Capacity Utilization, Inflation and Monetary Policy: 
Classicals, post-Keynesians and the New Keynesian Consensus 

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Abstract
The paper looks at the adjustment process towards long run equilibrium within Marxian models, defined in terms of normal rates of capacity utilization. The model is reduced to three essential equations: an IS equation, a Phillips curve equation and an central bank reaction function. It is shown that long run convergence depends on the specific inflation (Phillips curve) equation, and on the central bank setting a zero inflationary target. When these conditions are relaxed, the results are shown to accord more closely with post-Keynesian results. The Marxian model is then contrasted with New Consensus models, which only varies in its inflation/Phillips curve equation. Post-Keynesian criticisms of both the IS and the Phillips curve equation are considered, and suggestions for a post-Keynesian alternative are made.

Keywords: monetary policy, central bank, inflation, capacity utilization, post-Keynesian, New-Keynesian
JEL classification: E12, E40, E52, E58

In an extremely interesting paper, Duménil and Lévy (Duménil and Lévy 1999) explore the adjustment mechanism of an economy towards a long run equilibrium with capacity utilization at normal levels – a fully adjusted position as the Sraffians would call it, or a classical long-term equilibrium as Duménil and Lévy have it. Short run equilibrium within their model is of the Keynes/Kalecki type, with variability in levels of capacity utilization. One distinctive feature of their model is that it is not the forces of competition which push the economy to a fully adjusted position, but rather aspects of the macro economy coupled with the behaviour of the central bank. In many ways, their analysis of the adjustment process is similar to the analysis of the so-called New Consensus among neoclassical economists (or New Neoclassical Synthesis), which has been defined by a number
of New Keynesian economists (such as Romer 2000, Taylor 2000, and Woodford 2002), while in other respects it represents a return to the original Phillips curve. This paper seeks to look at their underlying framework, comparing it to both the New Consensus and post-Keynesian frameworks in order to develop a pedagogical synthesis.

**The Duménil and Lévy Model**

The important aspect of the model for our purpose, is their specification of the traverse which moves the economy from the Keynesian short run to the classical long-run equilibrium, defined as a position where “capacity utilization rates are ‘normal’” (Duménil and Lévy 1999, p. 685).

The short run model takes prices as given, and allows capacity utilization to vary. In long run equilibrium, prices are equal to prices of production with uniform rates of profit and capacity is equal to normal or target rates.

The underlying mechanism driving their traverse is the reaction function of the central bank in the face of inflation. In Duménil and Lévy (1999) the instrument of monetary policy is the central bank’s control over the money supply. However, in section 2.4.3 of their 1999 paper, they make it clear that the analysis of money supply as the appropriate policy instrument is merely a simplification, and that the rate of interest can be readily substituted within their model. Indeed they do this in section 4.4 of their earlier, more extended, draft versions of the published 1999 paper (Duménil and Lévy, 1994, 1997). This is the course we follow, in order to more clearly contrast the model with that of the New Consensus, where it is assumed, as in post-Keynesian models, that monetary control is essentially exercised through discretionary modifications of the interest rate by the monetary authorities. In Duménil and Lévy, monetary policy is adjusted as a result of any actual inflation rate. This, as we shall...

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1 University of New South Wales and University of Ottawa, respectively. We wish to thank Mario Seccareccia for his
see, will assure stability of the general price level while “this stability of the general level of prices ensures gravitation of the general level of activity around a normal level”. (Duménil and Lévy 1999, p.697)

The reaction function of the central bank is assumed to be:

$$\Delta r = \beta_1 \pi$$  \hspace{1cm} (1)

Where $\pi$ is the inflation rate and $r$ is the rate of interest. All $\beta$’s are and will be positive parameters.

In both the 1994 and 1997 drafts, Duménil and Lévy note that they “will not discuss here whether $r$ should be the nominal or the real rate of interest”. In view of current discussions over monetary policy, it seems clear that the real rate of interest needs to rise whenever price inflation exceeds some target level, so that it is best to interpret $r$ as a real rate, with $\beta_1$ a positive parameter (or else $r$ is in nominal terms, but $\beta_1$ must exceed unity).

As in most macroeconomic models, Duménil and Lévy (equation 16 in both the 1994 and 1997 drafts) assume that investment, or more precisely, the growth rate of capital, is inversely responsive to changes in the rate of interest:

$$g = g_0 - \beta_2 r + \beta_3 u$$  \hspace{1cm} (2A)

where: $g$ is the growth rate of capital (the rate of accumulation); $g_0$ represents the autonomous components of growth; $u$ is the rate of capacity utilization and $r$ is the real rate of interest (as long as $g$ is interpreted as the real rate of accumulation).

Equation (2A) can be interpreted as a standard IS curve, with an inverse relation between the rate of interest and the level of economic activity $u$, since the equilibrium level of the rate of capacity
utilization itself depends positively on the autonomous component of growth and negatively on the rate of interest. We have:\(^2\)

\[ u = u_0 - B_4 r \]  

(2B)

and hence as a consequence rates of capacity utilization fall. This feedback mechanism will eventually lead to reductions in inflation rates, because Duménil and Lévy (1999) assume that the inflation rate is a linear function of the discrepancy between the actual rate of capacity utilization, as computed in equation (2B), and some normal level of capacity utilization.\(^3\) They have:

\[ \pi = \beta_5 (u - u_n) \]  

(3)

where: \( u \) is still the realised level of capacity utilization and \( u_n \) is the optimal level of capacity utilization targeted by enterprises (the normal rate).

Equation (3) represents a standard old-fashioned Phillips curve (it is not a vertical Phillips curve), where there is a straight linear trade-off between the inflation rate and the level of economic activity, without any possibility of shift in the relationship as there are no parameters. In addition, the equation implies that inflation is nil only when the realized rate of capacity utilization is equal to the normal rate of capacity utilization. The model thus operates in some kind of competitive world, where prices are highly flexible and where they increase whenever demand exceeds normal capacity while they decrease whenever demand falls below normal capacity. This equation, along with equation (1), implies that the rate of interest:

\[ ... \text{is constant in a classical long-term equilibrium, since the capacity utilization rate is normal} [u = u_n] \text{ and there is no inflation} [\pi = 0]......... \text{The coincidence between the absence of inflation and} \]

\(^2\) The equilibrium rate of capacity utilization can be obtained by confronting the above investment function (equation 2A), with the standard classical saving function, which can be written as: \[ g = s,R = s, m/v, \] where \( s \) is the propensity to save out of profits and \( R \) is the profit rate on capital. As is well-known the profit rate can be decomposed into three components: \( m \) the share of profits, \( u \) the rate of capacity utilization, and \( v \) the capacity to output ratio. The solution is then given by:

\[ u = (g_0 - B_2 r)(s,m/v - B_1) \]

so that \( u_0 = g_0/(s,m/v - B_1) \) and \( B_1 = B_2/(s,m/v - B_1) \) in equation (2B).

\(^3\) This follows from their equation 1, p. 689, and their definition of inflation p. 706.
the prevalence of a normal capacity utilization rate is related to the behaviour of enterprises. Because enterprises consider the utilization of productive capacity in the setting of their prices, price stability is associated with a normal capacity utilization rate. .... Within our analysis, prices are a function of disequilibria between supply and demand. (Duménil and Lévy 1999, pp. 698-9)

What happens is that the addition of the central bank reaction function and the inflation mechanism (equations 1 and 3) transforms an otherwise Kaleckian-Keynesian investment function (equation 2A) into a classical (Marxist-Sraffian) investment function, where “a deviation of the capacity utilization rate from its normal value would lead to a variation of investment, instead of a constant investment” (Duménil and Lévy 1999, p. 692). Although monetary variables play a role in the determination of the level of economic activity in the short run, according to Duménil and Lévy they have no real effects in the long run. The basic role of monetary variables is to push the economy to its fully-adjusted long run equilibrium, though they play no role in the determination of that equilibrium. In other words, we have the long-term neutrality of money:

Long-term equilibrium can be defined independently of money, but monetary mechanisms are responsible for the convergence of short-term equilibria to long-term equilibrium: they are crucial *vis-à-vis* the stability in dimension of long-term equilibrium. (Duménil and Lévy 1999, p. 710)

The Duménil and Lévy traverse analysis represents an interesting mixture of heterodox and neoclassical theory. As we will see in the next section, equations (1) to (3) are very much reminiscent of those of the New Consensus model. So is their conclusion that the system will tend to a long-term equilibrium with normal capacity (the equivalent to the NAIRU assumption), with monetary variables having no impact on real variables in the long run.

There is also a certain amount of similarity between Duménil and Lévy’s results and those of the so-called New endogenous growth. In the latter, in contrast to the traditional neoclassical Solow growth model, the natural rate of growth is endogenous and achieves higher levels when the economy propensity to save is higher. For instance, in Rebelo (1991), the endogenous growth rate in steady state
equals $g^* = sR$, where $s$ is the exogenous average propensity to save while $R$ is the technologically given profit rate on capital. In Duménil and Lévy (1999, p. 705), the endogenous growth rate in fully adjusted positions is given by $g^* = s_c R_n$ where $s_c$ is the propensity to save out of profits and where $R_n$ is the normal rate of profit – the profit rate which is determined by technology and the real wage rate (as determined by the resolution of class conflicts through the value taken by the mark-up over wage unit costs). As in new endogenous growth models, lower propensities to save eventually reduce growth rates.

In a short-term equilibrium, a lower saving rate of capitalists has the same effect as a larger real wage, i.e. results in larger capacity utilization rates in the two industries and a larger growth rate, whereas in a long-term equilibrium the profit rate is not affected and a lower saving rate diminishes the growth rate …. (Duménil and Lévy 1999, p. 705).

The interesting feature of the Duménil and Lévy model is that their model, in contrast to the New endogenous canonic growth model, takes the effects of effective demand and class conflict into consideration, as would Keynesian or Kaleckian growth models. However, the inclusion of the specific features of their inflation equation and central bank reaction function produces a traverse towards a long-run classical model, with all the conclusions generally agreed upon by neoclassical authors. For instance, lower propensities to save will eventually generate inflation through standard Keynesian demand-led effects; and hence through the reaction function of the central bank, it will generate higher interest rates (as in the loanable funds story) and slower rates of accumulation (as in New endogenous growth models). In addition, higher real wages (with no technical progress) may generate favorable short-run effective demand effects, but in the long run these higher real wages will bring about a slowdown in accumulation and higher unemployment rates.

Another important element of the Duménil and Lévy analysis is their long-term neutrality of money. They argue that, while the monetary system plays a role in pushing the economy to its long-
term equilibrium, it does not influence that equilibrium in any way.\textsuperscript{5} This has important implications for their underlying story. It is the assumed separation between the forces determining equilibrium, and the stability factors that push the economy to that equilibrium, that bring forth this conclusion.

However, this conclusion needs to be modified if we allow, in the Duménil and Lévy model, the inflation rate target of the central bank to differ from zero, in particular, as is usually the case, to be greater than zero. In this case, the long-term equilibrium will change depending on the inflation target, and therefore on the central bank’s setting of interest rates, so that monetary policy will indirectly influence the long-term equilibrium. This restores the argument of most heterodox economists that monetary policy and the monetary system matter even in the long run. The long-term equilibrium position cannot be derived independent of the adjustment path of the economy.

The key point of departure with the New Consensus model is the replacement of the latter’s vertical long-run Phillips curve with a more Keynesian Phillips curve, which does allow for long-term trade-offs between inflation and the level of economic activity. Price stability, in their model, is restored due to the reaction function of the central bank. However, their reaction function makes central banks much more rigorous in their anti-inflationary policy than most other commentators would have them. Despite the fact that there is some argument as to the appropriate inflation target (Solow and Taylor 1999), most economists (neoclassical and others) accept that central banks may target a non-zero inflation rate, while Duménil and Lévy impose a target rate of inflation exactly equal to zero.\textsuperscript{6} In fact, if a target rate of inflation greater than zero were allowed, then the long-term equilibrium of the

\textsuperscript{4} This is a standard Marxist result, as can be deduced from Marglin (1984, p. 136).
\textsuperscript{5} A similar critique of Duménil and Lévy’s approach is provided by Deprez and Dalendina (1994, p. 72).
\textsuperscript{6} Indeed such a zero-inflation target is tied by Woodford (2002, p. 38) to Knut Wicksell’s proposed rule for setting interest rates.
economy would be at a level of capacity greater than the normal rate.\footnote{And hence the realized profit rate $R$ would end up being different from the normal profit rate $R_n$ in the long run equilibrium.} This follows in a straightforward manner from equation (3), where $\pi > 0 \Rightarrow u > u_n$.\footnote{Interestingly, long run capacity utilization lower than normal levels is only possible if a deflationary target is set.}

The heterodox nature of the Duménil and Lévy model, provided some more realistic features are added to it, can be readily seen if we modify equations (1) and (3) by introducing an inflationary target $\pi^T$ greater than zero in equation (1), writing now:

$$\Delta r = \beta_3 (\pi - \pi^T) \quad (1B)$$

and by introducing into equation (3) an element of cost inflation $\pi_c$,\footnote{As was already suggested in Lavoie (1996, p. 125)} based on some institutional or structural features, now rewritten as:

$$\Phi = s(u - u_n) + \pi_c \quad (3B)$$

In long run equilibrium, $\Delta r = 0$ and $\pi = \pi^T$. Substituting the value of $\pi$ taken from equation (3B), we obtain the long run value of the actual rate of capacity utilization:

$$u^* - u_n = (\pi^T - \pi_c)/\beta_5 \quad (4)$$

It then becomes obvious that, all else equal, a higher target rate of inflation will be associated with a higher long run rate of capacity utilization and a higher rate of growth. It is equally clear that a classical long run equilibrium, with normal rates of capacity utilization, will only be achieved in the special case where $\pi^T = \pi_c$, that is when the target rate of inflation set by the central bank will turn out to be equal to cost inflation. In general, this will not necessarily be the case, even if one ventures to suppose that cost inflation ought to be determined in the long run by inflation expectations, which themselves should be anchored by the target inflation rate set by the central bank.

In other words, the reason that the Duménil and Lévy model tends to a specifically classical long term equilibrium is not the underlying nature of the model or the adjustment process. Rather this specific result is achieved as a consequence of the choice of a very peculiar inflation target ($\pi^T = 0$),
tied to a very peculiar inflation process ($\pi_c = 0$). This is indeed recognized by Duménil and Lévy (1999, p. 712) themselves when they say that: “Economic policies may direct the system toward targets other than the stability of the general price level …. It would be easy to show in the model that, if such targets are defined, long-term equilibrium will be shifted to another position deviating from the normal utilization of capacity”. In fact, this is true if either condition is modified, as per equations (1B) or (3B). In addition, these modifications mean that monetary policy will not be neutral in the long run.

**The “New Consensus”**

It seems ironic to call this group “new” consensus, as the underlying view of the economy has not changed, in essence since Monetarism Mark 1 associated with Milton Friedman. Like Friedman, New Consensus authors view the long run Phillips curve as being vertical at NAIRU, or at some similar supply-side determined concept, with monetary policy having no impact on real activity in the long run:

There is substantial evidence demonstrating that there is no long-run trade-off between the level of inflation and the level of unused resources in the economy – whether measured by the unemployment rate, the capacity utilization rate, or the deviation of real GDP from potential GDP. Monetary policy is thus neutral in the long run. An increase in money growth will have no long-run impact on the unemployment rate; it will only result in increased inflation. (Taylor 1999 pp. 29-30)

In other words, the inflation rate falls when unemployment is above NAIRU, and increases when unemployment is below it. This is now most often expressed in terms of output gaps – the spread between actual output and potential output – or in terms of capacity utilization. Expressed in terms of capacity utilization, the supply constraint of New Consensus models is given by equation (5):

$$\Delta \pi = \beta (u - u^*)$$  \hspace{1cm} (5)

This is, of course, the vertical long-run Phillips curve, where any deviation of capacity, real GDP or unemployment from their normal levels leads to changes in the inflation rate. If capacity
utilization is kept above its normal level, this will quickly lead to accelerating inflation. In
other words, unlike equation (3) for Duménil and Lévy, there is no long-term trade-off between
inflation and some measure of the output gap.

Like Friedman (and Duménil and Lévy), defenders of the New Consensus view believe that
monetary policy can have real effects in the short run as summarized in a conventional IS schedule, so
that equation (2B) applies as well to the New Consensus model, provided we ignore the additional
terms that are included in the more sophisticated versions of the equation (which incorporate expected
terms and autonomous shocks, as in Woodford (2002)):

\[ u = u_0 - \beta_4 r \] (2B)

Both Friedman and the New Keynesian authors strongly argue that this indicates the need for
monetary policy rules. The only difference is that, while for Friedman the rule sets optimal money
supply growth, for New Consensus authors “the interest rate rather than the money supply is the key
instrument that should be adjusted” (Taylor 1999, p. 47). The proposed rule would have the central
bank responding to both price and aggregate demand shocks (or expected such shocks). So, interest
rates should be changed if inflation deviated from its target or if real GDP deviates from potential GDP.
There are many variants of these rules, but the best-known is the so-called Taylor rule, which, in terms
of rates of utilization, is presented as:

\[ i = \pi + \beta_7 (\pi - \pi^T) + \beta_8 (u - u_n) + r_n \] (6A)

where \( i \) is now a nominal interest rate while \( r_n \) “is the implicit real interest rate in the central
bank’s reaction function” (Taylor 1999, p. 50). We can say that, in Wicksellian terms, it is the central
bank estimate of the ‘natural’ (real) rate of interest.

This can also be rewritten in real terms by taking note that \( i - \pi = r \), so that equation (6A)
becomes equation (6B), which can now more easily be compared to equations (1) and (1B):

\[ r - r_n = \beta_7 (\pi - \pi^T) + \beta_8 (u - u_n) \] (6B)
In the long-term as defined by neoclassical authors, $\pi = \pi^T$ and $u = u_n$, so $r = r_n$. As has been pointed out by numerous authors, the New Consensus central bank reaction function does not guarantee that the target inflation rate will ever be achieved however. This is recognized by Taylor (1999, p. 51) himself, when he says that if the central bank acts on an incorrect estimate of the natural rate of interest, “then the steady state inflation rate will not equal the target inflation rate”. The rate of capacity utilization can converge to its normal level without the steady state inflation rate converging to the target rate set by the central bank. For instance if the implicit real interest rate estimate is too high, the actual steady state rate of inflation will be too low relative to the target, and hence the central bank will need to revise downwards its estimate of the ‘natural’ rate of interest.

This problem can be avoided if the central bank reaction function is expressed in difference terms, as in the modified Duménil and Lévy equation (1B) above, or with equation (6C) below. Indeed, this is how Setterfield (2003, 2004) identifies the typical New Consensus central bank reaction function:

$$\Delta r = \beta_7 (\pi - \pi^T) + \beta_8 (u - u_n)$$

(6C)

Setterfield (2003) shows that a model made up of equations (2B), (5) and (6C) is always stable and converges to a normal rate of capacity utilization at the target inflation rate. However, the second term of the central bank reaction function, given by $\beta_8 (u - u_n)$, plays a crucial role in stability analysis. Without it, the economy would run into a limit cycle, circling the target inflation rate without ever achieving it. What happens is that the second term of equation (6C) provides derivative control, a well-known stabilizing feature since, substituting $(u - u_n)$ by its value in equation (5), we obtain the following reaction function:

$$\Delta r = \beta_7 (\pi - \pi^T) + \left(\frac{\beta_8}{\beta_6}\right)$$

(6D)
With equation (6D), the central bank reacts to the level of, and the change in, the inflation rate. In other words, for a given current inflation rate, the central bank would impose a more punitive increase in real interest rates when inflation is quickly rising.

If we compare the New Consensus model with that of Duménil and Lévy, the similarities are obvious. Both have the same specification of the IS curve, and virtually identical central bank reaction functions, with the important difference, noted above, that Duménil and Lévy have a target inflation rate of zero. The difference between them hinges mainly on the specification of the Phillips curve. Whereas the New Consensus authors rely on a vertical long-run Phillips curve that prevents the possibility of any level of economic activity bar that corresponding to potential output or normal use of capacity, Duménil and Lévy rely on a Phillips curve which does allow long run trade-offs. This means that the level of output (employment and capacity) can vary in the long run equilibrium position, and will be crucially dependent on the inflation rate target, as is obvious from equation (4). This also leads to another potential significant difference with the New Consensus analysis, that is, that monetary policy and monetary systems do matter in the long run, as they play a role not only in pushing the economy to its equilibrium position, but also in determining the actual long-run equilibrium.

The Post-Keynesian Response

Post-Keynesian economists are critical of a number of important features of both models described above.

1. Post-Keynesians reject the simple interest rate/investment relation implied in the IS model, as represented in equations (2A) and (2B) above. There are a number of reasons for this rejection. Firstly, most post-Keynesians believe that the relation between interest rate and investment is more complex than the simple functions (linear or otherwise) assumed in the IS relation. In addition, many economists do not think that there is a one for one relationship between the short term interest rate set by the central bank, and the long term interest rate which affects the components of
aggregate demand. (see, for example, Pollin 2003, Villieu 2004)) In fact, Kalecki argues, partly for this reason, that it is the quantity of credit rather than its price which influences investment. (Kriesler 1997) Nevertheless, tight monetary policy associated with increased short term rates will also be associated with increased credit tightening and a corresponding fall in the animal spirit of banks, so that, at least with contractionary monetary policy, it may be reasonable to assume that there will be some effect on aggregate demand. (Wolfson 1996)

Empirically, evidence suggests that the interest elasticity of investment is non-linear and asymmetric (Taylor 1999). While an increase in interest rates is likely to reduce investment in times of economic booms ($u > u_n$), the reverse is not true. Reductions in interest rates are unlikely to stimulate investment in times of recession. In the words of the old adage: you can lead a horse to water but you can’t make it drink. Many economists think that using monetary policy in a recession is like pushing on string.10

2. There is another symmetry in the Duménil and Lévy model which is rejected by post-Keynesians, namely that if actual capacity (employment or real GDP) is below its normal level, then prices will fall. This is seen as extremely unlikely. However, even if prices do fall, expectations of future price reductions will have perverse effects on confidence and effective demand, as Keynes (1936, p. 263) pointed out. In addition, due to the increased value of debts carried by firms in particular, there is likely to be a negative impact on the economy accentuating the original problem, with insolvencies and bankruptcies, and hence output reduction (Keynes 1936, p. 264, Kalecki 1944).

3. Post-Keynesians, as do many monetary economists, believe that monetary policy takes a considerable amount of time to have any effect, unless interest rates are changed by drastic amounts (that may jeopardize the stability of the financial system). Several post-Keynesians believe that,
before high rates take their toll, real interest rate hikes lead to higher inflation rates, through interest cost push (Galbraith 1957, pp. 130-1; Taylor 2004, pp. 88-90). This was first discussed by Tooke, and is often associated with the so-called Gibson paradox, also known in the States as the Wright Patman effect and in Latin America as the Caravallo effect. It can be shown that this effect may jeopardize the neat converging features of the New Consensus (Hannsgen 2004).

4. Post-Keynesians reject the vertical long-run Phillips curve. In addition, many are even skeptical about short-run trade-offs between GDP/capacity and inflation. There are two reasons for this. First, there is a large range of capacity utilization rates which are consistent with an absence of demand-led pressures, for reasons tied to the absence of decreasing returns over a large range of production levels (Lavoie 2004, p. 24). Second, it is believed that with “co-ordinated wage bargaining a constant inflation rate becomes compatible with a range of employment levels, and the NAIRU as the short run limit to employment is no longer unique” (Hein 2002, p. 314).

5. In contrast to New Keynesian authors who believe that “short-run neutrality and long-run neutrality are … as well accepted as any proposition in monetary economics” (Mankiw 1999, p. 72), post-Keynesians reject the so-called neutrality of money in both the short run and the long run.

6. Post-Keynesians deny that logic requires that in the long run the actual rate of capacity utilization ought to converge towards an exogenously given normal rate of capacity utilization. As Amitava Dutt (Dutt 2003, p. 87) points out, Kaleckian economists “argue in favour of an endogenous determination of capacity utilization even in the long run on the ground that firms may not have a unique level of capacity utilization but be content if it remains within a band, or that ‘normal’ or ‘desired’ capacity utilization itself may be endogenous”.

7. Post-Keynesians reject the notion of a supply-determined natural growth rate. This critique applies equally to the classical model and to the endogenous growth models, where saving leads the way,

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10 See Nevile and Kriesler (2002)
and to the New Consensus model, where the natural rate is determined by population
growth and technological progress, as in the Solow model (Taylor 2000, p. 91). Post-Keynesians
believe that if the concept of a natural growth rate is to be of any assistance, it is determined by the
path taken by the actual growth rate, as pointed out very early in Kaldor (1960, p. 237). “In sum,
the natural rate of growth is ultimately endogenous to the demand-determined actual rate of growth
…. The natural rate is not an attractor in demand-led growth models” (Setterfield 2002, p. 5).

A number of ways of modifying the New Consensus analysis to incorporate explicitly post-
Keynesian considerations have been suggested. To start with point 7, Lavoie (2004) identifies a hidden
equation in the New Consensus model. This relates to the question of why low inflation is regarded as
desirable. There is nothing inherent in the model, as presented so far, which favours one inflation rate
over any other. Implicit then must be another relation according to which there must be some optimal
inflation rate which maximises the economy’s natural growth rate. Deviations from this optimal
inflation rate will reduce the natural growth rate of the economy. Lavoie suggests a post-Keynesian
modification to this where, instead of the natural growth rate being dependent on the difference
between actual and optimal inflation, it will be determined by the path of the actual growth rate. This is
due to the assumption that increases in effective demand will lead to increases in the natural growth
rate, and vice versa. As a result, despite assuming a vertical Phillips curve, as given by equation (4), the
New Consensus model amended by this post-Keynesian feature will exhibit strong path dependency,
“with the possibility of multiple equilibria, that make long-run supply forces dependent on short-run
disequilibrium adjustment paths induced by effective demand” (Lavoie 2004, p. 26). Multiple
equilibria may also arise when normal rates of capacity utilization are endogenous and move with
actual rates, as shown by Lavoie (1996) and Dutt (1997).

Another simple manner of adjusting the analysis has already been discussed above, and that is
to simply replace the vertical long-run Phillips curve of equation (4) with a Keynesian Phillips curve of
the type discussed in equation (3) and in point 4. As was indicated above, this simple adjustment would mean that the model no longer tended to a unique level of capacity utilization or a unique supply-determined growth rate, but rather that these would depend on the target inflation rate.

Setterfield (2004) emphasises a similar post-Keynesian modification in his critique of the New Consensus. He concentrates on the nature of the Phillips curve, pointing out that demand-type considerations are not the only influence on the inflation rate. Cost considerations, as well as institutional variables reflecting the wage and price setting process will have significant influence on the inflation rate. As a result, he replaces the vertical Phillips curve of equation (5) with one representing these more intricate explanators of inflation:

\[ \pi = \beta_9 \pi_{-1} + \beta_{10} u + \pi_c \]  
(3C)

Where: \(0 < \beta_9 < 1\)

And \(\pi_c\) “is a vector of institutional variables that affect aggregate wage and price setting behaviour” (Setterfield 2004, p. 40)

Setterfield (2004) shows that with this kind of Phillips curve, as given by equation (3C), added to New Consensus equations (1B) and (2B), one obtains once more a multiplicity of possible long-run rates of growth and capacity utilization, when \(\pi = \pi_{-1} = \pi^r\). Comparisons of long-run positions show that higher inflation targets allow for higher rates of capacity utilization and higher growth rates.

However, further modifications need to be made in order to more fully capture the essence of post-Keynesian analysis. In particular, many post-Keynesians (but not all) are dubious of the notion that inflation needs to rise with increased capacity utilization. As mentioned in point 4, they argue that, for large ranges of output, there seems to be little impact on inflation. In other words, changes in capacity utilization need only be inflationary at levels of capacity near full utilization. Similarly, only at very low levels of capacity would we expect some reduction of the inflation rate. In other words, there would only be a tradeoff between inflation and unemployment at very low and very high levels of capacity utilization, with the inflation rate constant for levels of a large intermediate range of capacity.
In this case, the Phillips curve would be horizontal for large ranges of output and employment (Freedman, Harcourt and Kriesler 2004).

This would lead to the replacement of the Phillips curve equations (4), (4B) or (5) with an equation of the following type:

\[
\pi = \beta_{11} (u - u_m) + \beta_{12} (u - u_{fc}) + \pi_n
\]

(7)

Where:
- \( u_{fc} \) represents full capacity utilization
- \( u_m \) is some low level of capacity utilization, below which the inflation rate falls
- \( \beta_{11} = 0 \) for \( u > u_m \) and \( \beta_{11} > 0 \) for \( u < u_m \)
- \( \beta_{12} = 0 \) for \( u < u_{fc} \) and \( \beta_{12} > 0 \) for \( u > u_{fc} \)
- \( \pi_n \) represents the rate of inflation associated with the normal range of output, subject to supply side shock.

![Figure 1: Post-Keynesian Phillips Curve](image-url)

For a large range of capacity utilization \( u \) such that \( u_m < u < u_{fc} \) we have that

in Figure 1. In this case, central bank policy should set the interest rate at a fair rate, based on income distribution considerations, in particular the distribution between debtors and creditors, and allow fiscal
policy to set the output/capacity level, as more recently recommended by Arestis and Sawyer (2003); or else its reaction function would be of the Taylor rule type, so that it would maintain monetary policy as an instrument in manipulating effective demand to acceptable levels.

From the above discussion, we can see that there are at least two ways to modify the vertical (expectations augmented) long run Phillips curve, derived from upward sloping short run curves. The first is in the manner suggested by Setterfield, where the inflation rate of the previous period, (the effects of expectations) is only partially transmitted to the current inflation rate. The second way is to argue that for a large range of output (capacity utilization rates) higher levels of utilization will not lead to higher rates of inflation for given inflationary expectations. In other words, the (short run) expectations augmented Phillips curve is flat for a certain range. As there is no change in actual inflation over that range, there will be no change in inflationary expectations (with the target inflation rate set by the central bank possibly playing a key role.)

We can compare both of these with the more complete standard version of the short run expectations augmented Phillips curve:

\[ \pi^e = \pi_1 \]
\[ \pi = \pi^e + \beta_{13} (u - u_n) + \epsilon \]  \hspace{1cm} (8)

For Setterfield:

\[ \pi = \beta_9 \pi_4 + \beta_{10} u + \pi_c \] \hspace{1cm} (3C)

Where: \( 0 < \beta_9 < 1 \)

This relation yields a series of upward sloping short run Phillips curves which transmit into an upward sloping long run Phillips curve, allowing for the possibility of an inflation/capacity utilization trade-off over the long run.

For our model, from equation (7), over the normal range of output:

\[ \pi = \pi_n + \epsilon \]
which is the same inflation rate as from equation (8) if we amend the upward sloping short run Phillips curve, ie. $\beta_{13} = 0$. So over this range of output, increases in the level of capacity utilization will have no impact on the inflation rate in the short run. However, the flat short run Phillips curve means that there is no reason for inflation to change (over this range) in the long run. In other words, the mechanism whereby the upward sloping short run Phillips curve is transmitted to a vertical long run Phillips curve will not hold in the case of a horizontal Phillips curve, as increased output will not, in the short run, be inflationary. In this case, the long run Phillips curve will also be horizontal over the relevant range.

**Conclusion**

Duménil and Lévy (1994, 1997, 1999) provide an analysis that presents an interesting synthesis between Keynesian/Kaleckian and classical/Marxist macroeconomics. Their claim is that macroeconomists ought to be Keynesian for short run analysis but classical/Marxist when discussing long-run effects. It has been shown that the traverse leading to the classical long run equilibrium, as well as the conclusions that can be drawn from it, show substantial similarities with the formalizations being provided by the latest fad in neoclassical macroeconomics, the New Consensus, of New Keynesian pedigree.

However, it has also been argued that the traverse to the classical long run equilibrium is a very fragile one, since it relies on both a very specific central bank reaction function, and the absence of cost inflation. As soon as either an inflation target different from zero is introduced into Duménil and Lévy’s central bank reaction function, or if the possibility of cost factors contributing to inflation is added, the classical long run equilibrium vanishes and a Keynesian/Kaleckian equilibrium reappears, where rates of capacity utilization diverge from their normal level, and where growth rates remain demand-led. Duménil and Lévy’s model, at least in its macroeconomic dimension, is hence much more Kaleckian than it may look at first sight. This is essentially due to the fact that they do not adopt the
standard long-run vertical Phillips curve, which plays such a key role in mainstream economics. In a revised (more realistic) model there is still room for fiscal policy, and monetary policy, as reflected by inflation targets and administered real interest rates, has long-run effects on the economy.

Similarly, it has been shown that accepting all the basic equations of the New Consensus model amended with the suggested post-Keynesian modifications with respect to the Phillips curve equation, will fundamentally change the model’s conclusions. In particular, the amended model will yield Kaleckian results, with important roles for fiscal and monetary policy in influencing the level of output, capacity utilization and employment.

References


Appendix

The Duménil and Lévy original model

$$\Delta r = \beta_1 \pi$$  \hspace{1cm} (1)

$$u = u_0 - \beta_4 r$$  \hspace{1cm} (2B)

$$\pi = \beta_5 (u - u_n)$$  \hspace{1cm} (3)

The Duménil and Lévy revised model

$$\Delta r = \beta_3 (\pi - \pi^T)$$  \hspace{1cm} (1B)

$$u = u_0 - \beta_4 r$$  \hspace{1cm} (2B)

$$\pi = \beta_5 (u - u_n) + \pi_c$$  \hspace{1cm} (3B)

The New Consensus model, Mark I

$$r = r_n + \beta_7 (\pi - \pi^T) + \beta_8 (u - u_n)$$  \hspace{1cm} (6B)

$$u = u_0 - \beta_4 r$$  \hspace{1cm} (2B)

$$\Delta \pi = \beta_6 (u - u_n)$$  \hspace{1cm} (5)

The New Consensus model, Mark II

$$\Delta r = \beta_7 (\pi - \pi^T) + (\beta_8 / \beta_6) \Delta \pi$$  \hspace{1cm} (6D)

$$u = u_0 - \beta_4 r$$  \hspace{1cm} (2B)

$$\Delta \pi = \beta_6 (u - u_n)$$  \hspace{1cm} (5)

Our Model

$$r = r_n + \beta_7 (\pi - \pi^T) + \beta_8 (u - u_n)$$  \hspace{1cm} (6B)

$$u = u_0 - \beta_4 r$$  \hspace{1cm} (2B)
\( \tilde{\Pi} = \beta_1 (u - u_m) + \beta_{12} (u - u_{fc}) + \pi_n \) \tag{7}

\( \beta_{11} = \beta_{12} = 0 \) if \( u_m < u < u_{fc} \)