Real wages and unemployment with effective and notional demand for labor

Marc Lavoie
Department of Economics
University of Ottawa
200 Wilbrod St.
Ottawa (Ontario)
CANADA K1N 6N5
FAX: (613) 562 5999
E-MAIL: mlavoie@uottawa.ca

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Abstract

The paper presents the concepts of notional and effective demand for labor within the usual real wage and employment space. Its purpose is to compare various employment models, within a single and familiar heuristic framework, taking into account both the profit maximization hypothesis and the effective demand principle. This framework retains the assumption of decreasing returns, but adds the impact of income distribution on effective demand, through consumption demand.

JEL classification: B22, E12, J23
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Widespread unemployment appears to be a major feature of the modern globalized economy but, still, few economists seem to relate the actual levels of unemployment to the well-accepted main cause of the Great Depression of the 1930s—the lack of effective demand. For mainstream economists, high rates of unemployment today are tracking the high rates of natural unemployment, or rather as some prefer to put it, the high non-accelerating inflation rates of unemployment (NAIRU).

This high natural rate is said to be due to various elements, but most signs point towards the behavior of workers and the intervention of government in the market place. Even in models that purport to demonstrate that workers are not voluntarily unemployed, the failure of the economic system to deliver full employment (net of frictional unemployment) can be blamed on the behavior of the workers, whose bargaining power on the labor markets is reinforced whenever the employment situation improves. Hence, ultimately, unemployment is caused by the lack of flexibility of nominal and real wages.

This seems to be true irrespective of the exact neoclassical model of employment, be they New Keynesian models of efficiency wages or price-setting/wage setting models (PS-WS) of the Layard et al. variety (1991). In the so-called Post-Walrasian models, as presented by Colander (1996), unemployment is said to result from some inevitable coordination failure, so that the lack of flexibility is not at fault, but in these models, as in the New Keynesian models, unemployment is mainly a supply-side phenomenon.

By contrast, one of the crucial characteristics of post-Keynesian economics is its emphasis on demand-led phenomena. For post-Keynesians, employment in the labor market is essentially determined by effective demand on the goods market. The lack of employment, according to post-Keynesian economics, has nothing to do with excessive real wages or with a lack of wage flexibility. Indeed, in the Kaleckian version of the post-Keynesian model of employment, higher real wages are conducive to higher levels of employment; and in its variant dealing with growth and distribution, they might be conducive to higher rates of economic growth.

The intent of my paper is to present the simple analytics of effective demand within a context which facilitates comparison with neoclassical theories of employment, that is, within the space of employment and real wages. It is of course understood that some post-Keynesian authors (such as Davidson 1994) have preferred to use an aggregate demand and supply framework set in employment and proceeds space, being inspired by Keynes (1936, ch. 3) own presentation of effective demand. However, given that most of the current debate over unemployment occurs over the flexibility and the level of real wages, I believe that this framework should be abandoned, and that more efficient and heuristic means should be adopted. It is hoped that the suggested graphical framework will become more widespread.

The paper makes no claim to originality. Its main purpose is to clear up matters which appear confusing to students of economics—particularly the relationship between the profit maximization hypothesis and the principle of effective demand. The contribution of the paper is mainly pedagogical, with the intent of comparing different theories within a unified framework. As in all pedagogical exercises, there are limitations to the results obtained. To give but two related
instances, the models to be dealt with are short-period models only; also, in order to focus on one problem at a time, it has been assumed that real investment is a given and is not influenced by income distribution. An unlikely hypothesis from the standpoint of the Marxist tradition.

The outline of the paper is the following. The first part of the paper presents and justifies the algebra of the hybrid model which incorporates effective demand and a neoclassical production function. The second section deals with what is probably Keynes's view of the model, while the third section deals with the dynamics that would arise in a fixed-price disequilibrium model. The fourth section considers alternative versions of the effective demand constraint.

1. The distinction between notional and effective labor demand

The purpose of the following model is to explicitly introduce aggregate demand considerations while still retaining the standard production function of neoclassical analysis, with diminishing returns. We shall consider two variants of this model: a flexible price variant, which can be attributed to Keynes himself and to some of his most faithful followers, such as Davidson (1998, 1999); and a fixed price variant, which can be associated with the work of the so-called French disequilibrium school. In both models, we will have to distinguish between the notional demand for labor and the effective demand for labor, along the lines first developed by Patinkin (1965, ch. 13) and then by Barro and Grossman (1971). The model being presented owes a lot to Scheffold (1983) and Fujimoto and Leslie (1983), and it relies on the formulation of Nell (1978), Lavoie (1986), and Dutt (1987).

The production side of the model assumes a standard neoclassical production function, with a diminishing marginal product of labor and decreasing returns. Aggregate supply, in nominal terms, is thus simply given by:

\[ AS = pq = pf(L) \]

where \( p \) is the price level, \( q \) is real output, and \( L \) is labor. As usual, we suppose that the first derivative of this production function is positive, \( f'(L) > 0 \), and the second derivative negative, \( f''(L) < 0 \), which implies that the marginal product of labor is decreasing with respect to labor. The demand for labor at different real wage rates is given by this \( f' \) function, assuming as usual that firms attempt to maximize profit. This however should only be considered as the notional demand for labor, in the terminology of Barro and Grossman, because this labor demand curve takes no account of effective demand. For a given real wage, the chosen level of employment only maximizes potential profits, that is, the profits that would be realized if all of production were being sold. There is no assurance however that all of the goods being produced will get sold. This is akin to the Marxist problem of profit realization. As Keynes argued, one has to go beyond Say's law.

Thus, one has to take into account the effective demand constraint the constraint that aggregate supply needs to equal aggregate demand. In most neoclassical models, based on Walras's law, it is assumed that the demand for goods is equal to the income expected from the initial factor endowments. In these models, the equilibrium in the goods market will necessarily be accompanied by an equilibrium on the labor market. In other words, as is often claimed by Davidson (1994: ch. 2), a key characteristic of Keynesian economics and of post-Keynesian economics is that there is an autonomous component in aggregate demand,
essentially linked to an autonomous investment function, independent from the savings decision. In these heterodox models, the labor market generally does not clear, although the goods market does. In some heterodox models, however, the effective demand constraint has no relationship with the level of real wages because it is assumed that the propensity to save out of wages is the same as the propensity to save out of profits. Here by contrast, the distribution between wages and profits has an impact on aggregate demand, through its effect on consumption demand.

To make the model as simple as possible, it is assumed that aggregate demand is made up of only two components: wages, which are entirely consumed (the propensity to consume out of wages is unity), and some autonomous expenditures, which cover both investment expenditures and consumption out of profits. It is implicitly assumed that consumption out of profits depend on profits collected in a previous period, as was often assumed by Kalecki (1971). We are thus left with:

\[ AD = wL + ap \]

where \( w \) is the nominal wage rate and \( a \) represents the given amount of real autonomous expenditures (and hence \( ap \) is nominal autonomous expenditures).

A key feature of the model, the importance of which will become clear in section 4, is that autonomous expenditures are assumed to be given in real terms instead of being given in nominal terms. Now, the choice between nominal or real autonomous expenditures is not obvious. In the past, such diverse authors as Davidson and Smolensky (1964: 150) and Kurz (1985) have assumed that autonomous expenditures were given in nominal terms; others, like Kalecki (1971), Robinson (1962: 46), Harris (1974), Fujimoto and Leslie (1983) and Dutt (1987) have assumed that autonomous expenditures were given in real terms. By choosing real autonomous expenditures, I suppose that entrepreneurs decide first and foremost to fix their investment expenditures in terms of increases in productive capacity. Naturally, higher machine prices may deter entrepreneurs from going ahead with all of their planned purchases of investment goods, but one could argue that this deterrent would be canceled by an equivalent increase in output prices, and hence in the long-term expectations of future profits. In addition, one could also argue that most investment goods are produced on order, and hence that the level of real investment is set by decisions made in the past (Harris 1974: 145).

It is also assumed that investment expenditures do not depend on real wages, a hypothesis which is not quite coherent within a neoclassical profit-maximizing framework, as demonstrated by Bhaduri (1983), but we will leave it at that, mainly for heuristic reasons as mentioned in the introduction, but also on the grounds that in a post-Keynesian world dominated by uncertainty, animal spirits are the principal determinant of investment expenditures. In addition, it should be recalled that the model is a short-period model, and that issues related to the investment function are better left to growth models since a stationary level of output is only compatible with zero net investment.

It should be mentioned that various authors, mainly from the Marxist tradition, have argued that higher real wages are likely to have a detrimental impact on real investment expenditures, by reducing expected profitability or profitability calculated at normal use of
productive capacity (Kurz 1990, Bhaduri and Marglin 1990, Riach 1995). However, it has been argued by Kalecki (1971: 158), Mott and Slattery (1994) and Lavoie (1992, ch. 6) that if past profitability is the main proxy for expected profitability, these negative effects are unlikely. Whatever the case, in what follows autonomous expenditures will be considered to be a given in real terms.

The effective demand constraint is the equilibrium locus on the goods market, and is obtained by equating aggregate supply with aggregate demand:

$$wL + ap = pf(L)$$

Solving for the real wage, we obtain the effective demand constraint, or the effective labor demand curve, that is, the locus of combinations between the real wage and the level of employment that insure that whatever is being produced is being sold:

$$(w/p)_{eff} = [f(L) ! a] / L$$

The real wage rate which allows the goods market to be in equilibrium, for a given level of real autonomous expenditures and a given technology, is thus a function of the level of employment. Now, as shown by Schefold (1983) and Fujimoto and Leslie (1983), this non-linear function reaches its maximum when it equates the notional demand for labor function. In other words, the effective labor demand curve reaches its highest point when it is intersected by the notional labor demand curve. This can be seen by taking the first derivative of the effective demand for labor:

$$d(w/p)_{eff}/dL = [f'(L) . L ! (f(L) ! a)] / L^2$$

and setting it to zero, which happens when:

$$f'(L) = [f(L) ! a] / L$$

The term on the left is the notional labor demand; the term on the right is the effective Labor demand. It can be shown that the second derivative of the effective labor demand equation is negative when evaluated at its extremum, thus indicating that the extremum is a maximum. What this means is that, at low levels of employment, an increase in employment and hence in output requires an increase in real wages for the additional supply of goods to be absorbed by aggregate demand. After a while however, the impact of decreasing returns is such that the additional output is too small relative to the associated additional employment and wage payments, and as a consequence real wages must fall to equate supply and demand on the goods market.

We are then able to draw the two labor demand curves, shown with thick lines in Figure 1. The plane can further be divided into three areas. Along the $L_D^{effective}$ curve, $AD = AS$; above the curve, there is excess demand on the goods market, $AD > AS$; and below the curve, there is excess supply, $AD < AS$. The model, as constructed here, with its two distinct labor demand curves, is common to both Keynes and the French disequilibrium school. What distinguishes the two approaches are the hypotheses about market behavior.

Figure 1
2. Keynes's flexible price model

Keynes's flexible price model in a competitive goods market has been put forth by post-Keynesian authors such as Davidson (1998), Deprez (1996), Dutt (1987) and Palley (1996: 48, 78). In these models of Keynes's effective demand model of the General Theory, firms are assumed to be atomistic: there is pure rather than perfect competition, in the sense that firms do not know the market price; they can only have expectations about it. These market prices are not known to entrepreneurs until the end of the market period, in contrast to what is assumed in the new classical model, where only households ignore what realized prices will be. To make their employment decisions, firms must have expectations about the price level. It is assumed that nominal wages are set at the beginning of the market period, before entrepreneurs know the realized price level. Thus, on the basis of the expected real wage, firms make their employment decisions, in accordance with the notional demand curve (Dutt 1987: 276, Deprez 1996: 129-130).

The expected price and the chosen level of employment, given the wage level, embody all the information that correspond to what Keynes (1936: 25) called the point of effective demand. It is to be found at the intersection of the aggregate supply function and what Keynes called the aggregate demand function, which deals with the proceeds that the entrepreneurs expect to receive from the employment of \( L \) workers. This intersection, says Keynes, is where expectations of profits will be maximized. In Figure 1, the point of effective demand, in Keynes's initial terminology, is given by the point ED, at the intersection of the notional demand curve for labor and the expected effective demand constraint, here called \( L^D_{\text{expected}} \) and shown as a dotted line. The expected real wage corresponding to these expectations about proceeds is \( (w/p)_e \), and hence aggregate employment is \( L_1 \).

With this combination, however, since the economy is above the effective demand constraint, there will be an excess demand for goods. Prices will rise, until aggregate demand and supply are equated, that is, until the economy is back on the effective demand curve for labor. Market prices will thus be such that the realized real wage rate, compared to the expected real wage, has fallen to \( (w/p)_1 \) in Figure 1. Thus, as Davidson (1999: 584) and others have emphasized, in Keynes's model, Marshall's adjustment mechanisms have not been reversed. Prices react first, within the market period, and quantities will react later, in the next period (cf. Harcourt 2001: 118). In Marshall's market period, which some authors now call the ultra-short period (Skott 1989: 63), output and employment are fixed by definition, and the adjustment is done through prices, demand adjusting to the supply of goods.

Although the goods market clears, the situation as illustrated is inconsistent with short-period equilibrium, since price expectations are not fulfilled. Firms will thus revise their expectations. If these expectations are adaptative, the expected price would be revised upwards. In the simplest case where the expected price is the price realized in the previous period (At is sensible for producers to base their expectations on the assumption that the most recently realised results will continue), the newly expected real wage would be given by \( (w/p)_1 \), and hence, reading off the notional labor demand curve, the level of employment by firms would be \( L_2 \). At that combination, there would be an excess supply for goods, and prices would fall somewhat, with the realized real wage rate standing somewhere between \( (w/p)_1 \) and \( (w/p)_K \). There will thus be a succession of oscillations in
employment, as mentioned by Keynes (1936: 49). Intuitively, we can see that point \( K \) will eventually be reached, where price expectations would be achieved.

The short-period equilibrium is thus given by point \( K \), where the notional and the effective labor demand curves intersect. Point \( K \) is what Davidson (1998: 822) calls the point of effective demand. Point \( K \) represents equilibrium in the product market where the expectations of sales by profit maximizing entrepreneurs are just being met by the spending decisions of buyers. At point \( K \), as Davidson says, there are no endogenous forces that would lead the entrepreneurs to alter their production, pricing and hiring decision as long as the determinants of the notional and effective labor demand curves remain unchanged. If firms know how a demand-constrained economy works out, and if they have perfect knowledge of both the notional and effective labor demand curves, anticipations based on rational expectations should lead them right through point \( K \).

Now, as is well-known, Keynes felt that his presentation of *The General Theory* could have been much improved. On the matter of effective demand, Keynes (1973: 181) wrote: 

<table>
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<th>A now feel that if I were writing the book again I should begin by setting forth my theory on the assumption that short-period expectations were always fulfilled; and then have a subsequent chapter showing what differences it makes when short-period expectations are disappointed.....For the theory of effective demand is substantially the same if we assume that short-period expectations are always fulfilled</th>
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<td>Thus, Keynes was essentially saying that his theory would be much clearer if he were to cut through the ultra-short period haggling, and assume right away that the economy is at point ( K ), where the expected proceeds are the realized ones. In other words, the exposition of the principle of effective demand would be much simpler if point ( K ) is defined as the point of effective demand, as Davidson does, and if all disequilibrium ultra-short period states are left aside, allowing us to concentrate on the changes of the short-period equilibrium induced by modifications in the determinants of the notional and effective demand for labor. This is what we shall do from now on.</td>
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It also appears that Keynes and Davidson are mainly right when they claim that the (realized) real wage does not determine the level of employment, but rather that the level of effective demand determines the real wage. Out of equilibrium, the expected real wage, via the expected price level which is a function of the level of the expected aggregate demand, determines the level of employment, read off the notional demand curve for labor. This chosen level of employment then determines the realized real wage, given the realized aggregate demand. The realized real wage is thus endogenous. Similarly, in the equilibrium state, at the \( K \) equilibrium, the real wage rate is also endogenous and dependent on the effective demand constraint. The model is also consistent with Keynes's claim (1936, ch. 2), that firms are on their labor demand curve (the notional demand curve), thus fulfilling what he calls the first postulate of (neo)classical economics.

In this model, the oft-made claim that there is unemployment because real wages are too high is thus erroneous. Entrepreneurs have no incentives and no means to lower real wages, given the existing effective demand conditions, since real wages are determined by the (newly defined) point of effective demand. It follows that real wages can fall and full employment \( L_{fe} \) be restored only if effective demand increases, that is, if the effective labor demand curve shifts down, intersecting the notional demand curve at point \( W \). This is shown in Figure 2,
under the simplifying assumption of a vertical labor supply curve $L^S$. Point $W$ is the Walrasian equilibrium, with both the goods and the labor markets clearing. In the present simplified model, the downward shift of the effective demand curve can only occur if real autonomous expenditures $a$ increase.

Two well-known mechanisms have been contemplated in the literature to restore full employment, both related to falling nominal wages, accompanied by falling prices. The first mechanism is the Keynes effect, whereby the fall in prices would diminish the demand for money needed for transaction purposes, leading to a fall in interest rates and hence an increase in the investment part of our parameter $a$. The second mechanism is the Pigou effect, whereby the fall in prices would lead to an increase in real money balances, given that the stock of money is exogenous, and hence to an increase in the autonomous consumption part of parameter $a$. If neither automatic mechanism is credible, either because money and credit are endogenous variables, or because falling prices generate debt deflation, bankruptcies, and adverse expectations as argued in great detail by Keynes (1936: ch. 19) and Kalecki (1944), and later by Tobin (1980) Blower prices will not increase real autonomous demand. Indeed, Fazzari, Ferri and Greenberg (1998: 551) find no empirical basis for the nearly universal assumption that lower prices stimulate spending. We are back to Keynes's position: the $a$ parameter can be increased, and full employment can be restored, only by government taking the discretionary decision to increase its autonomous expenditures and fiscal deficit.

Still, due to the standard assumptions made about the production function, full employment must be accompanied by a lower real wage $w/p$. In this model, there is a negative correlation between real wages and the level of employment, when considering the various $K$ equilibria corresponding to different determinants of aggregate demand, although one cannot say that high real wages have caused low levels of employment.

Figure 2

3. The neo-Keynesian model with fixed prices

In our description of Keynes's model, it was assumed that any discrepancy between aggregate demand and aggregate supply would be quickly made good by a variation in prices. In a world of imperfect competition, and also in most markets of today, prices are set as goods are supplied, and hence they do not adjust immediately to possible discrepancies between supply and demand. Most of the adjustment is then accomplished by changes in inventories and in flow production. This is precisely what is being assumed in the next model, where it is supposed that wages and prices are fixed, at least in the short period. The model is based on the equations presented above, and on the arguments offered by the economists of the so-called French disequilibrium approach, or the neo-Keynesian school, as can be found in the writings of Bénassy (1975) and Malinvaud (1977). In their models, adjustments are made through quantities, rather than prices.

Neo-Keynesians consider that there are two kinds of unemployment: classical unemployment and Keynesian unemployment. Classical unemployment occurs when real wages are too high. This would be the case in Figure 2, if the real wage set by the decisions of firms was anywhere above $(w/p)K$. Being above the effective demand constraint, there is excess demand on the goods market, and since prices are not flexible, inventories are being depleted: this is the case of so-called
repressed inflation. There is classical unemployment because a fall in real wages, say from \((w/p)_1\) to \((w/p)_K\), would allow employment to increase from \(L_1\) to \(L_K\). Note that, as Kahn (1977) was quick to point out, the relevance of this sort of classical unemployment appears unlikely: if there is excess demand on the goods market and excess supply in the labor market, one would expect that eventually, prices would rise while nominal wages would drop (or rise more slowly than prices), thus gradually leading the economy to point \(K\). In other words, classical unemployment here is an unstable situation.

Increases in real wages in this model may also allow for increases in employment, however. This is the so-called case of Keynesian unemployment. Suppose that real wages are set at level \((w/p)_{fe}\) in Figure 2. Following a profit-maximizing behavior, firms would initially choose the level of employment \(L_{fe}\). At this combination of real wages and employment, however, the goods market is not in equilibrium, since the economy is not on the \(L_D^{effective}\) curve. Two different levels of employment, at the real wage \((w/p)_{fe}\), could clear the goods markets: these are \(L_1\) and \(L_2\). But below the effective labor demand curve, goods are in excess supply. Oligopolistic firms in a fixed-price world will thus reduce production, at a constant real wage, until aggregate demand and supply are equated, that is, until the economy moves back horizontally to the effective labor demand curve, and hence until employment is down to \(L\). In this case, because of fixed prices, firms cannot be on their profit-maximizing notional labor demand curve. For any real wage below \((w/p)_{K}\), the effective labor demand curve is the relevant constraint, and any increase in real wages will generate an increase in employment, as firms respond to the new aggregate demand conditions by moving up their effective labor demand curve.

Still, ultimately, to wipe out all of the unemployment, real wages have to decrease (unless it is assumed that the labor supply curve cuts the effective labor demand curve to the left of the \(K\) equilibrium point). As in the previous model, an increase in autonomous demand \(a\), such as an increase in government expenditures, will be required, and this will have to be accompanied by a fall in real wages, from \((w/p)_K\) to \((w/p)_{fe}\). Thus, in this model, as in Keynes's model, getting rid of all of the unemployment requires lower wages.

### 4. Alternative means to present the principle of effective demand

The non-linear shape of the effective labor demand curve is surprising at first sight, and not very intuitive. One purpose of the present section is to consider alternative presentations of the principle of effective demand that may be either more intuitive or more familiar to students of economics. Another purpose is to point to the weaknesses of some other presentations.

As I pointed out in the introduction, I do not wish to make use of the standard aggregate demand and aggregate supply schedules suggested by Keynes. In my view, even when forgiving all the confusion which these graphs have generated in the past (see King 1994 and Dutt 1987), they do not allow us to come to any precise conclusion when doing comparative static analysis. As Dutt and Amadeo (1990: 132) correctly state, besides coming closest to the presentation suggested by Keynes in 1936, these aggregate demand and supply graphs in proceeds values have no intrinsic advantages over the other presentations. In addition, these graphs lead students to believe that there is no relationship between effective demand concepts, as taught in post-Keynesian economics, and the rest of macroeconomics, as taught in standard...
For instance, Davidson (1994: ch. 11) dwells on the consequences of an increase in the money wage rate. But the crucial issue, as Davidson (1998: 826) himself recognizes, is that we should not take any recommendation that lowering the real wage will automatically increase employment, unless, and until the proponents of natural employment rate models demonstrate that lowering the real wage will necessarily increase the point of effective demand. The crucial issue is the level of the real wage. Davidsonian graphs of aggregate supply and demand, whether they are deflated by wage units or not, are helpless on this question.

Let us first consider the graphs that have been proposed by Edward Nell (1978, 1988) over the last twenty years. Nell's intention is mainly to present what he considers to be the model relevant to contemporary economies, one devoid of decreasing returns, but he also considers the case of the so-called Craft economies, where diminishing returns are still present. Nell's graphs can easily be linked to Figures 1 and 2, and they will provide an intuitive understanding of the bell-curve shape of the effective labor demand curve. Nell's graphs are normally in the employment/proceeds space, but things can be even clearer if proceeds and wage payments are deflated by the price level, thus considering real output and real wages.

Nell's presentation, as related to the notional and effective labor demand curves suggested in the preceding sections, can be found on Figure 3. The bottom part of the graph represents a standard neoclassical production function, with output $q$ being a function of employment $L$, under the assumption of decreasing returns. Wage costs $(w/p)L$, in real terms, are shown by a straight line arising from the origin, assuming away fixed labor and under the assumption that all workers are paid the same real wage, whatever the production level. These real labor costs also represent the first component of aggregate demand, since in line with our initial aggregate demand formulation, it is assumed that all wages are consumed. Total aggregate demand in real terms is thus given by an $RAD$ curve, which includes both real consumption out of wages and real autonomous expenditures: $[(w/p)L + a]$.

**Figure 3**

It is clear from the top part of Figure 3 that, when the real wage is $(w/p)_0$, firms would like to hire the amount $L_3$ of workers, because this is where firms would maximize their potential profits (in real terms). This is where the distance between real output and real wage costs is the greatest, as illustrated on the bottom part of Figure 3. However, at that real wage rate, the potential profits at an employment level $L_3$ would not be realized, given the existing autonomous component of aggregate demand. It is clear that, at the going wage $(w/p)_0$, there are two short-period equilibrium levels of employment at which real aggregate demand $RAD_0$ equals real aggregate supply: $L_1$ and $L_4$. These equilibria correspond to the fixed-price model described in the previous section. Only the $L_1$ employment level, however, would be stable, since at $L_3$, as is obvious from the bottom part of the graph, supply exceeds demand, so that firms would tend to reduce output and employment, until $L_1$ is reached (Nell 1978: 23).
On the other hand, the Keynes equilibrium, given by point $K$ in the top part of the graph, would correspond to a real wage equal to $(w/p)_K$. At that real wage, real aggregate demand $RAD_K$ on the bottom part of the graph would be tangent to the production function, and hence there would be just one equilibrium level of employment, where aggregate supply is equal to aggregate demand. At that level of employment $L_2$, potential profits are maximized and they are also realized, as Keynes would have them.

The economics of effective demand could also be illustrated with the help of the standard graphical depiction of aggregate demand and aggregate supply in the quantity and price space (AD/AS analysis). The aggregate supply curve would now represent all the profit-maximizing levels of output which correspond to different levels of expected prices $p^e$, given the nominal wage rate $w$. On the other hand, the aggregate demand curve would represent the locus of all the equilibrium prices on the goods market, achieved within Marshall’s market period, at each level of output chosen on the basis of the expected price level. This aggregate demand curve, in the quantity and price space, would be U-shaped, and it would reach its minimum point where the aggregate supply curve intersects it. This intersection represents the point of effective demand in the terminology of Davidson (it corresponds to the $K$ equilibrium). A feature of this $K$ equilibrium is that, although the expected and the realized price levels are equal, the labor market does not provide for full employment, as it would in the new classical model. We leave to readers the drawing of such AS and AD curves.

I would also like to consider the case where the value of real wages has no impact on the level of effective demand. This is implicitly the stance taken by Davidson (1998, 1999) in his graphs of effective demand: the employment level, constrained by the effective demand for labor, is a vertical line and hence is impervious to the realized real wage rate. It is also the implicit assumption of those post-Keynesians who claim that the aggregate demand curve should be considered vertical in the price-output space (Moore 1988: 384; cf. King 2001: 70). Since a similar representation is offered by Patinkin (1965: ch. 13) and by Barro and Grossman (1971) (although, in contrast to Davidson, they assume that firms can be off their notional labor demand curve), we may presume that they make the same assumption with respect to the composition of effective demand. In several Keynesian or post-Keynesian models, we thus have an aggregate demand function which does not depend on the level of the real wage. For instance, we could have:

$$AD = (1 - s)pq + ap = (1 - s)p.f(N) + ap$$

Here aggregate demand depends on real autonomous expenditures and on the propensity to consume out of aggregate income. There is no distinction between wage and profit income: it is assumed that the propensity to save $s$ out of both sorts of income is identical. In this case, the equilibrium level of output, which equates the aggregate supply and demand on the goods market is $q_{eff} = a/s$, and hence there is a unique level of employment corresponding to the effective labor demand curve, given by $LD_{effective} = f^{-1}(a/s)$. Under these conditions, it is possible to represent the effective demand for labor as a vertical line in the employment and real wage space, as is shown here in Figure 4.
In this case, also, it is easier to make the claim that real wages do not determine the level of employment, since the latter is determined independently of the level of real wages. The actual real wage is clearly endogenous, resulting from the application, at the level of employment determined by the effective demand for labor, of the profit-maximizing constraint given by the notional demand curve for labor. One can also see why economists such as Davidson are adamant not to use the expression notional demand for labor (Ahe marginal product curve is not the demand curve for labor (1983); neither a marginal productivity for labor ... nor any other productivity based labor-demand analysis can provide an aggregate demand for labor (1999: 581). These strong statements are based on the simplified characterization of Figure 4, where the notional demand for labor plays no role whatsoever in the determination of the level of employment. But, as we have seen in the first sections, this recursivity is only a special case. In general, at least in Keynes’s model with flexible prices, the notional and the effective demand curves for labor determine simultaneously the level of employment and the real wage rate.

I would also like to reconsider the question of whether autonomous expenditures should be fixed in real or in nominal terms. Up to now, all arguments have been conducted on the assumption that autonomous expenditures are constant in real terms. But let us consider the case where the nominal amount of autonomous expenditures is assumed to be given. In this case, the effective demand constraint of section 1 becomes:

\[(w/p)_{eff} = \left\{f(L) / p\right\}/L\]

where \{ \} is the given amount of nominal autonomous expenditures. This fixed nominal amount could arise if profit recipients decide to set aside a fixed proportion of their past nominal profits for consumption purposes, whatever the actual price level, and if entrepreneurs budget a given sum of money to carry out investment. Consequently, as Davidson and Smolensky (1964: 144) point out, money investment remains fixed during the period although real investment may depart from the goal set by management at the beginning of the period because of changes in prices.

Now, the consequences of such assumptions are straightforward. If wages and prices are flexible downwards, and if unemployment generates a fall in wages, and hence in prices, as it would in a competitive economy, the above equation clearly shows that the effective demand constraint would shift. In terms of Figure 2, the effective labor demand curve would be shifting down, from the continuous curve to the dotted one. The equilibrium, following the fall in prices, would move from \(K\) to \(W\), thus achieving full employment. Flexible wages and prices generate full employment. The fixed nominal autonomous expenditures here play the role of the Keynes effect or of Pigou’s real balance effect. If autonomous expenditures are assumed to be given in nominal terms, one needs to introduce additional mechanisms into the model, such as debt deflation effects, to retain the conclusion that market mechanisms will not, on their own, bring back the economy to full employment.

5. Concluding remarks

The hybrid model described in the previous sections, with an effective demand constraint associated with
a neoclassical production function and market clearing through changes in prices, is not necessarily a realistic one. As pointed out by Deprez (1996: 141), Davidsonian approach to the labour market is one true to Keynes's method of building with Marshallian tools and of giving the classicals as much as possible and still end up with unemployment conclusions. As such, it is not nor is meant to be a fully positive, descriptive approach to what actually happens in the labour market.

For some economists, such as Nell (1998), the hybrid model described here corresponds to a world of Craft technologies, which operated in the past and which can still be said to operate in a small subset of industries. This can be contrasted to the modern world of Mass Production technology manufacturing, the service sector and the so-called new economy of the internet based on constant or increasing returns, where prices are not market-clearing, and which has given rise to another brand of post-Keynesian models the Kaleckian branch.

Whatever the view one takes about the realism of Keynes's assumptions, the representation of his model shown here has many pedagogical virtues. It provides a clear illustration of Keynes's stable equilibrium with involuntary unemployment, with a minimum of additions to Keynes's model. It does so within the framework of profit maximizing and diminishing returns with flexible prices, and eventually with fixed prices. It clearly differentiates between notional and effective labor demand, within a framework which is familiar to all students of economics, that used by neoclassical authors when depicting the labor market in the real wage and employment plane. And finally the key results of the model depend on standard features of heterodox analyses the presence of autonomous expenditures and propensities to consume that are differentiated according to income classes.

References


Davidson, Paul. 1983. The marginal product is not the demand curve for labor and Lucas's labor supply function is not the supply curve for labor in the real world. Journal of Post Keynesian Economics 6(1): 105-117.


