

Wage norms, capital accumulation, and unemployment: a post-Keynesian view

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Abstract The paper presents a post-Keynesian view of unemployment. It argues, first, that the effective labour demand need not be downward sloping with respect to real wages, and aggregate demand need not be downward sloping with respect to inflation; second, that there is a broad case for unemployment hysteresis, understood as endogeneity of the non-accelerating inflation rate of unemployment (NAIRU), based on social norms in wage bargaining and on the supply-side effects of capital accumulation; and, third, that, much as Keynes argued, capital investment (rather than labour-market institutions) is the key variable to explain changes in aggregate unemployment performance across countries and over time. Overall, the paper advocates a Keynesian view of the NAIRU, where effective demand determines unemployment in the short run and the deviation of actual unemployment from the NAIRU determines the change in inflation. In the medium term the NAIRU is endogenous and follows actual unemployment.

Key words: unemployment, NAIRU, Keynesian economics, wage norms

JEL classification: E12, E24, E25

I. Introduction

The financial crisis which began in August 2007 has shaken the belief in the efficiency and stability of the market system regarding financial markets. It has discredited the ‘efficient market hypothesis’ (EMH), which had lauded the efficiency of financial markets and, in the area of macroeconomics, the ‘new consensus model’ (NCM), which had argued that central bank policy should exclusively focus on price stability and had assigned a secondary, if any, role to fiscal policy. Economic policy has been based on the EMH and the NCM as well as the NAIRU (non-accelerating inflation rate of unemployment) explanation of unemployment, which regards unemployment as the outcome of labour-market inflexibility. The crisis has led to a partial revival of Keynesian approaches (e.g. Akerlof and Shiller, 2009), which have long argued that financial markets are prone to instability (e.g. Minsky, 1986) and that

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in times of crises fiscal policy is indispensable. However, as of yet, there has not been a comparable surge in interest in Keynesian analyses of the labour market, despite the fact that even before the crisis the NAIRU story had been criticized (Baccaro and Rei, 2007; Howell *et al.*, 2007) and the OECD's estimates of the NAIRU have been revised upwards during the crisis (OECD, 2009).

This article offers a reformulation of the post-Keynesian approach to the analysis of unemployment. Post-Keynesian economics is a stream within Keynesian economics that is highly sceptical about the traditional microfoundations. It highlights that economic actors operate in a world that is characterized by fundamental uncertainty and therefore convention-based (i.e. non-rational) behaviour, psychology, and social institutions will play an important role, in particular with regard to investment expenditures and the demand for financial assets, but also in wage setting. Post-Keynesian economics has the concept of effective demand at its centre, not only in the short run but also in the context of growth theory. One of its hallmarks is that unemployment is typically regarded as a result of demand deficiencies in the goods market and that wages are analysed as a cost factor as well as a source of demand.

The paper makes three central claims. First, effective labour demand need not be downward sloping. There is a difference between the notional, technologically given labour demand curve and effective labour demand. Changes in wages will impact on demand in various ways. In particular, wage increases may stimulate demand because consumption propensities out of wage incomes are higher than those out of profit incomes. And, if wage increases will come with price increases, an increase in inflation may have positive effects on demand via the real debt channel. The effective labour demand curve need not be downward sloping. A substantial empirical literature finds evidence that, at least for large economies, a wage-led demand regime is plausible (Naastepad and Storm, 2006–7; Hein and Vogel, 2008; Stockhammer *et al.*, 2009).

Second, the paper claims that there is a broad case for unemployment hysteresis based on social norms in wage bargaining and the supply-side effects of capital accumulation. Much of the literature on hysteresis focuses on the effect of long-term unemployment on wages. This paper argues that there is a more general case for unemployment hysteresis based on conventional wage norms. What is regarded as a 'normal' wage will depend on people's experience of what other people earn. Therefore actual wages will be regarded as 'normal' if workers' wage aspirations get frustrated for a sufficiently long time (Skott, 2005). As a consequence of hysteresis in wages, there will be unemployment hysteresis, i.e. the wage-setting curve will shift if unemployment deviates from the NAIRU. Moreover, capital accumulation has supply-side effects, if the elasticity of substitution between capital and labour is not equal to unity (Rowthorn, 1999a; Arestis and Sawyer, 2005) and/or if the mark-up reacts to the degree of capacity utilization (Rowthorn, 1995). A negative demand shock may reduce the capital stock (relative to full employment capital stock) and thereby increases unemployment in the medium term. The NAIRU will thus be endogenous and demand shocks can have long-lasting effects on unemployment.

Third, the paper claims that capital investment is empirically the key variable to explain changes in aggregate unemployment performance across countries and over time. Keynes (1937) had already hypothesized that investment expenditures are the single most important determinant of unemployment because investment is prone to wide fluctuations. This assertion is in sharp contrast to the mainstream NAIRU story, which argues that labour-market institutions (LMIs) are the main driving force of unemployment. The paper will review the empirical studies on the determinants of unemployment and finds broad support for the role of capital investment as a determinant of unemployment.

The paper will use a standard NAIRU model as a reference point to illustrate these arguments and argue for a view of the NAIRU where effective demand determines unemployment in the short run and the deviation of actual unemployment from the NAIRU determines the change in inflation. In the medium term the NAIRU is endogenous and can follow actual unemployment.

The paper is structured as follows. Section II briefly outlines the post-Keynesian approach. Section III presents a general NAIRU model and highlights that the mainstream NAIRU story, which claims that lack of labour-market flexibility is the root cause of unemployment, is only one specific interpretation of the NAIRU model. Section IV argues that the effective labour demand curve need not be downward sloping (with respect to the real wage) and that the aggregate demand (AD) curve will in general not be downward sloping (with respect to inflation), except in so far as this is caused by monetary policy. Section V maintains that unemployment hysteresis is ubiquitous (in the face of sufficiently strong and long-lived shocks), owing to social norms in wages and the fact that capital investment has demand- as well as supply-side effects. Section VI evaluates the empirical evidence on the determinants of unemployment and argues that capital investment (rather than LMIs) is the key variable that drives unemployment performance. Finally, section VII concludes.

II. The post-Keynesian approach

The following sections discuss the post-Keynesian analysis of the unemployment in a conventional framework. It is thus helpful first briefly to review the basic building blocks of post-Keynesian economics.¹ As regards individual behaviour, post-Keynesian economics emphasizes that people operate in an environment of fundamental uncertainty regarding the future. The post-Keynesian approach rejects the quest for microfoundations of macroeconomics as they are conventionally understood: deriving macroeconomic models based on a 'representative' agent from the behaviour of rational, selfish individuals. Society and the economy are too complex and do not function along sufficiently deterministic lines for the future to be readily forecast—and individuals know that. The post-Keynesian assertion is not so much that individuals are irrational, but that the world is not sufficiently mechanistic for individuals to be rational. Rather, human behaviour should be understood in psychological and sociological terms. Social norms and conventions play a crucial role.

Fundamental uncertainty has several important implications in post-Keynesian economics. First, issues of uncertainty are most pronounced for decisions that involve long time horizons. Investment decisions are thus characterized by high degree of uncertainty and will consequently be ruled by what Keynes called 'animal spirits' rather than by rational calculation. Second, uncertainty is the basis for liquidity preference. Investors keep liquid assets, despite their low return, to maintain flexibility in the face of an uncertain future (Davidson, 1994, ch. 6). Third, the possibility of structural breaks and sudden shifts in behaviour has been highlighted (Lawson, 1985; Keynes, [1936] 1973).

In its macroeconomic analysis post-Keynesian economics has the concept of effective demand at its centre, in particular the notion that investment decisions are not reducible to an

¹ See Lavoie (1992), Arestis (1992), Davidson (1994), and Hein and Stockhammer (2010) as overviews, and King (2002) as a history of post-Keynesian economics.

optimizing calculus and will be ‘prone to sudden and wide fluctuations’ (Keynes, 1937, p. 221). Moreover, the functional distribution of income is usually given more prominence than in standard models in that income shares impact on investment and consumption (Kalecki, 1954; Bhaduri and Marglin, 1990). Both autonomous investment expenditures and distributional issues also feature prominently in post-Keynesian growth theory (Robinson, 1956; Dutt, 1990; Taylor, 2004).

The role of the financial system differs from that in standard models. Money is held to maintain flexibility in an uncertain world. The demand for liquidity will thus reflect the state of mind of investors. Money is created endogenously by the banking system as the result of lending decisions (Kaldor, 1982; Moore, 1983). The role of the central bank is to maintain the stability of the financial system and its key policy instrument is the interest rate, but it has little (or no) control over the money supply. Deposit rates and lending rates are then determined by the private banking sector based on their liquidity preference. Post-Keynesians (in particular Minsky, 1964, 1986) have long argued that the financial system is prone to endogenous cycles of instability as debt ratios are likely to increase during booms.

This is not the place to dwell on the delineations between Keynes’s own analysis, mainstream Keynesian economics, and post-Keynesian economics. The following analysis reformulates the post-Keynesian analysis of unemployment in a standard setting, but several mainstream Keynesians (Modigliani *et al.*, 1998; Ball, 1994, 1999; Solow, 2000) would share substantial parts of this analysis.

III. The NAIRU model and the NAIRU story

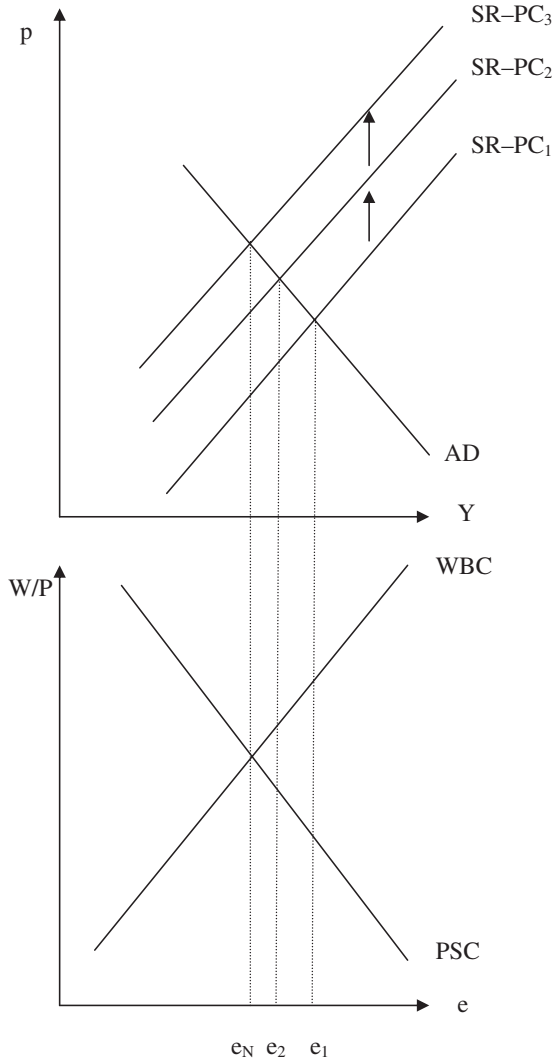
The NAIRU model has become the dominant framework for the macroeconomic analysis of unemployment as witnessed by textbooks such as Blanchard (2006) or Carlin and Soskice (1990, 2005). Following influential work by Layard *et al.* (1991), the NAIRU theory has become associated with a specific interpretation that we will call the NAIRU *story*, i.e. the arguments that actual unemployment is over longer periods essentially determined primarily by LMIs (e.g. IMF, 2003; Nickell *et al.*, 2005).

At the core, the NAIRU model has a bargaining interpretation of the labour market. Wage contracts are not the result of a market-clearing process (as in Walrasian economics). Rather labour unions and large firms bargain over nominal wages, and the bargaining power of labour is a positive function of the level of employment. The model presupposes that both sides have market power (otherwise there would be nothing to bargain about). Inflation is thus the result of a distributional conflict. Unemployment is determined by effective demand on the goods market. If actual unemployment falls below the NAIRU, this improves the bargaining position of labour and results in increased wage inflation.

Insofar as aggregate demand reacts to changes in inflation, there is a feedback from the goods market to the labour market. If the AD curve is downward sloping (as is the standard assumption) then the labour-market equilibrium is self-adjusting. If demand pushes unemployment below the NAIRU, then there will be an increase in inflation, which in turn decreases demand. Consequently unemployment will increase and actual unemployment converges to the NAIRU.

Figure 1 illustrates the argument. The bottom panel represents the labour market, the upper panel represents the goods market. For the latter we assume a given labour supply such that an increase in employment corresponds directly to a decrease in unemployment. Assume that

Figure 1: A well-behaved NAIRU model



aggregate demand (AD) intersects the short-run supply curve, which is a short-run Phillips curve for given inflation expectations, at output level Y_1 . This corresponds to a level of employment (e_1). The intersection of the wage-bargaining curve (WBC) and the price-setting curve (PSC) give an employment rate at the NAIU (e_N). The wage-bargaining curve maps the wage settlements for different employment levels. Higher employment means higher bargaining power for unions and consequently higher nominal wages. There will only be one level of employment at which the expected real wage (given inflation expectations) is consistent with the real wage implied by the prices set by (oligopolistic) firms (given their expectations about input price inflation and wage inflation). In other words, there will only be one level of employment at which the income claims of labour and capital are consistent. If e_1

exceeds e_N there will be unexpected wage inflation as the bargaining position of unions improves. This unexpected wage inflation feeds into prices as firms seek to pass on the increases in costs to consumers. Thus, there results a spiral of unexpected wage and price inflation at employment level i_1 .

As firms and households adapt to the higher inflation level, the short-run Phillips curve shifts upwards (from $SR-PC_1$ to $SR-PC_2$), resulting in Y_2 and the corresponding employment level e_2 . This process will continue until the Phillips curve has shifted to $SR-PC_3$, where employment equals e_N , at which point there is no further inflationary pressure.

The adjustment of actual unemployment to the NAIRU depends on two conditions: first that the goods market reaction to an increase in inflation is contractionary, and second that the NAIRU itself does not change during the period away from equilibrium. We will argue that the post-Keynesian vision questions both conditions.

The NAIRU model is a rather general framework that can accommodate different theories. At the core it posits a short-run trade-off between unemployment and inflation, i.e. a short-run Phillips curve. Equilibrium can, in principle, be stable or unstable, according to the adjustment in the goods market. And the NAIRU can be endogenous or exogenous; Stockhammer (2008) shows that depending on the assumptions about the demand function and about the endogeneity or exogeneity of the NAIRU, the NAIRU model is consistent with a monetarist, new Keynesian, post-Keynesian, or Marxist interpretation.

The NAIRU story, i.e. the assertion that actual unemployment is primarily determined by changes in LMIs, is but one particular interpretation of the NAIRU model that assumes a standard negative effect of inflation on demand and the exogeneity of unemployment with respect to its own history. The NAIRU story has become the dominant view on unemployment and has informed policy recommendations of labour-market deregulation as the key means to change medium-term unemployment (OECD, 1994, 2006; IMF, 2003; European Commission, 2003). We thus use the terms ‘NAIRU story’ and ‘mainstream view’ synonymously.

IV. Goods market adjustments

Why should the goods market demand decline in the face of a wage–price spiral? We investigate two aspects of this question: why should the AD curve be downward sloping (with respect to prices), and why should the labour demand curve be downward sloping (with respect to the real wage)?

Why should the AD curve be downward sloping? There are two possible answers to this question. The first, monetarist, answer is based on the assumption that the money supply is exogenous. If so, an increase in the price level will decrease the real money supply and will result in an increase in interest rates, which will depress aggregate demand. This argument can still be found in many macroeconomic textbooks and some papers on the NAIRU (e.g. Nickell, 1998), but few monetary economists and certainly very few central bankers (who according to this theory are supposed to set the money supply) today believe that the money supply is exogenous. Rather the modern view of central banking (including the NCM) regards the monetary authorities as setting the interest rate, with the money supply adjusting endogenously.

The second, modern, answer to the question of why the AD-curve is downward sloping is the central bank’s policy reaction. Most central banks increase interest rates in response to (or

in anticipation of) inflation. This reaction could be part of a strict inflation-targeting regime or as part of a more flexible Taylor Rule that gives weight to unemployment as well as to inflation. Indeed, post-Keynesians have argued that the interest rate (rather than the money supply) has been the prime monetary policy well before the recent popularity of the Taylor Rule (Kaldor, 1970, 1982; King, 2002, ch. 8).

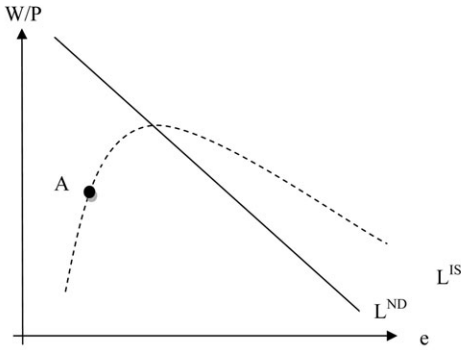
The argument that the central bank creates the negative reaction of aggregate demand to an increase in inflation is plausible and has important implications for the interpretation of the NAIRU. First, it highlights that the adjustment of actual unemployment to the NAIRU is essentially due to a policy reaction, not an economic automatism. That is, if central banks choose not to change interest rate, no adjustment would occur—the economic system in this view is not self-adjusting. Indeed, the private-sector adjustment to a wage–price spiral may be perverse. An unexpected disinflation increases the real debt burden and may have contractive effects (Fisher, 1933). As a consequence, different monetary policy rules may result in different NAIRUs. Or, as Keynes put it, ‘there are a number of positions of long-period equilibrium corresponding to different conceivable interest policies on part of the monetary authority’ (Keynes, [1936] 1973, p. 191).

Second, there are limitations to the effectiveness of monetary policy. Once the inflation and interest get close to zero, it will be impossible for the central bank to lower real interest rates (by conventional means). The experience of Japan in the 1990s has demonstrated that this is not merely a theoretical possibility. Moreover, this mechanism (as well as the exogenous money supply mechanism) relies on a sufficiently strong reaction of the private sector to the change in interest rates. As Keynes had pointed out a long time ago, there are several situations where this may not be the case: in times of financial crisis the demand for money can become perfectly elastic with respect to the interest rate (a liquidity trap), risk premia may surge, breaking the usual link between the central bank rate and loan rates, banks may hoard liquidity and not extend credit (credit rationing), or investors (and households) may not react to changes in interest rates because they are worried about the future (an investment trap).

A second, closely related, question, is whether the labour demand curve is downward sloping. There have been several microeconomic arguments that the labour demand curve need not be downward sloping (Card and Krueger, 1994; Manning, 1995), but our concern here is a genuinely macroeconomic one: there is a difference between notional labour demand and effective labour demand, a distinction established by the disequilibrium Keynesians of the 1960s and 1970s (Lavoie, 2003). The notional labour demand curve is the technologically determined labour demand derived from the first-order condition of a profit-maximizing firm. It assumes that there are no demand constraints for the firm. The effective labour demand is derived from aggregate demand given changes in (real or nominal) wages.

To clarify the post-Keynesian argument in comparison to standard analysis we focus on change in real wages.² Figure 2 depicts the standard downward-sloping (notional) labour demand curve. In a recession firms typically have spare capacity and the economy will be at point A. The economy is off the production function and off the (notional) labour demand curve. The relevant question (for economic policy during a recession) is how effective labour demand will react to a wage cut at point A. Other things equal, one would expect a redistribution of income from capital to labour, i.e. an increase in the wage share, to have

² The following is not Keynes’s own argument. For Keynes the level of employment is determined by effective demand and the level of real wage is determined by the labour demand curve (Keynes, [1936] 1973; Lavoie, 2003).

Figure 2: Notional and effective labour demand with a standard production function

Note: L^{ND} is notional labour demand and L^{IS} is effective labour demand as derived from the goods market equilibrium.

a positive effect on consumption demand (as wage earners are likely to have a higher consumption propensity than earners of profit income); also a negative effect on investment (which depends positively on retained earnings); and a negative effect on net exports (assuming that the increase in the wage share comes with a nominal wage increase that feeds into domestic prices and depresses competitiveness). A priori, the total effect of a change in the wage share is thus indeterminate in such distribution-led demand models (Bhaduri and Marglin, 1990), which has motivated several studies to investigate the relation empirically (Bowles and Boyer, 1995; Stockhammer and Onaran, 2004; Naastepad and Storm, 2006; Hein and Vogel, 2008; Stockhammer *et al.*, 2009). Most of these studies find that for large economies the demand regime is wage led. For example Stockhammer *et al.* (2009) find that for the Euro (12) zone a 1 percentage point increase in the wage share leads to an increase in consumption by 0.4 per cent (of GDP), a decline of investment by 0.1, and a decline of net exports by 0.1, with the net effect being +0.2, i.e. private excess demand in the euro area turns out to be wage led.³ The effective labour demand may thus be upward sloping (like L^{IS} in Figure 2).⁴ From a neoclassical point of view, the size of these effects will depend on the distance of point A from the notional labour demand curve and the time horizon of the analysis.

In short, the AD curve will be downward sloping in normal times because of central bank reaction, but it need not be downward sloping at all in times of financial turmoil, when monetary policy can become ineffective, and once the economy is close to (or in) deflation. The goods market adjustment to disequilibria on the labour market critically depends on policy reactions and their effectiveness.

³ This effect does not account for the possible effect of changes in the central bank's interest rate.

⁴ There is a large literature trying empirically to identify labour demand curves. However, national accounting identities will give rise to spurious negative slopes. Anyadike-Danes and Godley (1989) demonstrated that estimated labour demand functions will generate negative slopes based on data that were simulated assuming fixed coefficient technology and mark-up pricing (see also Felipe and McCombie, 2009).

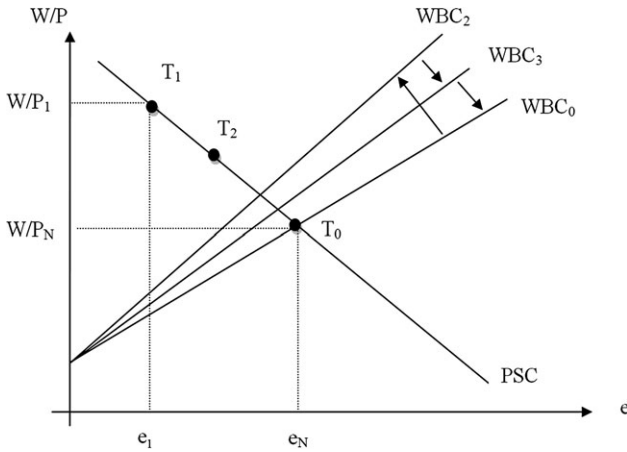
V. Labour-market adjustments: unemployment hysteresis and the endogeneity of the NAIRU

The previous section discussed the adjustment mechanism in the goods market if actual unemployment deviates from the NAIRU. On the labour market the crucial question is whether the NAIRU sits still while actual unemployment is adjusting, or whether the NAIRU itself changes. This is known as the issue of unemployment persistence or unemployment hysteresis. In the literature unemployment ‘persistence’ is often used to describe situations where actual unemployment depends on past unemployment, while the NAIRU is independent of past unemployment; ‘hysteresis’ is used for situations where the NAIRU itself reacts to changes in actual unemployment. The standard NAIRU literature treats unemployment persistence as a matter of great practical importance, but little theoretical significance, whereas unemployment hysteresis is regarded as an extreme special case (Nickell, 1998). In contrast, we argue that unemployment hysteresis or NAIRU endogeneity will be a widespread and dominant phenomenon.

Let us recapitulate the mainstream analysis of unemployment persistence. At the core is the distinction between short-term and long-term unemployment. When people stay unemployed for an extended period, they start losing their skills, their work motivation deteriorates, or potential employers start discriminating against them, based on the assumption that these things might have happened. Moreover, labour unions may not give full weight to the (long-term) unemployed when bargaining, as the long-term unemployed are less likely to be union members. In the short run, long-term unemployment has a different effect on wages than short-term unemployment. There will be a short-term NAIRU that depends on actual (past) unemployment and differs from the long-term NAIRU. But as Nickell (1998) shows, as long as long-term unemployment has some effect on wages, the short-term NAIRU will eventually converge to the (long-term) NAIRU. Adjustment will be slow, but will take place.

But the case for NAIRU endogeneity is much broader than the above arguments suggest. First, consider social norms in wage setting. Recent surveys have established that managers are reluctant to cut wages because they fear detrimental effects on work morale (Bewley, 1999; Agell and Bennmarker, 2007). A growing literature in behavioural economics has demonstrated that perceived fairness of wages may impact on labour-market outcomes (Akerlof, 1982; Fehr *et al.*, 1998). It is difficult to define what constitutes a fair wage, but people refer to wages of other workers and to their own past wages as a standard. In general, when actual unemployment deviates from the NAIRU, the actual wage will also deviate from the equilibrium wage. If workers’ evaluation of wages follows social norms, e.g. a comparison with other people’s wages or with their own wage in the past, then any actual wage level can become accepted as ‘normal’, if it persists long enough. This is also plausible when one considers that the new wage level will lead to new consumption patterns and habits that are not easily reversed. The case for unemployment hysteresis rests on the endogeneity of wage claims rather than on the disciplining effect (or lack thereof) of the long-term unemployed.

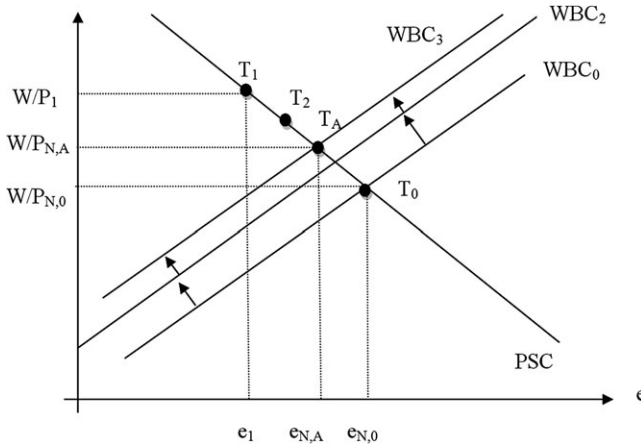
Figures 3 and 4 illustrate the difference between the two arguments. In both cases we assume a downward-sloping AD curve, i.e. standard adjustment on the goods market. And, for simplicity we assume that actual wages are determined by the price-setting curve. Figure 3 presents the persistence owing to insufficient wage pressure by the long-term unemployed. There is a NAIRU equilibrium e_N and a demand shock that pushes the economy

Figure 3: Standard unemployment persistence

to T_1 . Actual employment is at level e_1 and actual real wages are at W/P_1 . Because of high unemployment in period 1, long-term unemployment increases and, in the next period, the wage-bargaining curve will have rotated outwards to WBC_2 . The curve has the same intercept, but a different slope, which represents the fact that the long-term unemployed do exercise only limited pressure on wages. Workers (or their unions), one is tempted to say, know what the ‘correct’ wage is, but they know that they can get away with a higher wage. As actual wages are above what workers think they can get at this level of unemployment, inflation will be declining and (assuming standard goods-market adjustment) output and employment will increase. The WBC will rotate inwards to WBC_3 as the number of long-term unemployed decreases. The short-term WBC will thus approach WBC_0 , which is determined only by LMIs. The adjustment back to the NAIRU will be protracted, but it will eventually take place.

The wage-norm argument is illustrated in Figure 4. Again we assume standard adjustment on the goods market and a demand shock. As a result of the demand shock, not only will actual employment deviate from the NAIRU, but the actual wage will also deviate from the wage at the NAIRU (W/P)_N. For convenience it is assumed that the demand shock came with an increase in real wages. Assume that the demand shock lasts long enough for workers to perceive at least part of the new wage level as normal—the wage norm has changed. The extent to which WBC shifts will depend on how long the economy remains at T_1 . If there is some adjustment, the wage bargaining curve will shift to WBC_2 . The longer the economy stays off equilibrium, the more the wage norms will shift. Eventually the economy will settle at some point, T_A , between the original equilibrium and T_1 , depending on the depth and duration of the shock and the adjustment speed of wage norms. The NAIRU has changed to $e_{N,A}$. There are two key differences to Figure 3. First, there has been a shift of the curve rather than a rotation, because the change is due to changing wage norms rather than to the (lack of) wage pressure due to the long-term unemployed. Second, the WBC is now moving towards the actual wage level, rather than rotating towards the original curve. This is because, with each round of adjustment, wage norms will change towards the actual level, whereas the number of long-term unemployed is gradually decreasing.

Figure 4: NAIRU endogeneity due to social wage norms



A second reason why the NAIRU will be endogenous is that the key Keynesian variable, investment expenditure, has demand-side as well as supply-side effects. The demand-side effects are the familiar multiplier effects. The supply-side effect is that change in investment expenditures will affect the capital stock, which has two effects on the NAIRU. First, it will affect the marginal product of labour and thus the price-setting curve. As Rowthorn (1999a) has shown, the NAIRU will depend on the capital stock unless the elasticity of substitution is exactly equal to unity, i.e. unless the production function is Cobb–Douglas type. Second, the capital stock will also affect the mark-up because, for a given level of output, a change in the capital stock will change capacity utilization which will affect the price-setting power of firms (Rowthorn, 1977).

Thus, the NAIRU is likely to be endogenous (at least if shocks are strong enough and enduring). It is therefore unsurprising that a rich empirical literature testing for the existence (or absence) of hysteresis often concludes that there is unemployment hysteresis.⁵ Several surveys find evidence, especially for European countries, by testing for a unit root in the unemployment rate (Røed, 1997; León-Ledesma, 2002). Stanley (2004) performs a meta-regression analysis of 24 publications with 99 regressions on the determinants of unemployment and finds a persistence coefficient close to unity, which indicates full hysteresis. But there is a much more straightforward indication of NAIRU endogeneity: the OECD has revised its NAIRU estimates upward (and its estimates for potential output downwards) in response to the deep recession 2008/9 (OECD, 2009). If the NAIRU were properly exogenous, there would be no reason for the NAIRU to change.

⁵ Our theoretical concept of hysteresis is defined as (medium-term) endogeneity of the NAIRU. Empirical tests of the unemployment hysteresis usually test for a unit root in unemployment, while the existence of a unit root can be regarded as sufficient condition for NAIRU endogeneity. Our discussion of social norms suggests that the persistence of the shock (and of the deviation of actual unemployment from the NAIRU) will play a role in determining the extent of unemployment hysteresis, which is not taken account of in unit root tests.

VI. 'Employment as a whole depends on the amount of investment'—the empirics of unemployment

The previous sections have highlighted the theoretical differences between the mainstream view and the post-Keynesian view. As regards the empirical predictions, the differences are clear cut. The mainstream view argues that unemployment is, beyond short-term fluctuations, effectively determined by LMIs. In the Keynesian view, the key variable determining aggregate demand and, consequently, employment is the level of investment expenditure:

The theory can be summed up by saying given the psychology of the public, the level of output and employment as a whole depends on the amount of investment. I put it this way, not because this is the only factor on which aggregate output depends, but because it is usual in a complex system to regard as the *causa causans* that factor which is most prone to sudden and wide fluctuations. (Keynes, 1937, p. 221)

Smith and Zoega trace the development of modern macroeconomics and argue 'in the process of domesticating the General Theory, the central relationship between unemployment and investment and the role of the state of confidence was bred out of the model' (Smith and Zoega, 2009, p. 428). The post-Keynesian approach advocated here shares the centrality of investment expenditure, but is also consistent with the NAIRU model. The driving force is located in the goods market, namely in investment expenditure. Demand determines the level of employment. The difference between actual unemployment and the NAIRU determines inflation (and, in conjunction with the specific shock, the actual wage rate). However, the feedback from the goods market to wage and price inflation is weak and, without effective monetary policy, often perverse. These perverse reactions will be all the stronger once the economy is approaching very low and negative inflation rates. The NAIRU itself is endogenous in this framework. The NAIRU is crucial in determining inflation in the short run, but will be dragged along with actual unemployment in the medium run. If shocks are strong and persistent enough, the NAIRU will be dragged along with actual unemployment. The strength and persistence of shocks is, of course, shaped by government policies.

The mainstream NAIRU story regards LMIs as the key variable that determines unemployment performance in the medium term. However, the self-confidence with which the calls for labour-market deregulation are often put forward are not backed by any corresponding unanimity of empirical findings. Indeed, there is a lively controversy regarding the ability of LMI to explain medium-run unemployment. Studies finding strong effects of LMI usually rest on panel estimation techniques. IMF (2003) estimates a panel of 20 OECD countries and finds significant effects for employment protection, union density, the tax wedge, the interest rate, and productivity shocks. Nickell *et al.* (2005) estimate a non-linear least square panel with country-specific time trends and find significant effects of the unemployment benefit replacement ratio and (the change in) union density, some interactions, labour demand shocks, and import price shocks. Both find a very high degree of unemployment persistence. However, many other studies find mixed, weak, or no effects of LMI. Blanchard and Wolfers (2000) present a panel investigation for 20 OECD countries and highlight the interaction of macroeconomic shocks and institutions. They conclude: 'While labor market institutions can potentially explain cross country differences today, they do not appear able to explain the general evolution of unemployment over time' (Blanchard and Wolfers, 2000, p. 2). Baker *et al.* (2005) attempt to replicate previous findings by means of a panel with 5-year averages; they conclude that there is 'no meaningful relationship

between [the] OECD measure of labor market deregulation and shifts in the NAIRU' (Baker *et al.* 2005, p. 107).⁶ Bassanini and Duval (2006) use a dynamic panel analysis of 21 OECD countries over the 1982–2003 period employing a new OECD data set on LMI and find that benefit generosity is the only classic LMI to have a significant effect. The tax wedge and product market regulation variables have effects as well. Baccaro and Rei (2007) offer an extensive attempt to replicate previous estimations employing various econometric estimation techniques and find significant effects only of union density among the LMIs (as well as of interest rates and central bank independence among the control variables). Notably, *none* of these studies includes capital accumulation, i.e. none of these studies allows for a Keynesian null hypothesis.

The *Keynesian view* holds inadequate capital accumulation and/or (closely related) high interest rates responsible for persistently high unemployment. Econometric evidence supporting strong effects of capital accumulation has been found by a wide range of different methodologies. The studies notably differ in the extent to which they control for LMI, i.e. to what extent they encompass the mainstream explanation. Stockhammer (2004a) uses time series analysis for five countries and controls for the tax wedge, unemployment benefits, and union density. Arestis *et al.* (2007) apply a vector error correction model for nine countries and control for unemployment benefits and strike activity. They report (p. 145) 'a robust negative relationship between capital accumulation and unemployment'. Both studies find strong effects of capital accumulation. In a series of papers, Karanassou and Snower (1998) and Karanassou *et al.* (2008) (for the UK and Scandinavian countries respectively) estimate a system of labour-demand, wage-setting, and labour-supply curves and (controlling for a limited set of LMI) find strong effects of capital accumulation.

Rowthorn (1995) and Alexiou and Pitelis (2003) report significant effects of capital accumulation with a cross-section and panel approach, respectively, but do not control for any LMI. The most encompassing work with panel data is by Stockhammer and Klär (2011), who perform a panel analysis for OECD countries controlling for the full set of LMIs used in OECD (2006). They find strong capital accumulation effects, substantial effects of interest rates, but a very small LMI effect. Simulations show that the explained contributions of changes in actual capital expenditures clearly dominate the contributions of other factors.

As regards economic policy, monetary policy has received most attention. Several studies, using different methodologies, have found that interest rates have empirically important effects on unemployment. Lawrence Ball analysed the effects of differences in monetary policy reactions during recessions (controlling only for a limited number of LMI) and concludes that 'monetary policy and other determinants of aggregate demand have long-run effects on unemployment' (Ball, 1999, p. 234). Stockhammer and Sturm (2011) update and extend his approach and confirm his results. Based on a regression explaining changes in unemployment between the 1980s and 1990s in 19 OECD countries, Fitoussi *et al.* (2000, p. 259) find that 'changes in the domestic (short-term) real rate of interest go hand in hand with changes in average unemployment'. The results are in line with those based on panel analysis; for example, Blanchard and Wolfers (2000) find strong effects of real interest rates. Similarly Bassanini and Duval (2006) find that the long-term real interest rate has a statistically significant impact on unemployment.

⁶ Similar conclusions were drawn earlier by Blanchard and Katz (1997, pp. 67–8) and Madsen (1998, p. 862), and later by Freeman (2005).

VII. Conclusion

This paper has reasserted the post-Keynesian view that unemployment is essentially driven by private investment behaviour. There is a feedback from the labour market via price and wage inflation to the goods market, but it is weak. Without government policy the goods market reactions may even be perverse and, as we are currently reminded, the scope of monetary policy is limited in times of financial crises and in times of deflation. Second, the labour market itself is more adaptive than commonly assumed. The NAIRU is endogenous owing to the supply-side effects of capital accumulation and the importance of social norms in wage setting. Thus, there is a well-defined NAIRU that determines wage and price inflation (in conjunction with actual unemployment) in the short term, but it is endogenous and changes along with actual unemployment in the medium term.

This story, of course, invites the question of what determines investment in the medium term.⁷ A serious attempt to answer this question is clearly beyond the scope of this paper; however, we indicate the direction in which a post-Keynesian explanation goes. While monetary policy exerts some impact on investment decisions, there may be other reasons for private investment to fall below the level necessary for full employment. Keynes himself had famously argued that it is mostly driven by animal spirits, which leaves the economic analyst in the dark as to what actually drives them. To some extent these animal spirits will depend on specific institutional structures and the degree of uncertainty regarding the future evolution of important macroeconomic variables (Carruth *et al.*, 2000) or corporate governance structures (Stockhammer, 2004b); but overall it is fair to say that investment expenditures cannot be easily reduced to underlying variables.

Our analysis has important policy implications. Rather than regarding the role of the state as having to provide conditions (in the labour market) as close as possible to perfect markets, our analysis highlights the role of the state as a mediator of social conflict and as a stabilizer of economic activity. If the private sector is prone to long-lasting swings in economic activity (due to changes in animal spirits or the aftermath of financial crises) and the NAIRU is endogenous, maintaining employment at a high level in the short run is crucial. To that end, monetary policy will in general not be sufficient and an active (counter-cyclical) fiscal policy is needed. Finally, wage policy is crucial in terms of controlling inflation as well as in terms of stabilizing income distribution. Wage flexibility will not cure unemployment. Hein and Stockhammer (2010) advocate a policy package where interest rates are maintained at levels close to real trend productivity. Fiscal policy is the main tool of short-run stabilization and wages policy aims at wages growth in line with labour productivity.

The post-Keynesian approach assigns fiscal policy a central role in maintaining full employment. For the present (spring 2011) situation in the UK, this means that the government's focus on balancing the budget is misguided and is likely to aggravate the real effects of the crisis. Similarly, excessive wage restraint is likely to be counterproductive as it will have negative effects on consumption expenditures. Instead, in the aftermath of a financial crisis and a severe recession, government budget deficits should be accepted as

⁷ Over longer periods, neoclassical theory as well as the 'New Growth Theory' usually treat capital accumulation as an endogenous variable, while post-Keynesian growth theory (at least partially) features autonomous investment expenditures at its very core (Robinson, 1956; Marglin, 1984; Taylor, 2004). Only the last would thus predict a significant effect of capital accumulation on unemployment *in the medium run*.

necessary to stabilize demand, and wage growth in line with productivity growth (plus inflation) should be encouraged.

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