocative language, not much is added analytically to the employed/unemployed distinction. The innovation in insider/outsider analysis is the idea that firms do not hire unemployed workers, despite their lower reservation wages, because employed insiders will not cooperate with, or will harass, newly-hired employees – but no evidence for the prevalence of this behaviour has been presented, and indeed it has become commonplace in Canada for permanent employees to work alongside temporary workers (*e.g.* sessional lecturers in universities, short-term contract employees and temporary help agency workers in government and business).

The new debate on unemployment has made some gains in realism in recognizing tendencies to hysteresis/persistence in unemployment, but it is puzzling that in both market-clearing and non-market-clearing models of unemployment, firms are so curiously passive, indeed almost nonexistent⁸. In an era when employers seem to have more power to dictate the terms and conditions of employment to those whom they choose to hire than they have had for many years, it seems strange that so much of the analytic attention of economists should continue to focus on the decision making of potential *workers*, and/or their unions.

Furthermore, is it reasonable that macroeconomic models should be so immune to the substantial structural and institutional change that has swept Western labour markets over the last 30 years? Macro theorists are usually not very precise about what “employment” actually is – *i.e.* what people are actually producing, under what institutional arrangements. But if the institutional structure of labour markets does not matter, there is no obvious reason why the logical structure of aggregate relationships

⁷ The new low in credibility is the assertion that predictable *seasonal* fluctuations in output and employment are evidence for unpredictable technology shocks to firms, which somehow mysteriously affect all firms simultaneously (rather than averaging out across firms and industrial sectors). See Barro and Lucas (1994, p. 293).

⁸ The exception being efficiency wage models of unemployment, considered below.

in recent work (e.g. Lindbeck, 1993) could not equally well have been produced in the 1960s (or in the 1930s). However, is unemployment really the same problem now as it was 30 or 60 years ago? Implicitly, the assumption underlying macro economic theorizing appears to be that a "job" is a full-time, continuing, employer-employee relationship and that one can speak with equal validity of 1930s, 1960s and 1990s employment in these terms – and there is a continuing tendency to think of manufacturing employment. Is this still a valid framework?

Over 70 percent of Canadian workers are now employed in the service sector – and two important characteristics of the service sector are the fact that output is not storable from one period to the next, and "quality" is both ambiguous to measure and crucial to profitability. Moreover, as employment has shifted to the service sector, the institutional nature of the employment relationship has changed substantially. Increasingly, firms are restricting their offers of the traditional "job" – full-time employment with a continuing expectation of future employment – to a subset of permanent "core" workers. The Economic Council of Canada has argued (1991, p. 81) that 44 percent of all employment growth in Canada in the 1980s was in non-standard employment forms – part-time, short-term and temporary employment contracts, temporary help agency employment and "own account" self employment. The common characteristic of these employment forms is their "contingent" status, as individual workers are hired and released in response to short-term demand fluctuations facing firms (See also Abraham, 1990).

The changing *composition* of the work force, and the importance of the structural decisions of employers, fits poorly with the standard framework of homogeneous labour and a purely reactive demand side. Hence, this paper adopts the view that part of the reason why explanations for unemployment remain unsatisfactory is because macro economists have paid so little attention to the changing institutional structure of employment. The issue is important because much of the vocabulary of analysis of unemployment depends for its meaning on the standard structural assumptions about labour market processes and institutions. Because this is not realized, many analysts⁹ continue to presume, for example, that the "natural rate" and the "NAIRU" are *inherently the same idea*, rather than only being identical under *specific* maintained hypotheses about price and wage setting behaviour.

To illustrate this point, Section 2 presents a verbal description (which Appendix 1 formalizes) of an approach to unemployment determination

⁹ e.g. Burns (1991, p. 157).

which emphasizes the incentives which *firms* face to alter the structure of employment, and thereby change the level of unemployment. Section 3 then asks how one could interpret trends in actual unemployment rates if the mechanism of Section 2 is in operation, over and above any other influences on the rate of unemployment. Section 4 is a conclusion.

II. HIGH UNEMPLOYMENT AND THE LABOUR FORCE STRATEGY OF FIRMS

Could hysteresis in unemployment come, at least partly, from *firms'*¹⁰ decisions in the labour market? Suppose that one were to start from the assumption that there are initially *no* observable differences among workers and that the unemployed *always* accept any employment which they are offered. Suppose further that workers have no unions and are quite willing to work alongside other workers earning lower wages. Is it still possible that an unemployment shock might alter the labour market strategies of firms in ways that increase future unemployment?

As Stiglitz (1984, 1987), Weiss (1980) and others have argued, profit-maximizing firms will typically want to minimize the cost per efficiency unit of labour, and the average productivity of the workforce may depend partly on the wage level. If so, firms will choose levels of employment and wages that will typically imply some unemployment, in aggregate. If firms want to prevent their most productive workers from quitting (Weiss) or if there are costs to employee turnover or if firms need to maintain some differential between the wages they pay and the market clearing wage in order to induce worker effort (Stiglitz), the "efficiency wage" argument is that firms in aggregate will set their wages above the market clearing wage and their total employment levels will fall short of the supply of labour, and involuntary unemployment will exist. Implicitly, these models (like the other models of unemployment earlier discussed) presume that "employment" is full time and continuing. However, let us start from this position, and ask what happens to this equilibrium if it is disturbed by an upward shock to the unemployment rate.

First, however, let us assume that individual firms do not face steady product demand conditions, and instead have busy and slow sales periods. Assume further that, like most of the service sector or those

¹⁰ For a discussion of illustrative case studies see Osberg, Wien and Grude (1995).

manufacturing establishments which operate as “just-in-time” suppliers to the retail sector or other manufacturers, output cannot be stockpiled from one period to the next. The firm can predict some of the seasonal variation in sales, but in addition there is unpredictable stochastic variability – given an expectation of the probability distribution of future demand conditions, the firm chooses a profit-maximizing capital stock, which it is then locked into.

Hiring a permanent labour force then carries the cost that the labour force will be under utilized on slow days, while working at capacity during busy periods. Assuming that the firm is constrained to charge a single price in all periods, it will remain in business if, averaging the peaks and troughs in product demand, total revenues exceed the wage bill plus capital costs plus taxes. Due to variations in entrepreneurial ability, firms differ somewhat in their perceived “quality”, and, therefore, in the price they are able to charge – in equilibrium the marginal (low “quality”) firm earns zero profits while infra-marginal firms make net rents.

The decision which firms face is whether to adopt a permanent worker labour strategy (and accept occasional under-utilization of their workforce during slack periods) or adopt a “just-in-time” labour strategy in which only a core group (sufficient to meet production needs during slow periods and organize production during peak periods) receives full-time work and casual employees are hired in as and when necessary to meet peak periods of output.

If casual workers are paid lower wages than permanent workers¹¹, and never decline employment *if* they are available, the reason firms still may hesitate to adopt the “just-in-time” labour strategy is because they may not be sure of being able to locate casual workers when such workers are needed. Given their fixed costs of capital, the price charged by firms exceeds the marginal cost of production. Firms rely upon the profits earned during peak sales periods to carry their fixed charges during slow periods. It is, therefore, very expensive if, when market demand is available, sales are lost because needed labour cannot be found.

In essence, adopting a permanent worker strategy means that firms pay an insurance premium in slow periods equal to the wages cost of under-utilized labour in order to insure against the risk of loss of forgone profits in peak sales periods. Their willingness to do so depends

¹¹ Actually, this is an implication of the “efficiency wage” argument previously made – one which acquires particular force if “quality” is important to firm profitability, but hard to measure/monitor.

on the relative wages of casual and permanent employees, the likelihood of slow and busy periods of product demand *and* the probability that they will be unable to locate casual employees, when they are needed. The assurance that casual employees can be recruited on short notice depends on the size of the pool of unemployed workers – *i.e.* as the unemployment rate increases, the relative balance of costs and benefits shifts in favour of adopting a just-in-time casual worker labour force strategy.

The externality in this process is that each firm which shifts to a just-in-time labour strategy generates a net increase in unemployment, since they release their workers who used to be under-utilized (but employed) in slow sales periods, and who are now openly unemployed. This increase in the unemployment pool increases the probability that other firms will be able to locate casual workers on short notice, and thereby increases the profitability of their switching to a core/contingent labour force strategy.

If firms differ somewhat in their perceived quality and in the price they charge, they will face differing costs in potential forgone sales. Firms may also face differing lump sum costs to changing their employment strategies – hence one would not expect all firms to change immediately their employment strategies. However, high unemployment in one period increases the probability that individual firms will adopt a just-in-time labour strategy, and thereby increases the number of firms which generate, in future periods, short-run spells of employment, followed by unemployment.

The process is accentuated if casual workers have to depend on unemployment insurance or social assistance during their unemployment spells. In the absence of experience rating, all firms pay the same unemployment insurance premium rate, but the total premiums paid by firms following a permanent labour force strategy is higher, because they pay premiums on their wages in both slow and busy sales periods. Firms which follow the casualization strategy avoid paying unemployment insurance premiums (as well as wages) to the labourers that they do not need in slow sales periods, but as more firms switch to a casualization strategy, total unemployment insurance claims increase, increasing the UI premium rate necessary to finance them.

If this model of structural labour change is embedded in a larger macroeconomic model where aggregate consumption demand is partially dependent on labour earnings, the decline in labour incomes produced by employment casualization will also feed through to product market demand. It is not necessarily the case that the decline in labour

income is matched by a corresponding increase in capital income, since national income is lower and an increasing fraction is occupied by transfer payments. However, it is clear that a trend to increased casualization of employment implies that any given level of annual aggregate demand generates less employment weeks.

To highlight the contrast with supply oriented models of the labour market, assume that the lower bound on the wages of casual workers is set by minimum wage legislation or by subsistence. Employers pay more than this to their permanent work force, because they have a delegation problem in organizing their permanent workers, on whom they depend to maintain product quality and to organize the effort of casual employees. In the services sector, "quality" is often both ambiguous and crucial to profitability. The perception of "quality" may change subtly with each customer, and high quality service providers have no feasible alternative but to delegate to their workers the responsibility to meet the *customers* definition of quality. Hence, central monitoring of worker effort is very imperfect, and maintaining the morale/motivation of employees is very important. The permanent workforce therefore attracts a wage premium, whose size varies with the importance of worker motivation and the difficulty of management monitoring.

Since some fraction of the permanent work force is always dying or retiring, there are a corresponding number of vacancies opening up in any given year. The efficiency wage argument implies that permanent jobs have a wage premium, hence there is a queue of potential applicants for these desirable jobs. It makes sense for employers to ration access to their new permanent jobs on the basis of observed job performance and relative seniority among their casual employees. Casual workers who refuse an offer of short-term employment decrease their probability of eventually obtaining a permanent job with that employer. The incentive to accept casual employment is, therefore, the current wage plus the change in probability of eventual permanent employment which comes with greater seniority and the reputation of being a "good worker". Given that most leisure activities actually require some cash expenditure and the fact that casual workers have lots of unemployment already, it is reasonable to argue that the marginal valuation of additional "unemployment leisure" is zero, for low income workers¹².

¹² Most authors who adopt the labour/leisure approach to analysis of unemployment do not formulate their empirical estimating equations in ways that would allow the marginal valuation of unemployment leisure to be evaluated, but the work of Narendranathan and Nickell (1985, p. 40) is an exception. They find "a negative valuation on unemployment leisure. The fact that individuals do not, in general, like being unemployed

If the marginal hour of additional unemployment leisure has zero (or negative) utility¹³ and accepting a short-term job increases the probability of eventually getting a permanent job, contingent workers will always accept any job offer that they get¹⁴. As Layard *et al.* (1991, p. 42) note, most of the unemployed take their first job offer. Devine and Kiefer (1991, p. 302) also note that since the typical job offer acceptance probability is very high, "variation in unemployment durations appears to arise primarily from variation in the likelihood of receiving offers".

is not as surprising as it may seem". Osberg and Phipps (1993) note that low wage workers are, more often than high wage workers, underemployed – *i.e.* willing to work more hours at the going wage, but unable to get work.

¹³ Note that as increasing casualization of labour force increases the aggregate unemployment rate, each casual worker can expect to spend more of their year unemployed, decreasing further the marginal utility of an additional week of unemployment "leisure".

¹⁴ In Canada's unemployment insurance system, the first two weeks of a claim have zero benefits. Following that initial period, an unemployed person who is on claim and receives a job offer has to decide whether to accept the job and whether to terminate the UI claim (workers can legitimately continue on claim, declaring their earnings, with UI payments reduced at a dollar for dollar rate for earnings in excess of 25 % of UI benefits). If the job offer is for a permanent job, there is not much to be gained by continuing on claim, and the net financial benefit to job acceptance is:

$$\sum_{i=1}^D [w_2 - b_1 w_1] / (1+r)^i + \sum_{i=D+1}^T w_2 / (1+r)^i \quad \text{where } w_1 \text{ is the prior wage, } b_1 \text{ is the}$$

replacement rate on prior earnings (currently, $b_1 = 0.55$ if $w_1 \leq$ maximum insurable earnings, $b_1 < 0.55$ if $w_1 >$ the maximum insurable), D is the individual's remaining duration of UI benefits, r is the discount rate and w_2 is wage rate being offered [if permanent jobs typically pay better than casual jobs, then typically $w_2 > w_1$] and T is the expected duration of the job.

The situation is different if the job offer is for a job whose duration is expected to be short- *i.e.* a "casual" job. In this case, there is nothing gained by terminating the current UI claim. The option of working while continuing on claim implies that (a) the two week waiting period does not need to be served again when employment ceases [if it ceases before the current claim expires]; (b) each week of work establishes eligibility for weeks of UI benefits following completion of the temporary job (denote the rate of establishment of eligibility as e); (c) the net return to a current week's work effort is reduced by the amount of foregone UI income [*i.e.* $b_1 w_1$ minus (the earnings exemption)].

As a consequence, $w_2(1 + eb_2) - [b_1 w_1]$ is the weekly financial return for the first week of work at a short term job. If job duration exceeds remaining UI duration, the second term goes to zero when UI benefits expire. If UI spell duration exceeds job duration, the return to work while employed is as above, and following job completion the choice framework is moot.

In general, (1) when jobs come with employment durations attached the influence of UI on incentives is much more complex than the effect of the simple "replacement rate" – UI has significant work *incentives* for casual workers, (2) if the marginal utility of "unemployment leisure" is zero or negative, *any* financial return implies job acceptance, (3) if the structure of employment is shifting to temporary jobs, one would expect to observe that many UI claimants now work while on claim (for the reasons suggested above) – and in fact over 3/4 of Canadian UI claimants now do so (personal communication from HRDC).

For analytical clarity, this paper neglects the huge literature in labour economics on wage differentials associated with education, on-the-job training, gender, region of residence, unionization, race, etc. – and the changes in those differentials over time. The emphasis here is on the relationship between the structure of employment offers by firms and the tendency for unemployment rates to increase over time. In this very simple framework, the general level of wages is set by a combination of institutional and market forces. If unemployed workers typically accept the first job offer they receive, one would expect that nominal wages for casual workers would drift down towards their minimum lower bound, and wages for permanent employees would be established at some differential above that. The *real* wage rate for any individual then depends on the rate of inflation.

However, this model of employer decision-making on the structure of employment (and its implications for unemployment) also fits the stylized facts of the aggregate unemployment/wage inflation relationship. As in standard Phillips curve models, the average nominal wage rate declines as the trend unemployment rate increases – as more firms switch to a “just-in-time” casual labour force strategy, the unemployment rate increases and the increasing proportion of lower paid casual workers decreases the observed average wage of all employees. Even if the money wage rate of casual workers is determined by minimum wage legislation and the money wage of permanent workers is a constant premium above that, higher unemployment changes the mix of permanent and casual employees, depressing the observed average money wage¹⁵.

III. MODEL SPECIFICITY AND THE VOCABULARY OF UNEMPLOYMENT

If the foregoing picture of labour markets has some validity, how can one interpret the standard vocabulary of unemployment analysis?

¹⁵ Since increased casualization of employment increases the intensity of work among those permanent employees retained at firms which have shifted to a “just-in-time” labour strategy, the utility wage of permanent employees falls, even if their money wage remains constant. If the efficiency wage argument for paying a premium to permanent employees entails a premium in utility terms over the casual worker option, the money wage differential of permanent employees may increase. On the other hand, increasing unemployment, as Shapiro and Stiglitz (1984) have argued, will decrease the wage premium which permanent workers need to be paid to ensure good performance. It takes extreme assumptions to reverse the compositional affect on average money wages of increasing casualization noted in the text.

What, for example, is the “natural” rate of unemployment in a world where *firms* make decisions about employment strategy? The famous formulation of Friedman (1968)¹⁶ amounts to saying that the natural rate of unemployment is the conditional expectation of the unemployment rate, given the institutional structure of the society at a point in time. In recent years, some (*e.g.* James, 1991) have drawn a distinction between the “short-run natural rate”, given the current characteristics of firms and workers, and the “steady state natural rate” which is the conditional expectation of unemployment given the endogenous changes in characteristics of agents which could be expected to occur if the unemployment rate were to remain at that level.

In the scenario of Section 2, the short-run natural rate of unemployment is the conditional expectation of unemployment given the number of firms who have already adopted permanent-worker or just-in-time labour strategies – but since firms are continually changing their labour strategies in response to the observed unemployment rate, there are several feasible steady state natural rates – those corresponding to a fully permanent or partially casualized labour markets.

Given a particular specification of the price formation process, the natural rate of unemployment may be equal to the non-accelerating inflation rate of unemployment – but this is not, *in general*, true. As Cornwall (1994, p. 62) notes “When one or more of the determinants of [the NAIRU] are functions of the performance of the economy, multiple equilibria result. There is no unique NAIRU”.

¹⁶ The classic definition of “the natural rate of unemployment” is that of Friedman (1968, p. 8)

The natural rate of unemployment, in other words, is the level that would be ground out by the Walrasian system of general equilibrium equations, provided there is embedded in them the actual structural characteristics of the labour and commodity markets, including market imperfections, stochastic variability in demands and supplies, the cost of gathering information about job vacancies and labour availabilities, the costs of mobility, and so on.

This is clearly a statement about the *equilibrium* position of the labour market, given its structural characteristics. However, the existence of a Walrasian equilibrium is a very different thing from the adjustment properties of the economy, when it is out of equilibrium. Part of the confusion surrounding discussions of the natural rate probably arises from the sentences which precede Friedman’s definition of the natural rate, which refer to upward pressure on real wage rates when there is excess demand for labour. Hence, although the definition of the natural rate itself refers only to the level of unemployment to be expected in equilibrium, the discussion which surrounds it makes assertions about the nature of the adjustment process in disequilibrium situations – although these are clearly two different sets of issues.

It should also be noted that the term “natural rate of unemployment” is defined *differently* by some other authors – *e.g.* Barro (1990, p. 32) who defines the natural rate as the actual rate “plus a term that depends negatively on contemporaneous unexpected inflation”.

Section 2 illustrates a type of model in which workers and the labour market function in nominal wage terms – indeed, since efficiency wage models are in general about wage *differentials*, such models are necessarily about *nominal wage ratios*. In such models, the average money wage rate is set in the labour market. The setting of the average *real* wage rate depends on what the price level is, and the rate of price inflation is set – separately – in product markets. One well known model of price inflation in product markets is that it depends on the rate of growth of money supply. Standard Phillips-curve/NAIRU models use a specific assumption (a constant mark-up of prices over unit labour cost) to tie price inflation in product markets to wage trends in the labour market but one needs to rely on longer-run stories about market entry by new firms to motivate this assumption (since it is clearly not what profit maximizing firms would do under all circumstances). If *price* inflation is a phenomenon of *product* markets, while equilibrium in labour markets is the result of nominal wage bargains, the entire NAIRU concept has little meaning.

The reason for presenting a *different* model of unemployment is to make the point, by example, that the relationship between the NAIRU, the natural rate of unemployment, the socially optimal rate of unemployment and the actual rate of unemployment is highly model dependent. In a model of the type described in Section 2, the “natural” rate of unemployment and the NAIRU are not the same. There may be several natural rates and the NAIRU has little meaning. To define the *socially optimal* unemployment rate, one must specify the weights to be attached to the incomes of workers and capitalists, since lower unemployment and higher wages come partly at the expense of profits. [From the point of view of labour, the fully permanent work-force, low unemployment equilibrium dominates all the partially casualized equilibria.]

CONCLUSION

The point of this essay is not to argue that no amount of aggregate unemployment has ever come from unemployment insurance incentives or excessively high real wages (*e.g.* from an over-valued currency). Nor is the point to argue that all unemployment comes from employer initiated changes in the institutional structure of employment relationships – rather it is to highlight the process by

which *some* unemployment arises in the *current* labour market context. Unemployment is a large and important phenomenon, with a great many complexities – it would be surprising if an issue this large and complex had a single simple cause.

The point *is* that it is time to look at unemployment from a new angle. It is time to emphasize how the labour market strategy of firms responds to the continued ready availability of labour in a high unemployment environment, and the long-run societal implications of individual employer strategies. And it is time to recognize how dependent the vocabulary of the description of unemployment has become on a *particular* (and not obviously superior) analysis of the determinants of unemployment.

As well, a labour market which has become fully casualized is highly “flexible”, but it is otherwise not very attractive. The “insider/outsider” vocabulary of Lindbeck has been much used recently as an argument to decrease the protections to employment security of permanent employees, in the name of greater equity in the allocation of employment and faster growth in output. However, that argument depends heavily on a presumed institutional structure of employment relationships – that employment, when obtained, is a full-time continuing traditional job. It depends also on a presumed behaviour – the harassment/non-cooperation of insiders against any outsiders hired – to maintain the privileges of “insider” workers. There is a lot of empirical evidence that much of the employment growth in Canada has not been the traditional permanent job, and there is very little (if any) evidence for insider harassment. Employers are able, in practice, to maintain clear distinctions between core and contingent workers, and I would wager that the readers of this article do not harass the casual employees with whom they share their workplace on a day-to-day basis.

It has become part of the standard orthodoxy to argue that high unemployment is due to “inflexible” labour markets and that public policy should increase labour market flexibility. However, this paper has tried to argue that orthodox approaches have not done very well as explanations of unemployment and the vocabulary of unemployment which such approaches imply has inappropriate policy implications. In my view, public policy should not aim at hastening the transition to a fully casualized labour market. Average labour earnings are lower and the economy is likely to be on a lower trend rate of growth of labour productivity since firms have little incentive to invest in the training of a potentially transient work force. Transfer dependency and the size of government is greater, and so also is economic inequality. High

unemployment may be pushing our society in this direction, but this is not a trend we should accentuate, or choose without conscious thought.

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APPENDIX 1

Shapiro and Stiglitz (1984) emphasize the need of firms to ensure that workers do not “shirk” while Williamson Wachter and Harris (1977) focus on the need for “consummate cooperation” to enable firm productivity. Akerlof (1984) emphasized “gift exchange” in which firms pay more than they have to, in the awareness that firms which pay the minimum get the minimum – in loyalty, initiative and unobservable effort. The common perception is that firms want to minimize the cost per efficiency unit of labour, and know that productivity levels depend on the wage paid – hence firms choose a profit maximizing wage, and then decide on profit maximizing employment level, given that wage. Equilibrium does not imply full employment.

In this tradition, assume we start from underemployment equilibrium at unemployment rate u_1 , in which n_1 nearly identical firms each pay a daily wage rate w_1 to l_1 permanent, full-time workers. (The year is D days long.) Firms are “nearly identical” since they differ only in entrepreneurial ability to project an image of product quality. Firms all have the same production technology and the same size of capital stock (k) but high “quality” firms can charge a somewhat higher price for output (which is non-storable). Firms pay payroll tax at a rate t_1 , and interest costs on capital at an exogenous rate r . The marginal firm can be denoted as the n_1 th firm and makes zero profit, as in equation (1) – infra-marginal firms make positive profits.

$$P(n_1) \cdot Q - (w_1 D l_1 (l + t_1)) - r k = 0 \quad (1)$$

In each year, some firms randomly go bankrupt and some individuals die or retire, while new firms and new workers enter the labour market – let us assume these flows balance at an aggregate annual turnover rate of s and that it takes an average d_1 days for entrants to locate a job and for a vacancy to be filled. Workers have no taste for leisure and accept all jobs immediately they get an offer, but total number of unemployment days (U_1) is as in equation 2.

$$U_1 = s d_1 \cdot N_1 \quad (2)$$

where $n_1 l_1 = N_1$

Employment days total N_1 and unemployment days total U_1 , so the unemployment rate is $u_1 = \frac{U_1}{N_1 + U_1}$.

If the unemployed receive a daily unemployment insurance benefit of b and the UI fund must balance its books annually, then equation 3 follows

$$bU_1 = t_1 N_1 w_1 \tag{3}$$

The unemployed get an expected annual income y_1^u as in (4) while the expected income of an employed worker y_1^e is given by (5).

$$y_1^u = bd_1 + w_1(D - d_1) \quad w_1 > b \tag{4}$$

$$y_1^e = (1 - s)w_1D + s[(D - d_1)w_1 + bd_1] \quad y_1^e > y_1^u \tag{5}$$

Assume now that there are D_2 days of good sales (at a daily rate of Q_2) and D_1 slow days (at Q_1), as equations (6) and (7) summarize.

$$D_1 + D_2 = D \tag{6}$$

$$D_1Q_1 + D_2Q_2 = Q \quad Q_1 < Q_2 \tag{7}$$

So far, this is an equilibrium. Unemployed workers accept a job as soon as they can locate it, while employed workers never quit theirs – no worker has an incentive to change their behaviour. The government budget is balanced and the marginal firm makes zero profits – so neither of them wishes to change behaviour either.

Suppose now that firms realize that it would be possible to hire only a_1 permanent workers (enough to take care of business on slow days and organize production on busy days) and call in a_2 casual employees on short notice for busy sales periods. Since casual workers have lower productivity (q_2) than permanent employees (q_1), $a_1 + a_2 > l_1$. Since casualized firms can only make a finite number of calls in time to fill jobs on busy days, on average they can only locate some proportion (π) of the a_2 casuals they need, and that proportion depends on the unemployment rate.

$$q_1 a_1 = Q_1 \tag{8}$$

$$q_2 a_2 + q_1 a_1 = Q_2 \tag{9}$$

$$\pi = \pi(u) \quad 0 \leq \pi \leq 1 \tag{10}$$

The risk of moving to a just-in-time labour strategy is least for the firm which has least to lose in forgone profits from not being able to locate enough workers in busy periods, because it can only charge a low price for its product. Hence the issue of whether any firm will casualize

its labour force reduces to whether or not the marginal firm gets positive profits in a casualized mode of operation, as equation (11) expresses. Assume that the firm pays the minimum wage w_m to casual employees.

$$P_n[Q_1D + \pi(Q_2 - Q_1)D_2] - [w_1[l + t_1]a_1D + w_m\pi(l + t_1)a_2D_2] - rk > 0 \quad (11)$$

The critical values of w_1 , w_m and π are defined by equations (12) to (14).

$$w_1 > \frac{P_nQ_2D + P_n\pi D_2(Q_2 - Q_1) - w_m - \pi a_2D_2(1 + t_1) - rk}{a_1D(1 + t_1)} \quad (12)$$

$$w_m < \frac{P_nQ_2D + P_n\pi D_2(Q_2 - Q_1) - w_1(1 + t_1)a_1D - rk}{\pi a_2D_2(1 + t_1)} \quad (13)$$

$$\pi = \pi(u_1) = \frac{D(P_nQ_2 - w_1a_1(1 + t_1)) - rk}{D_2(P_nQ_1 + w_m a_2(1 + t_1) - P_nQ_2)} \quad (14)$$

If the wage paid to permanent workers is greater than (12), or the wage paid to casuals is less than (13) or if the probability of attracting replacements is greater than (15), the marginal firm will turn to a "just-in-time" labour strategy – indeed, these conditions define the marginal permanent work force firm. The proportion of firms which follow a casualized labour strategy will depend on market forces (via w_1 and u), institutional constraints (especially the minimum wage w_m) and technology. Any technological change which makes it easier for firms to call in workers (e.g. call-forwarding) can be thought of as a shift in equation 11, and will increase the number of successful call-ins at any given level of unemployment, and hence the proportion of firms which opt for a casual labour force strategy.

A shock to unemployment will change the probability of success in calling in casual workers. Figure 1 presents a diagrammatic analysis of an initial equilibrium (U_0, π_0, β_0) which is disturbed by an unemployment shock, producing an increasing share (β_1, β_2) of firms operating in a casualized labour force strategy, and an increase in unemployment rates¹⁷. As the unemployment rate increases, the average money wage rate (\bar{w}) falls, since both depend on the fraction (β) of

¹⁷ Depending on the relative rate at which the success probability of calling-in increases with aggregate unemployment and the rate at which profits decline with missed sales [which depends on the price/"Quality" gradient] there may be several intermediate equilibria, short of complete casualization.

firms following a just in time labour strategy. The mean weekly wage in a permanent firm is w_1 . The mean weekly wage in a firm with a core/contingent strategy is \bar{w}_c

$$\bar{w}_c = \frac{w_1 a_1 + w_m \pi a_2}{a_1 + \pi a_2} \cdot \frac{D_2}{D_1 + D_2} + W_1 \cdot \frac{D_1}{D_1 + D_2} < W_1$$

Overall the average wage is \bar{w} .

$$\bar{w} = (1 - \beta)w_1 + \beta\bar{w}_c \tag{15}$$

If N is the total number of firms, unemployment is also a function of the proportion of firms casualized (β)

$$U = (1 - \beta)Nsd_1l_1 + N\beta[sd_1a_1 + (l_1 - a_1)D_1 - \pi D_2a_2]$$

If increased “labour market flexibility” is interpreted as equivalent to an increase in β , it is clear that such an increase in flexibility decreases worker welfare.

APPENDIX 2

Aggregation and the Micro-economics of the Demand Side

As an example of the importance, for analysis and policy, of understanding the microeconomics of the demand side, consider the following example of the relationship between the average industry wage and employment. A macro economist who saw a time series of data on employment and wages where average wages fall when total employment rises might well consider this to be an example of how variation in wage rates trace out the demand curve for labour.

Estimating an equation of the general form of equation 1 might, for example, produce the estimated relationship summarized in equation 2¹⁸.

$$\text{Employment} = b_0 + b_1 (\text{Wage}) + \varepsilon_1 \tag{1}$$

$$\text{Employment} = 5345.1 - 309.65(\text{Wage}) \tag{2}$$

(71.52) (5.31)

$$\bar{R}^2 = .9801$$

$$n = 56 \quad (\text{standard error in parentheses})$$

¹⁸ The actual data for this regression is available from the author on request.

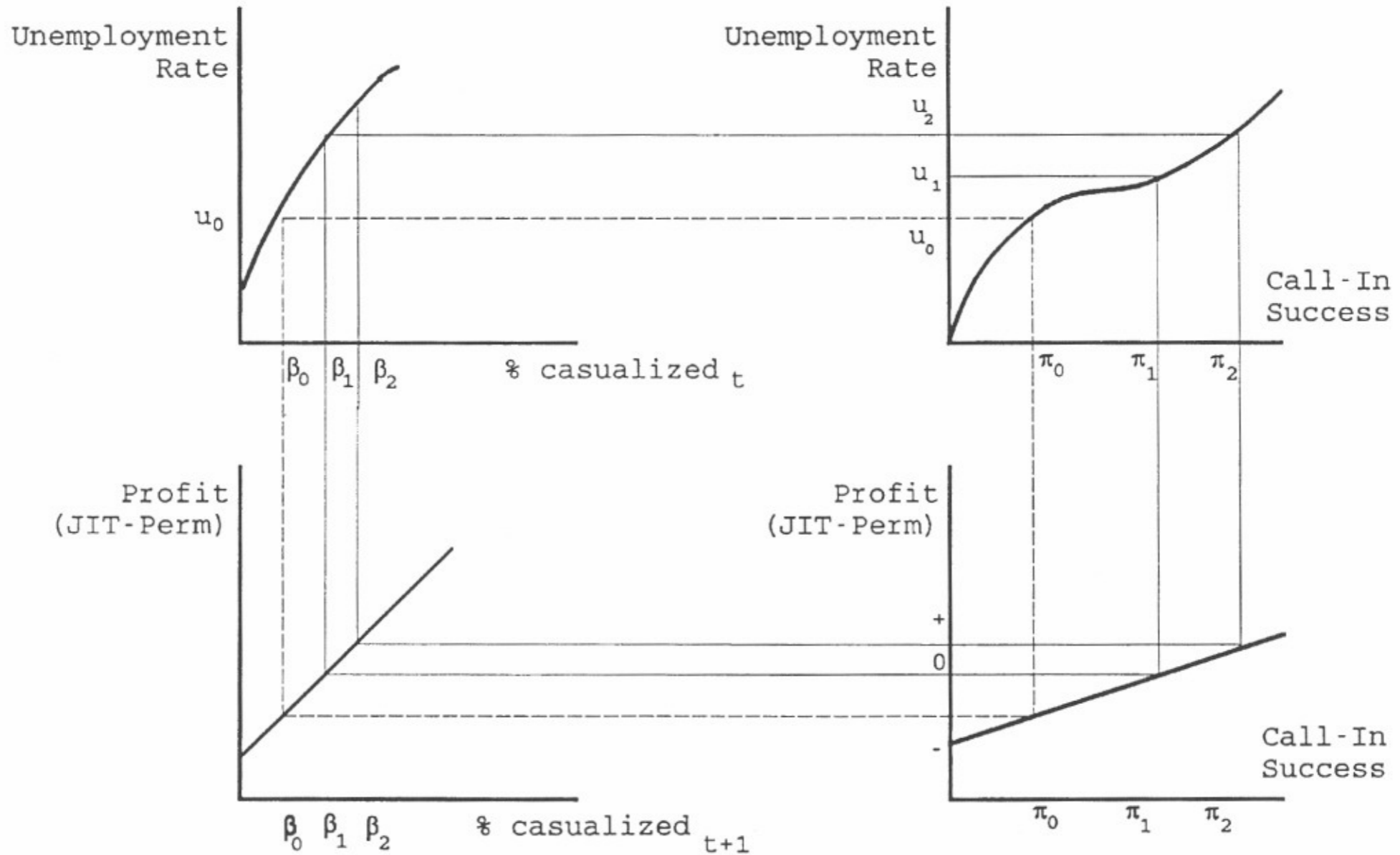


Figure 1
Casualization and unemployment dynamics

Most (98 %) of the variation in the data is explained by variation in the wage, and the wage paid is highly statistically significant (a t statistic of 58.3) and empirically large – at the point of means, the wage elasticity of demand estimated from Table 1 is -3.54 . Since most of the variation in employment is explained by movements in the average wage, and the estimated elasticity implies a change of 1 % in wages cost induces a 3.5 % change in employment levels, policy makers might well use econometric results such as those of equation 2 in thinking about appropriate policies to deal with unemployment. If the wage elasticity of labour demand is high, firms will generate more employment if governments cut indirect labour costs, such as unemployment insurance premiums or workers compensation contributions. In the 1994 Canadian budget, the federal government decided to forgo 500 million dollars in annual unemployment insurance contributions, and justified that taxation decision by the assertion that indirect labour costs are the “silent killer of jobs” and that reducing unemployment insurance contributions by 0.3 % of insurable earnings will create employment¹⁹.

However, one might ask “given all of the other uncertainties of business, how many employers will actually be motivated to add workers in response to a 0.3 % change in direct labour costs?”²⁰

Since Equation (2) was estimated from artificial data, it is known that the true process underlying these aggregate numbers is based on a typical factory adding workers in shifts. The true micro-economics underlying this macro data is that each of 10 identical employers has 40 workers involved in administration, sales, product design etc. earning \$ 20 per hour and 50 workers *per shift* employed in direct production at \$ 10 per hour. [To make the example easy, it is assumed all employees work full time.] The employment level and average wages cost of each firm are described in Table 2. At different points in time, different numbers of firms are running a second production shift.

The regression results of equation 2 were produced from aggregate data on the industry (assumed to consist of 10 firms) in which individual firms simply increase production in response to variations in

¹⁹ According to media reports of the House of Commons debates, the Minister asserted that 40,000 jobs would be created by keeping UI premiums at 3 % of insurable earnings, rather than raising them to 3.3 %.

²⁰ More precisely, the budget announced a 0.3 % decline in labour costs for employees *earning less than maximum insurable earnings* – the decline in unit labour costs for employees earning in excess of maximum insurable earnings is (maximum insurable earnings/actual earnings \times 0.3 %). Since maximum insurable earnings is reset each year at the previous year’s average wage, the actual cut in average labour costs is approximately 0.15 %.

product demand. Over time, aggregate employment changes as varying proportions of establishments add a second shift. (e.g. employment is 1,050 when three plants are on double shift operation while 7 are working single shifts, while 5 plants working double shifts and 5 working single shifts produces total employment of 1,150. Since the marginal workers being hired earn less than average workers' salaries, adding shifts of lower paid workers reduces the average wage paid in the industry – in this example from \$ 13.81 to \$ 13.48 per hour.)

Table 2

Level	Establishment Labour demand	Wage Bill	Employment	Average Hourly Wage
One Shift Operation	40 @ \$ 20 per hour	800		
	50 @ \$ 10 per hour	500		
	Total	1 300		
Two Shift Operation	40 @ \$ 20 per hour	800		
	100 @ \$ 10 per hour	1 000		
	Total	1 800		

The microeconomics underlying Table 2 are that factories simply add shifts of workers when product demand warrants – the demand for labour is directly derived from demand in product markets. The microeconomics underlying aggregate industry data is, therefore, a world in which the wage elasticity of labour demand at the firm level is 0. It follows, therefore, that the employment effect of marginally decreasing indirect labour costs is also 0.

The aggregate employment/wage relationship of equation 2 *could* also be generated by a number of identical firms *all* of whom made marginal changes to their employment levels in response to marginal changes in wages paid. The point to emphasize is that one cannot, with aggregate macro data on industry performance, distinguish that hypothesis from the microeconomics of employment creation as summarized in Table 2 – but the policy implications of the two scenarios are *very* different. If employers just add shifts of (lower-paid) workers when demand warrants, there is *no* gain in increased employment to cutting indirect labour costs. Although the government of Canada has demonstrated

its willingness to spend \$ 500 million in forgone tax revenue, on the basis of a presumption about the wage elasticity of labour demand, it would be useful to spend some fraction of that amount on examining the underlying microeconomics of firm behaviour.

More generally, many economists have justified their belief in the role of real wages as a determinant of employment levels on the basis of data on the industry-level correlation over time of total employment and average wages. This correlation is increased as more firms in the industry shift from a wholly permanent to a partially contingent (at lower pay) work force. On periods of slow sales, average wages are high and employment is low because only highly paid permanent employees have jobs. In busy sales periods, employment increases with the hiring of short-term workers, whose lower wages depress the industry average wage. However, if the average wage/employment level correlation is simply a phenomenon of aggregation, there will be no aggregate employment gain to either cutting real wages or increasing labour market flexibility by increased casualization of the work force.