Discussion Papers

Adhibe rationem difficultatibus

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Wages Behaviour and Unemployment in Keynes and New Keynesians Views.
A Comparison

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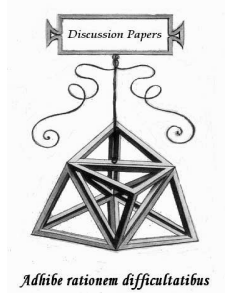
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Abstract

The paper compares different strands of New Keynesian Economics with respect to Keynes's original work on wages, describing which are the most relevant differences and analogies. In particular, two issues are analysed in detail. First, the explanations provided by Keynes and New Keynesians of nominal and real wages behaviour. Second, the different theories and interpretations concerning the ability of flexible nominal wages in assuring full employment in the economy. It is argued that, although persistent involuntary unemployment is a central and continuing problem both in Keynes and New Keynesians views, referring to the role of nominal and/or real wages behaviour in explaining unemployment, New Keynesian theories present features which differ, sometimes substantially, from the ideas and concepts developed by Keynes in his *General Theory*.

JEL classification: B20, B40, E12, E24
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Contents

I.   Introduction

Introducing the New Keynesian Economics (NKE) symposium on the *Journal of Economic Perspectives* in 1993, Gregory Mankiw, a leading New Keynesian economist, stated that "like Keynes, new Keynesians begin with the premise that persistent unemployment and economic fluctuations are central and continuing problems" (Mankiw 1993, p. 3) and in another influential article he also determined that "New Keynesians views their work as following in the broad tradition that evolved from Keynes, but their goal is to explain the world, not to clarify the views of one particular man" (Mankiw 1992, p. 560).

New Keynesians argued that "traditional expositions of Keynesian economics emphasized the role of rigidities in nominal wages and prices" (Mankiw 1993, p. 4) but "crucial nominal rigidities were assumed rather than explained" (Ball, Mankiw and Romer 1988, p. 2). In this perspective, an important strand of the NKE has put at the top of its research agenda the attempt to provide acceptable micro foundations for the phenomena of nominal wages and prices sluggish adjustments and, although some prominent economists have strongly rejected such an interpretation[1], the most important contribution of NKE to the Keynes's original work has often been associated with the improvements obtained in such a direction.

This paper aims at comparing different strands of NKE with respect to Keynes's original work on wages, pointing out which have been the contributions of the NKE and describing the most relevant differences and analogies between 'the master and his descendants'[2]. In particular, two issues will be analysed in detail. First, the explanations provided by Keynes and New Keynesians of nominal and

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[1]For a large discussion in the same symposium on the *JEP*, see Tobin (1993). In particular, Tobin stressed as "the central Keynesian proposition is not nominal price rigidity but the principle of effective demand" (Tobin 1993, p. 46).

[2]Of course, Keynes's 'descendants' are various and different. In this paper, the attention is concentrated on the NKE while it is not considered the Post-Keynesian school which main elements can be traced back to the contributions of its founders, with Keynes providing the monetary perspective, Kalecki the real analysis and Sraffa the value and distribution component (Snowdon, Vane and Wynarczyk 1994, Ch. 8).

real wages behaviour. Second, the different theories and interpretations concerning the ability of flexible nominal wages in assuring full employment in the economy.

One of the most discussed issue about Keynes's contribution is represented by his explanation for a possible source of downward nominal wages stickiness. This explanation has become the target of numerous unfair attacks and it has been criticised since grounded in irrational behaviour by workers. These critics are groundless since the explanation provided by Keynes is theoretically valid other than confirmed by empirical observations. Nevertheless, some other points in Keynes's analysis concerning wages behaviour should be better investigated and in this direction NKE has been effectively able to provide its own contribution. In this perspective, the attention will be concentrated on two different points: the issue of the *underbidding* and that of the cyclical behaviour of real wages.

Concerning the capacity of nominal wages reductions in restoring full employment, it is well known that Keynes did not believe that nominal wage rigidity was the main source of unemployment. As a consequence, he asserted that nominal wage cuts were not the proper cure for it, and might not be a cure at all. In this perspective, the strand of NKE which focalises on nominal wages and prices rigidities seems to be in contrast with Keynes's view. This because in that framework flexible wages and prices would allow the economy to maintain full employment. On the other hand, however, other New Keynesians theories, even if with some relevant distinguishing features, seem to reinforce Keynes's opinion.

The rest of the paper is structured as follows. Section II. describes Keynes's analysis of nominal and real wages behaviour and presents some New Keynesian contributions emphasising most relevant differences and analogies with Keynes's work. Section III. analyses and compares Keynes and alternative New Keynesians' views concerning the ability of nominal wage flexibility in restoring full employment. Finally, Section IV. concludes.

II.   *Nominal and real wages behaviour*

At the beginning of the *General Theory* (*GT*, Ch. 2) Keynes assumed that the nominal wage was constant in order to facilitate the exposition of his argument but he clarified that "the essential character of the argument is precisely the same whether or not money-wages [...] are liable to change" (*GT*, p. 27). Keynes presumed that nominal wages were as a rule a function of activity, tending to rise and to fall with the level of output and employment. Concerning the relationship between nominal and real wages, Keynes argued that:

> It would be interesting to see the results of a statistical enquiry into the actual relationship between changes in money wages and changes in real wages. [...] But in the case of changes in the general level of wages, it will be found, I think, that the change in real wages, is almost always in the opposite direction. When money-wages are rising, that is to say, it will be found that real wages are falling; and when money-wages are falling, real wages are rising. (Keynes 1936, p. 10).

In a following article (Keynes 1939) related to the debate on relative movements of real wages and output (see Section II.B. below), Keynes pointed out that in order to correctly understand the passage of the *General Theory* quoted above, it is important to distinguish between two different situations.

On the one side, the case in which the reaction of wages is due to changes in output and employment driven by changes in effective demand. In such a case, to which the passage above refers, Keynes maintained that rising nominal wages and falling real wages are likely to accompany increasing output and employment; the opposite when output and employment are decreasing[3].

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[3]This implies that prices increase (decrease) more than wages when output increases (decreases). In Keynes's view this happens because there is a prevalence of increasing costs in the short-term of the upswing and a rise in the proportion of product going to profits during the expansion, while the reverse patterns of change characterise contractions in output [see the letter from Keynes to Dunlop dated 1938 (Dunlop 1998, Appendix)].

On the other side, the case in which changes in nominal wages are not caused by changes in effective demand[4] but, for instance, by changes in the conditions governing wage bargaining. In this second perspective, Keynes argued that if a nominal wage reduction would occur, real wage hardly would be reduced as neoclassical economists predicted. Considering the economy as a whole, a nominal wage reduction that is not followed by a price decrease seems to suffer from a 'fallacy of composition' disease. In this scenario, nominal wage reductions would not tend to reduce unemployment, since the level of real wage could remain largely unaffected and, more in general, nominal wage changes can produce complex effects on output and employment which are difficult to generalise.

Particularly unsatisfied by the explanation of his contemporary economists, he also provided an alternative reason for the observation of downward wage stickiness in the presence of excess supply of labour which has been the focus of discussion and criticism. In Keynes's view, workers are concerned not only with real wages but also with relative wages, that is with how their pay compares with the pay of those to whom they regard themselves at least equal in merit and status. However, if labour markets are disaggregated and desynchronised, a nominal wage cut for a single worker or a group of workers appears as a reduction in relative wage, since there is no guarantee that other workers or groups of workers elsewhere receive the same cut. For such a reason, in a democracy characterised by decentralised bargaining, wage reductions are only likely to occur after "wasteful and struggles", thus producing a final result which is "justifiable on no criterion of social justice or economic expediency" (*GT*, p. 267).

Summing up, Keynes explained nominal wage downward rigidity (at least over some range) with workers' concerns about their relative wages and postulated downward real wage flexibility via the increase in prices driven by effective demand[5]. This asymmetry led

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[4]Keynes specified that, in such a case, variations in nominal wages *are not caused* by changes in effective demand but they *may cause* such changes (see Section III. on this point).

[5]According to this, it seems to me that Keynes would hardly agree with Hahn and Solow when they state "In any case, the normal way to achieve a flexible real wage is through flexible

many critics to infer that Keynes was attributing 'money illusion' to workers: why would workers accept a cut in real wages by an increase in prices but would resist reductions in nominal wages?[6]

Most recent findings on changes in pay over time give support from the empirical ground to Keynes's statement. Although nominal wages are not completely rigid downwards they are somewhat sticky in the short term and are certainly not all adjusted instantaneously to labour market changes; on the other side, real wages decreases are not rare (e.g. Blinder and Choi 1990, McLaughlin 1994, Card and Hyslop 1997). From the theoretical viewpoint, the resistance to nominal wage cuts and acceptance of reductions in real wages via a general rise in cost of living is perfectly consistent with the goal of preserving the existing structure of relative wages. Relative wages are real rather than nominal variables, thus workers are not behaving irrationally and no 'money illusion' phenomenon is implied in Keynes's argument. Nowadays we would use game-theoretic considerations to point out the presence of a conflict between collective and individual rationality, stressing that workers are caught up in a form of 'prisoner dilemma' or 'coordination failure' game (e.g. Cooper and John 1988). Collective rationality may require a reduction in the general level of nominal wage which, in turn, requires reductions in nominal wages in each single labour market. However, since labour markets are disaggregated and desynchronised, considerations of individual rationality induce workers in each labour market to reject any downward revision of the nominal wage. A non-cooperative result could emerge in equilibrium making the general level of nominal wages downwardly inflexible. On the contrary, this divergence between collective and individual rationality is not encountered when real wage is reduced via an increase in the absolute price level since "all workers are in the same boat when prices rise" (Trevithick 1992, p. 111). But this is exactly the point stressed by Keynes! Of course, there could be also other reasons for which nominal wages are downwardly sticky

nominal wages ..." (Hahn and Solow 1986, p. 1).
  [6]Leontief (1936) was the first of Keynes's critics on this point.

and NKE has provided some contribution in this direction that will be discussed later. However, the explanation provided by Keynes remains, other than correct, among the most relevant[7].

II.A.   The issue of the underbidding

A somewhat different question than the traditional Keynes's issue concerning insufficient aggregate demand is, regardless of the level of aggregate demand, why labour markets do not clear at the *microeconomic* level if there is persistent unemployment? In a single labour market, if unemployed workers would offer to work for less pay and firms would be willing to hire them at that lower pay, real wages would be bid down and employment would increase[8]. Indeed, Keynes did not provide a complete analysis of such an issue and it is not clear if workers' concerns about relative wages is enough to explain why *unemployed* workers do not offer to work for a lower pay respect on that actually payed to employed ones[9]. A contribution in providing alternative (and more robust) explanations for such a phenomenon is due to some modern theories with a New Keynesian style.

Considering employment relationships as repeated games involving firms and workers, Solow (1990) shows that being unemployed in a single period (or stage game) but 'sitting tight' and refusing to offer to work for less pay can be an 'equilibrium strategy' for self-interested unemployed workers, since if anyone ever offer to work for less than the current wage other workers will do the same thereafter (and firms will be happy to pay lower wages forever after) and the

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[7]More recently Summers (1988) has taken up this issue suggesting that relative wage influences give rise to significant coordination problems.

[8]This, of course, if labour demand schedule is downward-sloping. Keynes, however, accepted such an hypothesis.

[9]Consider this utility function for worker i: $u_i(\frac{W_i}{P}, \frac{W_i}{W_j})$, with $\frac{W_i}{P}$ and $\frac{W_i}{W_j}$ which represent respectively her real wage and relative wage respect to a worker j. Assume also that worker i reservation utility when she is unemployed is equal to $\overline{u_i}$. In this case, when worker i is unemployed, she would not accept a nominal wage $W_i' < W_i$ only if $u_i(\frac{W_i'}{P}, \frac{W_i'}{W_j}) \leq \overline{u_i}$. However, if $u_i(\frac{W_i}{P}, \frac{W_i}{W_j}) > \overline{u_i}$ there could be a wage W_i' for which $u_i(\frac{W_i}{P}, \frac{W_i}{W_j}) > u_i(\frac{W_i'}{P}, \frac{W_i'}{W_j}) > \overline{u_i}$. In such a case, why worker i does not accept a (lower) wage W_i' when she is unemployed?

discounted value of present and (expected) future earnings could be reduced. This can be translated with the existence of some sort of 'social norm' or behavioural injunction that forbids undercutting the wage as a strategy for unemployed workers.

On the other hand, efficiency wages and insider-outsider theories explain why firms do not cut wages when there are unemployed workers. In an asymmetric information framework, efficiency wages models (e.g. Akerlof and Yellen 1986; Weiss 1990) describe several reasons for which cutting a wage adversely affect the quality or productivity of labour and increase at the end its cost measured in term of efficiency units. The most important versions of this story focalise on the effect on the distribution of workers hired (the adverse selection effect) and the effect on the performance of individual workers (the incentive or moral hazard effect). In insider-outsider theories (e.g. Lindbeck and Snower 1990), insiders (incumbent workers) have some power in determining, at least partially, firm's wage and employment decision due to the presence of turnover costs. Since for a firm it is costly to exchange insiders for outsiders (unemployed workers), the insiders can extract a share of the economic rent generated by such turnover costs[10]. Furthermore, if insiders feel their position threatened by outsiders, they can refuse to cooperate with and train new workers coming from outside, as well as make their life at work thoroughly unpleasant. This raises the disutility of work for outsiders and can contribute to explain also why they do not accept lower wages (Lindbeck and Snower 1988).

It is important to point out the relevant differences which exist between Keynes's analysis and New Keynesian models mentioned above. In the first place, the models above are fundamentally theories of real wage rigidity[11]. They explain why real wage does not adjust in single labour markets if there are involuntary unemployed

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[10]Although unions are not necessary for insider power, they may enhance it with their ability to threaten strikes and work-to-rule forms of non-cooperation. Union bargaining models are analysed in McDonald and Solow (1981) and Nickell (1990).

[11]In the efficiency wages literature this holds for the most known versions (adverse selection and incentive models). Other versions, in which relative wages matter (sociological and turnover models), are also consistent with nominal wage rigidity (e.g. Stiglitz 1987).

workers. Thus real wage is the key variable and is crucial in explaining involuntary unemployment. On the contrary, Keynes focalised on nominal wage rigidity while, in his view, the role of real wage is not so relevant in determining output and employment for at least two reasons. First, the real wage is not the only determinant of the labour supply[12]. Second and most important, the real wage is not directly fixed by economic agents through bargaining[13]. As a consequence, while real wage rigidity models produce an unemployment equilibrium outcome which could be compatible with the Keynes's involuntary unemployment *definition*[14], this outcome is much less in harmony with the Keynes's involuntary unemployment *theory* since, theoretically speaking, unemployment due to the presence of a downward rigid real wage rate which is too high as compared to the market-clearing value is more similar to the classical than Keynesian concept of unemployment[15]. In the second place, in these

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[12]A more extreme (and maybe also more traditional) interpretation of the Keynesian labour supply function states that it does not depend on real wage at all since the latter is replaced by nominal wage. In other terms, the Keynesian labour supply function can be written as $L^S = \phi(W)$ rather than $L^S = \psi(w)$. Notice that such representation violates the postulate that demand and supply functions should be of homogeneous of degree zero in nominal quantities and implies workers' 'money illusion'. For a critical large discussion of this representation see Trevithick (1976, 1992 p. 106).

[13]In Trevithick's words, "The impotence of the two parties [workers and employers] to the wage bargain to bring about a reduction in the real wage is what makes Keynesian unemployment *in*voluntary" (Trevithick 1992, p. 96, italics in original).

[14]The famous [but also "extraordinarily convoluted" (Trevithick 1992, p. 108)] Keynes's definition of involuntary unemployment is given on page 15 of the *General Theory* (all italics in original):

> *Men are involuntarily unemployed if, in the event of a small rise in the price of wage-goods relatively to the money-wage, both the aggregate supply of labour willing to work for the current money-wage and the aggregate demand for it at that wage would be greater than the existing volume of employment.*

It is clear that in the real wage rigidity models discussed above a real wage's decrease leads to a reduction of involuntary unemployed workers according to Keynes's definition.

[15]Indeed, since real wage rigidity models focalise only on the labour market, identification of unemployment as classical or Keynesian is not so immediate in those models. Actually, in either case observed unemployment might to be associated with real wages above full employment equilibrium values. However, in the Keynesian case, but not in the classical one, real wages would decline on their own and output and employment would increase in response to expanded demand. Given the microeconomic principles which underlie the New Keynesian real wage rigidity models, it is unlikely that an expanded demand alone is able to obtain such a result in those models.

models the role of effective demand in restoring full employment is much less clear that in the Keynes's original insight. For example, they have nothing to say about nominal magnitudes, and hence allow no role for nominal money, until they are altered to include frictions in changing nominal wages and prices. Moreover, since equilibria are characterized by optimal choices of rational agents (firms and workers), demand-side policies alone are not enough to increase output/reduce unemployment and (supply-side) policies directed to increase/modify microeconomic incentives for workers and firms (e.g. modifying social institutions in the labour markets, increasing labour productivity, reducing insiders' power, etc.) become even more relevant. In substance, real wage rigidity alone is not enough to understand Keynesian unemployment[16] because it leads only to 'classical' (but involuntary) unemployment and leaves in a large part unclear the role (if there is one) for aggregate demand (Blinder 1988, p. 291; Mankiw 1990, p. 1658).

II.B.   The cyclical behaviour of real wages

In the *General Theory*, Keynes considered perfect competition in all product markets[17]. On the other hand, as previously discussed, nominal wages were not perfectly flexible. In this scenario, a combination of Marshallian product markets with price-taking firms and neoclassical production technology as well as sticky nominal wages imply that aggregate demand contractions during a recession are associated with a rise in real wages and the reverse patterns of change will characterise expansions in aggregate demand and output, that is real wages move *countercyclically*. Thus, Keynes and the neoclas-

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[16]In fact, as already stressed, Keynes's analysis did not imply real wage rigidity at all.

[17]It would be inappropriate here to devolve more attention into the history of economic thought. However, there could be different reasons which contribute to explain such a choice. First, imperfect competition theory, which was originally developed independently by Robinson (1933) and Chamberlain (1933) just before the publication of the *General Theory*, was not yet widespread. Second, Keynes 'seeked to win the game on his opponents' home field'. Third, and maybe most important, he believed that the assumption of perfect competition in product markets had no role for the central message of his general theory. In fact, Keynes's theory of effective demand is compatible also with other hypothesis than perfect competition (e.g. Casarosa 1981).

sical tradition in Cambridge had the same perspective of real wages behaviour during economic fluctuations[18]. In other words, Keynes refuted the second postulate of classical economics but accepted the first postulate "which classical economists have (rightly) asserted as indefeasible" (*GT*, p. 17).

As Dunlop (1938) and Tarshis (1939) first found, the problem here is that this result has been repeatedly refuted by empirical observations. In Dunlop 1938 article, the British experience for the period 1860-1937 was summarised in the following passage:

> Increases in [money] wage rates [during an upswing] have usually been associated with increased real wage rates, while decreases in wage rates have equally often been associated with a rise or fall in real wage rates. (Dunlop 1938, p. 421).

An alternative formulation concerning the contraction phase of the business cycle stated that real wages rose in an initial phase of the downswing in some cycles as nominal wages resisted reduction, and then in a second phase real and nominal wages both declined (*Ibid.* p. 425). Similar results were found by Tarshis considering the U.S. experience for 1932-38 and the current consensus (e.g. Mankiw 1990; Abraham and Haltiwanger 1995) is that real wages appear to have no consistent relationship with economic activity, or perhaps appear 'slightly procyclical'.

Indeed, Keynes positively received this evidence and, in a long reply to Dunlop and Tarshish (Keynes 1939), admitted that in the *General Theory* he was accepting, *without taking care to check the facts for himself*, a belief which had been widely held by British economists. At the same time, he specified that, if real wages do not move countercyclically, his practical conclusions would have *à fortiori* force since if it is possible to increase employment without negatively affecting real wages "the warnings of the anti-expansionists need cause us less anxiety" (Keynes 1939 p. 401). In the same article, Keynes also listed different reasons for the observation of a

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[18]However, Pigou reported that "the upper halves of trade cycles have, on the whole, been associated with higher real wages than the lower halves" (Pigou 1927, p. 217).

procyclical behaviour of real wages among which the role of imperfect competition and sticky prices[19] which will receive later in time a formal treatment by a strand of NKE (see below). Nevertheless, in the *General Theory* a problem in describing the observed behaviour of real wages during business cycles does remain.

At this regard, the earliest NKE attempts to provide rational microeconomic foundations to nominal wage rigidity had the same problem as Keynes's original theory. I refer to the long-term and staggered wage contracts models initially proposed by Fischer (1977), Phelps and Taylor (1977) and Taylor (1980). In these models, the presence of explicit (or implicit) labour contracts predetermining the nominal wage for an agreed period can generate sufficient nominal wage inertia. Furthermore, such a rigidity may result amplified since contracts renegotiation is staggered over time, that is not all contracts are renegotiated at the same time, and firms or workers' strategical behaviour prevent wages in new contracts to fully incorporate variations in economic conditions. There could be some reasons for which both firms and workers have advantages from entering into long-term contracts (i.e. frequent wage negotiations are costly in time and there exists the potential for such negotiations to break down, etc.) and these models exhibit typical (*New*) Keynesian features[20]. However, a criticism to this literature is that the time between renegotiations is exogenously determined. In other terms, also if there are renegotiation costs, why contracts are not (endogenously) renegotiated more frequently if benefits in efficiency from new agreements outweigh bargaining costs? Thus critics pointed out that the existence of such contracts and their expire dates are not explained from solid microeconomic principles[21].

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[19]Another possible explanation of particular interest analysed by Keynes is that, if the economy is in unusually deep recession, firms may be operating at levels of output at which marginal costs are decreasing.

[20]In particular, if the monetary authorities can react to *nominal* demand shocks more quickly than the private sector can renegotiate nominal wages, anticipated monetary policy can have real effects even if agents have rational expectations when information becomes available only after the contract has been established (Fischer 1977).

[21]For a more recent attempt to provide an answer to such criticisms in a context of strategic bargaining games, see Malcomson (1997).

Ironically, these models which aimed at providing microeconomic foundations to Keynes's argument of nominal wage stickiness have *de facto* resulted less 'micro-founded' than Keynes's original work. Moreover, with sticky nominal wages and movements along a standard, downward-sloping labour demand schedule (which does not shift during the business cycle), a negative shock to aggregate demand is characterised by a decrease in output, employment and prices, and by an increase in real wages (since nominal wages are sticky). Thus the contribution of these models in explaining real wage behaviour during the business cycles is irrelevant.

Instead, in this direction a real contribution has been provided by New Keynesians models that turned the attention away from imperfections in labour market (such as sticky nominal wages due to contracts) and toward those in goods markets. In particular, since evidence (e.g. Rotemberg and Woodford 1991) suggests that the expansion (recession) phase is associated with a decline (increase) in the degree of monopoly (defined as the gap between price and marginal cost as a fraction of price i.e. mark-up) in the goods markets, the assumption of perfect competition in these markets need to be relaxed for a more complete understanding of wages behaviour over business cycles[22]. Thus, much effort of NKE has been devoted to examining the behaviour of monopolistically competitive firms in product markets which face small frictions such as 'menu costs' or 'near-rationality' when they change prices (e.g. Mankiw 1985; Akerlof and Yellen 1985; Blanchard and Kiyotaki 1987).

These models aim at explaining, in rigorous microeconomic terms, the failure of price-maker firms to restore equilibrium. In particular, when the shock is small, monopolistically competitive firms might not have incentive to cut their prices when the demand for their goods decline because the benefit is small (second-order). Yet, because of the preexisting distortion of monopoly pricing, the benefit for the society of a price cut may be large (first-order). Putting it another way, with nominal price rigidity due to menu costs and/or

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[22]Kalecki (1939) was the first advocate for the importance of this factor.

near rationality, small shocks to *nominal* aggregate demand might cause large fluctuations in output and employment. In this direction, one important criticism of such a literature is that models with nominal frictions can theoretically produce large nominal rigidities but do so for implausible parameter values, that is shocks must be too small and adjustments costs must be too high to produce empirically observed behaviours and results. In response to this attack, Ball and Romer (1990) have shown that substantial nominal rigidities can result from a *combination* of real rigidities and small frictions to nominal adjustment i.e. nominal rigidities matter only if real rigidities matter[23]. Even more relevant for our actual discussion, these models do not imply a countercyclical real wage. As firms have sticky prices, it is possible that they cannot sell all they want at those prices if aggregate demand is reduced. Hence, the labour demand curve shifts to the left as firms produce less and demand less labour. The reverse pattern may occur if aggregate demand is expanded. Of course, if the labour demand curve shifts to the left or to the right according to the business cycles, real wages can also result both procyclical and acyclical[24].

Once again, there are some important differences characterising NKE models discussed above, which explain nominal rigidities both in wages and prices, with respect to Keynes's theory. First, in models of monopolistic competition and nominal prices rigidity, fluctuations in real output and employment are essentially due (for any given path of nominal aggregate demand) to price stickiness

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[23]Indeed Mankiw and Romer (1991) identify the interaction between nominal and real imperfections as a distinguishing feature of the NKE.

[24]Other theories, both New Keynesians and New Classicals, have been criticised because they produce a real wage behaviour which is too much procyclical while evidence suggests that it is, if not acyclical, at the worst 'slightly' procyclical. In particular, in the famous 'shirking version' of efficiency wage models, due to Shapiro and Stiglitz (1984), the efficiency wage is sensitive to the rate of unemployment and lower unemployment rates impose firms to pay higher wages as a workers discipline device [for a reply to such a criticism to the shirking model see Stiglitz (1987)]. Also in New Keynesians' rival Real Business Cycle theories (e.g. Kydland and Prescott 1990) the real wage behaves in a strong procyclical manner if the labour supply curve is not highly elastic. However, empirical evidence does not offer strong support for the significant intertemporal substitution effect required for real business cycles to mimic the variations in real wages which characterise business cycles (e.g. Mankiw, Rotemberg and Summers 1985; Altonji 1986).

while in such models nominal wage behaviour is not so relevant in explaining those fluctuations (Gordon 1990). Second, in the traditional Keynes's business cycle theory, the shocks generating fluctuations are generally shifts in *real* aggregate demand, notably in capital investment, while New Keynesian models of nominal rigidities mainly focalise on the economic effects of *nominal* aggregate demand variations[25]. Finally, the third difference, which will drive to the second part of this paper, is that in New Keynesian models of nominal rigidities, without such rigidities, flexible prices would be able to to maintain full employment in the economy. Although specific mechanisms by which falling wages and prices would assure full employment have not been analysed in detail in such a literature, a sort of *hidden* 'real balance effect' implicitly seems to appear in most of such models: if wages and prices fell, the real value of individuals' holdings of money would increase and this would induce them to consume more. Such a mechanism, however, has little to do with Keynes's opinion concerning the ability of flexible wages (and prices) to restore equilibrium and maintain full employment in economic systems facing with shocks, as it will be discussed in the next section.

III. *Nominal wage flexibility and full employment*

Keynes's explanation of wages behaviour has been the usual focus of discussions and criticisms. Keynes anyway went further with another important piece of his argument sometimes ignored by New Keynesians. In Chapter 19 of the *General Theory* ("Changes in Money Wages") he came to the dynamic effects of downward nominal wage flexibility.

While neoclassical economists asserted that a reduction in nominal wages is associated with an increase in employment, Keynes pointed out that "the precise question at issue is whether the re-

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[25]As stated by Tobin "Keynes would be appalled to see his cycle model described as one in which "fluctuations in output arise largely from fluctuations in nominal aggregate demand" (Ball, Mankiw, and Romer 1988, p. 2)" (Tobin 1993 p. 47).

duction in money-wages will or will not accompanied by the same aggregate effective demand as before" (*GT*, p. 259). In particular, he argued that, starting from an insufficient aggregate demand and underemployment equilibrium, it is unlikely that a policy of greater nominal wage flexibility would generate forces powerful enough to lead the economy back to full employment. On the contrary, the main result of this policy would be to cause a great instability of prices "so violent perhaps as to make business calculations futile in an economic society functioning after the manner of that in which we live" (*GT*, p. 269). Putting it another way, wage cuts were not the proper cure for unemployment and might not be a cure at all. This led Keynes to conclude that a policy of stable rather than flexible nominal wages is probably the best macroeconomic environment:

> When we enter on a period of weakening effective demand, a sudden large reduction of money-wages to a level that no one believes in its indefinite continuance would be the event most favourable to a strengthening of effective demand. But this [...] is scarcely practical politics under a system of free wage-bargaining. On the other hand, it would be much better that wages should be rigidly fixed and deemed incapable of material changes, than that depressions should be accompanied by a gradual downward tendency of money-wages ... (Keynes 1936 p. 265)

and

> In the light of these consideration, I am now of the opinion that the maintenance of a stable general level of money wages is, on balance of considerations, the most advisable policy for a closed system. (Keynes 1936, p. 270)

Before passing to analyse in detail Keynes's reasons for the statements quoted above, it is important to keep in mind that such a point, as taken by Keynes, is quite different from that of why labour markets do not clear at the microeconomic level, which has been discussed in the previous section. In a single labour market, a decline in nominal wage is a decline in real wage. For instance, if

excess supply of labour in the local furniture industry causes at the end a cut of nominal wages for workers in that industry, this consists also of a corresponding cut in local furniture workers' real wage since it would not have any noticeable effect on local furniture firms' schedules of demand and prices. Modern theories of real rigidities in the labour markets (e.g. efficiency wages and insider-outsider), previously discussed, contribute to explain why real wages might not adjust even in each single labour market but this is a different story. In the *General Theory*, instead, Keynes considered the effects of a nominal wage reduction (or flexibility) for economy-wide markets and argued that in a closed economy the way in which nominal wage cuts would cure unemployment and return the economy to full employment equilibrium could operate primarily through their impact on the interest rate[26]. Holding nominal quantity of money constant, a decline of prices which follows that of nominal wages will produce an increase in real quantity of money and then a decrease in interest rate. This will generally lead to an increase in aggregate demand via the investment expenditure which could contribute to restore full employment. As Keynes gave such a theoretical relevance to this effect, it is often referred as 'Keynes effect'. In sum, for Keynes the policy of allowing nominal wages to fall for a given (nominal) money supply could, in theory, produce the same effects as a policy of expanding the money supply with a given nominal wage. Since this was the case, wage cutting was nevertheless subject to the same obstacles of monetary policy as a method of securing full employment:

> We can, therefore, theoretically, at least, produce precisely the same effects on the rate of interest by reducing wages, whilst leaving the quantity of money unchanged, that we can produce by increasing the quantity of money whilst leaving the level of wages unchanged. It follows that wage

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[26]In an open (or "unclosed") economy a reduction of nominal wages relatively to nominal wages abroad would be favourable to investment since it will tend to increase the balance of trade (*GT*, p. 262). However, for Keynes unemployment would be reduced only in local industries competing with foreign suppliers while the overall effect on unemployment would be more complex to predict.

> reductions, as a method of securing full employment, are also subject to
> the same limitations as the method of increasing the quantity of money.
> (Keynes 1936, p. 266)

and

> Having regard to human nature and our institutions, it can only be a foolish
> person who would prefer a flexible wage policy to a flexible money policy,
> unless he can point to advantages from the former which are not obtainable
> from the latter. (Keynes 1936, p. 268)

Keynes introduced two main theoretical reasons why the 'Keynes effect' might fail. First, if interest rates are very low the demand for money become perfectly elastic with respect to interest rates. In this 'liquidity trap' case, about which Keynes said that "whilst this limiting case might become practically important in future, I know of no example of it hitherto" (GT, p. 207)[27], each real money supply increase is followed by a money demand increase of the same amount. Thus, interest rate and investment expenditure do not change. Second, the role of the business expectations ('animal spirits') and the marginal efficiency of capital might render the investment expenditure less sensible, and perfectly inelastic at the extreme, to interest rates. In these two cases, falling nominal wages and prices would hardly stimulate aggregate demand and increase output and employment.

During the 1960s the famous 'neoclassical synthesis' incorporated these two cases in the well-known IS-LM model as special or limiting cases: a perfectly horizontal LM for the liquidity trap case and a perfectly vertical IS for the interest-inelastic investment case. In these cases aggregate demand is insufficient to achieve full employment and persistent involuntary unemployment will only be eliminated if the level of effective demand is increased by expansionary fiscal policy. However, if wages and prices are flexible the existence of underemployment equilibrium rests on these two highly limiting

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[27]See also Patinkin (1976, pp. 111-3) for a discussion of what may possibly be some ambivalence on this point in the *General Theory*.

and special cases. Furthermore, falling wages and prices can produce another and more direct effect of increasing real wealth in the form of increased real value of base money, which in turn increases aggregate demand via a rise in consumption expenditure[28]. This 'Pigou effect' or 'real balance effect' (Pigou 1943, 1947; Patinkin 1948), that Keynes did not consider adequately in his analysis[29], do not depend on reduction of interest rates and this led neoclassical synthesis economists to conclude that the *General Theory* was a special case in which downward nominal wage rigidity was necessarily requested to prevent the neoclassical automatic adjustment to full employment.

However, and this is the most important point, Keynes did not stop himself to consider the two special cases in which the standard 'wage reduction remedy' does not work. He proposed also the stronger argument that greater wage flexibility might be even a self-defeating way to achieve equilibrium at full employment. In particular, Keynes focalised his attention on the role of economic agents expectations:

> If the reduction of money-wages is expected to be a *reduction relative to money wages in the future*, the change will be favourable to investments because [...] it will increase the marginal efficiency of capital; whilst for the same reason it may be favourable to consumption. If, on the other hand, the reduction leads to the expectation, or even to the serious possibility, of a further wage reduction in prospect, it will have precisely the opposite effect. For it will diminish the marginal efficiency of capital and will lead to postponement of both investment and consumption. (Keynes 1936, p. 263, italics in original)

The adverse effect on the investment expenditure of a reduction in nominal wages which leads to the expectation of a severe deflation

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[28]Possibly also in investment expenditure as wealth-owners seek to maintain portfolio balance between real and nominal assets (Tobin 1993).

[29]Some authors (e.g. Presley 1986) have suggested that Keynes anticipated the real balance effect but rejected it on theoretical and practical grounds. Also Patinkin (1948), who conversely stressed its theoretical importance, disclaimed belief in its practical significance pointing out that in the Great Depression the real value of net private balances rose by 46 percent from 1929 to 1932 but real national income fell by 40 percent.

of prices in the future may be better understood considering the well-known *Fisher equation* which states that the (expected) real interest rate is (approximately) equal to the nominal interest rate minus the expected rate of inflation ($r^e \simeq i - \pi^e$). Greater expected deflation ($\pi^e < 0$) can produce an increase in the real rate of interest, which is the business' real cost for borrowing, and it is necessarily so when nominal interest rates are constrained by the zero floor of the interest on money. Of course, Keynes stressed that such a problem does not appear if a nominal wage reduction is believed as one in which nominal wages have touched bottom, "so that further changes are expected to be in the upward direction" (GT, p. 265). However, he suggested that a large reduction in nominal wages to a level so low would be hardly realized in a system of free and desynchronised wage bargaining. For such a reason, Keynes asserted that it would be much better that wages should be rigidly fixed.

The impact of severe deflation on the propensity to consume and investment was also likely to be adverse due to the distributional effect that such a deflation produces (GT, p. 262, 264)[30]. In particular, the net effect of transfers from wage-earners to other factors and from entrepreneurs to rentiers is more likely to be negative on the propensity to consume. More generally, price declines make creditors better off and debtors poorer, but their respective marginal propensities to spend need not be the same and common sense suggests that debtors have the higher spending propensities (that is why they are in debt!). Distributional effects are likely to be adverse also for the investment expenditure since deflation mainly penalise highly leveraged firms and this could produce negative effects for the overall financial system reducing banks' propensity to finance new investments.

In conclusion, in Keynes's view, a reduction in nominal wages can help to bring about recoveries if it is believed to be temporary and that it will be quickly reversed. On the contrary, if it leads to the

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[30]This point was emphasised before Keynes and with more strength by Fisher (1933) who indicated the increased burden of debt resulting from unanticipated deflation as a major factor in depressions in general and in the Great Depression in particular.

expectation of a future severe deflation, and the negative effects explored above are stronger than the real balance and Keynes effects combined[31], aggregate demand will decrease rather than increase since both consumption and investment expenditures are discouraged or postponed. Putting it another words, economic agents pessimism for the future will turn recession into depression. Moreover, fluctuations of prices and instability of short-run employment equilibrium would be reduced with a rigid (nominal) wage policy (GT, p. 271). As a result, Keynes advocated the maintenance of a stable level of nominal wages and that authorities would take positive action in order to restore full employment.

During the late 1970s and early 1980s some economists re-explored the notion that wage and price rigidity is not the only problem and perhaps not even the main problem. Recalling that deflation, by raising the real interest rate, may discourage both consumption and especially investment expenditure, Tobin remarked that Keynes "was well aware of the dynamic argument that declining money wage rates are unfavourable to aggregate demand. But perhaps he did not insist upon it strongly enough, for the subsequent theoretical argument focused on the statics of alternative stable wage levels" (Tobin 1975, p. 195). In the same vein Hahn and Solow asserted that "the flexible-wage economy will undergo a certain amount of deflation, and this is not especially a good thing either. In fact [...] deflation is [...] hard on debtors, among whom progressive entrepreneurs are disproportionately represented" and finally they concluded that their work "casts (further) doubt on the naive proposition that wage-flexibility automatically delivers stable economy. Our results [...] also suggest that it is the implications of flexibility for real investment that play the central role - as Keynes said they did" (Hahn and Solow 1986, pp. 2, 15)[32].

Nevertheless, as discussed above, the strand of NKE which fo-

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[31]This is quite possible particularly when output and employment are low relative to capacity (Tobin 1975).

[32]Other notable works which followed the same route were Hahn (1984), Schultze (1985) and De Long and Summers (1986).

calised on nominal prices rigidity seemed to not take into account
such prominent messages. The emphasis placed on nominal rigidi-
ties and the work done in explaining the source of such rigidities
appear as a main contribution to the neoclassical synthesis[33] but
they are very weak in supporting the Keynes's concerns about the
possibility that nominal wage reductions were not the proper cure
for unemployment. On the contrary, in such New Keynesian models
it seems that nominal rigidities are the only problem since nominal
wage and price flexibility would assure full employment and eco-
nomic efficiency. However, other New Keynesian theories, even if
with relevant different features, seem to reinforce Keynes's opinion
on this point. In particular, Greenwald and Stiglitz (1993a; 1993b)
have been influential in developing New Keynesian models which do
not rely on nominal price and wage inertia (although real rigidities
play an important role):

> A number of facts imply that price rigidities are, at a minimum, not the
> only source of economic problems [...] For example, Keynesian-like unem-
> ployment problems seem to arise even in economies which are experiencing
> inflationary pressures, and thus where the nominal wages do not need to
> fall, but only to rise more slowly. Moreover, nominal wages and prices did
> fall in the Great Depression [...] We agree with Keynes that had prices
> fallen even faster, the economy would have degenerated farther, rather
> improving more quickly" (Greenwald and Stiglitz 1993b, p. 36, italics in
> original).

The authors consider risk-adverse firms which, due to the pres-
ence of financial market imperfections generated by asymmetric in-
formation and incomplete contracts, are constrained in accessing
to equity finance. Their resultant dependence on debt rather than
new equity issues makes firms more vulnerable to bankruptcy, espe-
cially during a recession. In such a situation a risk-adverse equity-

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[33]As pointed out by Romer "the neoclassical synthesis foundered on what seems, in retro-
spect, an obvious question: in an environment that is so relentlessly competitive, how can the
glaring departure from Walrasian behavior persist? Perhaps the most fundamental message of
economics is that in a competitive setting, powerful incentives prod economic actors to adjust
prices in response to imbalances between supply and demand" (Romer 1993, p. 6).

constrained firm prefers to reduce its output because the uncertainties associated with prices flexibility are much greater than those from quantity adjustment. Greenwald and Stiglitz argue that, as a firm produce more, the probability of bankruptcy increases and since bankruptcy imposes costs, these will be taken into account in firms' production decision. Indeed, in such a framework, nominal price and wage flexibility, by creating more uncertainty, would in all likelihood make the situation worse inducing firm to further reduce output and employment[34].

This theory 'of the risk adverse firm' seems to be consistent with some important features of Keynes's original thought. In particular, Keynes pointed out that an incisive nominal wages decline, by determining a decline in product prices, may have large adverse effects on profits and financial position (or liquidity) particularly for highly leveraged firms. As a consequence, lenders, in particular banks, face the risk that loans will not be repaid. Moreover, if also banks are highly leveraged, the risk of bankruptcy increases also for them and the overall financial system would suffer[35].

This story plays a central role in the Greenwald-Stiglitz framework:

> [The theory of the risk adverse firm] contains three basic ingredients [...]:
> risk averse firms; a credit allocation mechanism in which credit-rationing,
> risk-averse banks play a central role; and new labor market theories, including efficiency wages and insider-outsider models. These building blocks
> should help to explain how [wage and] price flexibility contributes to macroeconomic fluctuations and to unemployment. In particular, the first two
> blocks will explain why small shocks to the economy can give rise to large
> changes in output, while the new labor market theories will explain why
> those changes in output [...] result in unemployment" (Greenwald and
> Stiglitz 1993b, p. 26).

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[34]Moreover, since shifts of firm and aggregate supply curve of output during a recession easily translate into shifts of firm and aggregate demand curves for labour, real wages may appear as moving procyclically or acyclically.

[35]Before than in the *General Theory* (p. 264, 267), Keynes advanced this point also in the 1931 writing *The Economic Consequences to the Banks of the Collapse of Money Values* [*The Collected Writings of John Maynard Keynes*, vol. 9, pp. 150-158].

In particular, as it emerges from the statement quoted above, the first two blocks come near to Keynes's original idea, enrich it with recent developments obtained by modern theories of credit markets with asymmetric information and credit-rationing. At the same time, however, the framework outlined by Greenwald and Stiglitz presents an important distinguishing feature respect on the Keynes's *General Theory*. In particular, the third block explicitly refers to the New Keynesian theories of the labour market, discussed in Section II.A., in which (involuntary) unemployment is strongly founded on real wage rigidity. On the contrary, as already stressed above, Keynes did not give any central role to such a rigidity in theoretically explaining the presence and the persistence of involuntary unemployment.

IV.   Concluding remarks

This paper has described and compared different contributions of NKE with respect to Keynes's original work on wages and unemployment, pointing out which are the most relevant differences and analogies.

Like Keynes, also New Keynesians consider persistent involuntary unemployment as being a central and continuing problem. At the same time, referring to the role of nominal and/or real wages behaviour in explaining unemployment, New Keynesian theories present important features which differ, sometimes substantially, from the ideas and concepts developed by Keynes in his *General Theory*.

In particular, in Keynes's view real wages were not so relevant in determining output and employment since they would be "adjusted" according to the level of employment correspondent to the actual amount of effective demand. Moreover, he did not believe that nominal wages stickiness was the main source of unemployment.

Modern New Keynesians theories of the labour market (e.g. efficiency wages and insider-outsider), instead, emphasise the role of real wage rigidity in explaining involuntary unemployment, while

those which stress the role of nominal rigidities, both in wages and prices, seem not taking into account Keynes's concerns about the possibility that greater nominal flexibility could exacerbate the economy's downturn. In this direction, however, there are some New Keynesian models which seem to reinforce Keynes opinion even if with important distinguishing features.

In conclusion, NKE has brought back favour to typical Keynesian arguments that seemed to be forgotten during the 1980's, namely the skepticism in the market's invisible hand ability to maintain full employment. Moreover, it has provided new contributions on some issues that, with respect to Keynes's work, should be investigated more in detail. However, an often remarked problem with the NKE clearly emerges also from the analysis developed in this paper: there is no single new Keynesian model, rather this literature is characterised by the presence of different explanations of the sources of wage (and price) rigidity as well as of its role in determining unemployment. Although such different explanations are not necessarily mutually exclusive but sometimes complementary, they are often unrelated. The paper has emphasised as this holds not only among different New Keynesian theories but also between that literature and the Keynes's original work.

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