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Long-term unemployment, hysteresis and missing deflation: reconsidering the New-Keynesian approach by means of an 'old' Phillips curve

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Abstract

A recent explanation of hysteresis in unemployment, refers to long-term unemployed as a cause of downward wage rigidity, since they are detached from the labour market and therefore are no good inflation fighters. Therefore, the debate on the Phillips curve has regained significant traction to explain the missing inflation matter. Based on the above-mentioned interpretation of hysteresis some scholars tried to provide a new estimation of the NAIRU incorporating short-term unemployed uniquely or taking into account the relative weight of unemployment duration. This essay is situated within this line of inquiry as it investigates whether the conclusion that long-term unemployment is less relevant for the inflation path, than the short one, depends on the assumption of linearity in the Phillips curve. The thesis we want to test is whether the lower effect of long-term unemployment on wage dynamics comes from not considering the convexity of the Phillips curve. Indeed, the phenomenon of long-term unemployment spreads in correspondence to a very high total unemployment rate, when the Phillips curve is flat. By contrast, no appreciable differences between short and long-term unemployment in affecting nominal wage would appear when convexity is considered. Using panel data of 25 OECD countries for the 1970-2016 period, we test the difference between short and long-term unemployment rate coefficients in a linear version of the Phillips curve and verify that there is no statistical difference between them. Then, we impose a convex shape to the relationship and test the relevance of the very high incidence of long-term unemployment in nominal wage inflation. Our findings indicate that once convexity in the Phillips curve is proved, no relevant difference between long and short-term unemployed in wage-setting exists.

Keywords: Hysteresis, long-term unemployment, NAIRU, conflict-claim inflation

JEL codes: E24, E12, E21

1. Introduction

The concept of hysteresis, introduced in the neo-Keynesian framework by Blanchard and Summers (1986), means that after a (prolonged) recession and the consequent increase in the level of the unemployment rate, also the natural rate, or the non-accelerating inflation rate of unemployment (NAIRU), will increase. In other words, hysteresis is a way to deny the pure exogeneity of the NAIRU. One side of the coin is the evidence that several actual unemployment rates can occur in correspondence with a stable inflation rate: this represents, by definition, a change in the NAIRU. The other side is the introduction of the concept of missing deflation (or inflation) matter which is the disappearing of inflation increase (fall) even if the unemployment rate is low (high) and it's related to the flattening of the Phillips Curve. Despite these innovations, the basic assumptions of the neoclassical theory have not been questioned (Summa and Braga, 2021). The most recent explanation of hysteresis refers to long-term unemployment as a cause of downward wage rigidity, since the long-term unemployed would not be perceived as competitors by other workers. If their share in the total unemployment increases, the NAIRU also increases because a certain total unemployment rate is no longer sufficient to guarantee a stable inflation rate. Not considering the entity of long-term unemployment, therefore, would lead to an underestimation of the NAIRU and thus to expect more disinflation than that estimated by models not incorporating the risk of hysteresis.

For that reason, the hysteresis calls into play also a reconsideration of the Phillips curve. Notably, the current form of the Phillips curve is very far away from its first exposition (Phillips, 1958). In his seminal contribution, the author provided an empirical relationship between the monetary wage inflation and the average unemployment rate over a period of more than 50 years (1861-1913). While this relationship was found to be negative, it was not stable in time nor linear due to institutional and economic factors able to influence the bargaining power of workers. This institutional, conflict-based explanation of unemployment-inflation linkage is very different from the subsequent formulation of the Phillips curve. Since Lypsey (1960), this latter has become the field where the neoclassical scholars tested the labour market disequilibrium. Friedman (1968) provided an internally consistent explanation arguing that, from a marginalist point of view, the excess or scarcity of labour should be seen in terms of real (not monetary) wage variation. Introducing adaptive expectations, the author forged the monetarist (or accelerationist) Phillips curve in which inflation is caused by disequilibrium in the labour market (generally, by an excess of labour demand) but in the long run, unlike Phillips, there is no trade-off between unemployment and inflation and the system converge to its natural equilibrium. Despite the presence of involuntary unemployment, also the New-Keynesian labour market equilibrium (i.e. the NAIRU) has the same features as the monetarist natural rate (NR). Removing the perfect competition hypothesis, in this class of models, lower unemployment would

push up the wage aspirations of workers, and so their bargained monetary wage. In the subsequent period, firms will increase the price to restore real wages and preserve their real mark-up. But, if the Government push the economy to achieve a lower unemployment rate, workers will respond to claim higher monetary wages, and so on. Therefore, in the short run, the Phillips curve will have a negative slope and the magnitude of change in the inflation rate, from year to year, depends on the sign and the size of the unemployment gap (the difference between unemployment and NAIRU). Nevertheless, in the long run, the actual unemployment will approach long-run exogenous NAIRU through neoclassical mechanism or by means of the action of the Central Bank, which generally operates using a Taylor rule. After the Great recession, the hysteresis, which means the endogeneity in the NAIRU and the flattening of the Phillips curve, comes back on the stage because the inflation-unemployment dynamics showed different features and magnitudes than those expected. A consequence is that the validity of the Phillips curve has been called into question (Ball and Mazumder, 2011). Based on the interpretation of hysteresis which stresses the role of long-term unemployment, some scholars tried to provide a new estimation of the NAIRU considering only the short-term unemployed (Gordon, 2013); or taking into account the relative weight of unemployment duration (Llaudes, 2005; Rusticelli, 2015). We stress this point by arguing that is not possible to distinguish, in general terms, between short and long term unemployment in wage-setting and that the flattening of the Phillips curve, especially in correspondence with the high unemployment rate, could be a "normal" feature of the unemployment-inflation link, as argued by Phillips (1958). Therefore, an alternative conflict-claim approach to inflation explanation can provide a convincing explanation also for recent inflation paths. The paper goes as follows: in the second section we provide a theoretical background of the Phillips curve in different theoretical contexts; in section 3 we will provide a review of the empirical literature on this topic; section 4 contains a description of the conflict-claim approach to inflation. Section 5 consists of an econometric section with our two Phillips curve specifications, one linear and one convex, in which we test the role of long-term unemployment in relationship with nominal wage inflation. Section 6 concludes.

2. Theoretical background

2.1 The original Phillips curve

The original Phillips curve, postulated by Phillips (1958), represented an "on average" long-run, and no cyclical, regularity in the relationship between unemployment and the rate of change in nominal wages. Moreover, in his contribution, there wasn't a concept of equilibrium of unemployment corresponding to the unemployment rate in which the money wage inflation was zero. Another important and forgotten feature of the relationship found by Phillips was the non-linearity. The trade-

off between the unemployment rate and inflation was not linear and, interestingly, he found a significant flattening of the curve for a very high level of unemployment. The analysis, referred to the United Kingdom between 1861 and 1957, identifies three factors that would affect the rate of change in money wages: the level of unemployment, the rate of change in the unemployment rate, and the rate of change in actual (retail) prices. The level of unemployment would influence the dynamics of money wages for two main reasons: on the one hand, when unemployment is low, employers would be interested in offering higher wages to employ the few remaining unemployed; on the other hand, the bargaining power of workers would be increased and they would try to get higher wages. Furthermore, the author states that the relation between unemployment and wage changes is neither mechanical nor linear, because even in the presence of high unemployment, workers would be unwilling to offer themselves to a lower wage rate than the prevailing one, especially if such situations occur in the presence of a growing demand for work. To avoid the cyclical perturbances in the relationship investigated and looking for a long-run explanation for the influence of unemployment on the wage rate, the author analyses separately three sub-period and referrers to the average value of nominal wage variation for different ranges of the unemployment rate. In this way, he finds that a strong increase in the rate of change in nominal wage is associated with a very low level of the unemployment rate, while the depressing role of unemployment on the nominal wage becomes weaker as far as the unemployment rate is higher. In Phillips' contribution, therefore, there is neither a notion of labour market imbalance nor the neoclassical automatic adjustment mechanisms. Instead, according to Rothschild (1993), the convex shape of the unemployment-wage inflation relationship appears to derive from a *combination of demand-pull and Keynesian wage rigidity*. Furthermore, his analysis is compatible with the possibility that wage increases occur even in the presence of unemployment, which is excluded in the context of the neoclassical theory. According to the latter, in fact, in the event of an excess of labour supply, a reduction in the (real) wage would guarantee the reabsorption of unemployment. Moreover, the asymmetry in the variation of monetary wages depending on whether the system is in a phase of growth in demand or reduction may appear as a further obstacle to the automatic adjustment mechanisms of the neoclassical-marginalist theory. It can be concluded that Phillips intends to provide a sufficiently general explanation of the determinants of the change in money wages within a more general "institutionalist" approach (Palumbo, 2008), consistent with the Keynesian paradigm, exemplified by Chapter 19 of the General Theory (Keynes, 1936) and difficult to reconcile with the neoclassical explanation of the labour market in terms of supply and demand curves. This inconsistency, however, has, on the one hand, meant that his work was interpreted as devoid of any theory (Vianello, 2007), and on the other, it stimulated attempts to embed the empirical relationship found in a neoclassical framework.

2.2 From the natural rate to the NAIRU

The first to interpret the Phillips curve in terms of neoclassical demand-supply curves has been Lipsey (1960) for whom the rate of change of nominal wage would depend on the difference between the two curves and so from a situation of disequilibrium in the labour market. If labour demand exceeds the supply, the nominal wage rate will increase but, with an unchanged price level, the increase in real wage will reduce labour demand and conduct the system towards equilibrium. Indeed, only with increasing price inflation that leaves unchanged the real wage, is possible to obtain a lower than the equilibrium unemployment rate. The greater the excess demand, therefore the condition of imbalance in the labour market, the faster nominal wages will rise; vice versa in the case of oversupply. When excess demand is zero, wage inflation will be zero. This point corresponds to the intersection between the Phillips curve and the horizontal axis and is interpreted, despite being nominal wages and not real wages, as the equilibrium point of the labour market (Palumbo, 2008). However, to interpret the Phillips Curve as a representation of the neoclassical adjustment path, changes in money wages must necessarily involve appropriate changes in prices such that the real wage rate is that of equilibrium. Without these considerations, limiting the analysis to movements in money wages but embedding them in a model of labour supply and demand, it would not be possible to present the Phillips curve as an "adjustment path" for which the reaction of nominal wages to excesses of demand leads the system back towards equilibrium, nor justifies – as in Phillips (1958) the presence of permanent points of imbalance.

According to Friedman (1968), the Lipsey interpretation is grounded on the hypothesis of persistent 'monetary illusion' that is not consistent with the marginalist neoclassical approach. In order to use it as a picture of imbalance in the labour market, the Phillips has to be formulated as a function of the rate of change in real wages instead of nominal ones. Assuming that workers bargain their monetary wages based on the expected inflation rate and that expectations are formed on the inflation observed in the previous period (adaptive expectations), he formalizes the so-called *monetarist (*or *accelerationist) Phillips curve*. Therefore, we have several short-run Phillips curves, each corresponding to the inflation rate of the year preceding the one in which the bargaining takes place. Friedman's analysis is carried out within a paradigm of perfect competition (in a marginalist sense) in which the effect of economic policy is only temporary and due to the delay to fulfil expectations. The behaviour of the monetary wage, therefore, is the same as in the Lipsey analysis, with the difference that in bargaining it, the workers also take into account the expected inflation. Moreover, recovering the term from the theory of interest rate of Wicksell (1898), Friedman calls the natural

unemployment rate (NR) the result that would be obtained from the resolution of a Walrasian system of general equilibrium equations. It refers to a certain amount of individuals who, for a given real wage, are voluntarily unemployed, either because they are unwilling to work or because they are looking for a better-paid job (Rothschild, 1993). This natural rate is determined solely by supply-side factors, such as the degree of worker protection. When the effective unemployment rate is equal to the natural unemployment rate, price expectations are fulfilled and inflation does not accelerate but remains constant from period after period. Furthermore, if the unemployment rate were to be lower than the natural unemployment rate, there would be an increase in the inflation rate and vice versa. All the points where inflation expectations are verified, therefore there is no acceleration or deceleration of the price between one period and another, correspond to the unique natural unemployment rate and form the so-called *vertical long-run Phillips curve*.

Friedman completely recovers a neoclassical labour market model in which, however, the formation of price expectations by workers allows the expansionary monetary policy to have temporary and short-term effects, at the cost of an increasing change in inflation over the period. In the long run, the relation postulated by the Phillips curve, the trade-off between inflation and unemployment, would disappear. Lucas (1972) and the New Classical Macroeconomics go beyond the Monetarist argument by constructing a vertical Phillips curve even in the short term and thus affirming the total ineffectiveness of monetary policy. Under the assumption of rational expectations of a representative agent and full flexibility of prices and wages, this model obtains that the economic system is constantly in a market-clearing equilibrium without involuntary unemployment.

The New-Keynesian school tried to respond to this resurrection of neoclassical orthodoxy by constructing macroeconomic models of general equilibrium, characterized by fully rational agents, which however act in contexts of markets that are not perfectly competitive. The reference to the Keynesian paradigm - rather than from the principle of effective demand - derives from the adoption of models of imperfect competition, in which the presence of nominal rigidities guarantees the existence of equilibria with involuntary unemployment and the non-neutrality of the money in the short term, that is, the presence of a trade-off between inflation and unemployment (Romer, 1993).

The downwards rigidity of wages hinders the perfect functioning of the labour market in the long period, while in the short period, together with the stickiness of prices and non-perfect competition, it favours the role of monetary policy. In this framework, the hypothesis of imperfect competition is crucial to achieving equilibrium with involuntary unemployment, indeed, according to Carlin and Soskice (2015 p. 45) *unless there are imperfections in the labour market, it is not possible for there to be involuntary unemployment when the labour market is in equilibrium.*

Therefore, the departure from the neoclassical theory is expressed exclusively in the abandonment of the hypothesis of perfect competition and so, in the long run, the non-neutrality of money is restored. Starting from the premise that there are rigidities in wages and prices and from a canonical *wage-setting* (WS) *price-setting* (PS) model of the labour market, we can obtain the Phillips curve scheme grounded in the micro foundation of the labour market that is characterized by a bundle of curves of short-period and only one long-run Phillips curve. The unemployment rate for which the wage-setting curve, representing the nominal wage aspirations of workers, is equal to the price-setting one, representing the price settled by capitalists based on the unit cost of production and a given (fixed) mark-up, is the so-called *non-accelerating inflation rate of unemployment* (NAIRU). The level of the NAIRU is affected by wage-push factors (i.e. unemployment benefits, trade union power and employment protection legislation) and the degree of monopoly (and the mark-up). For this reason, research and policy briefs have underlined the opportunity for reforms aimed at achieving a higher degree of liberalization in the market. This has been particularly true concerning the labour market side. Indeed, one very influential stream of literature argued that the main determinants of persistent unemployment are too strong labour market institutions (OECD, 1994; Bassanini and Duval, 2006; Miyamoto and Suphaphiphat, 2020). When the actual unemployment rate is higher (lower) than the NAIRU, there will be higher (lower) inflation. The size of the latter will depend on the size of the unemployment gap (the difference between the actual unemployment rate and the NAIRU). For example, if an expansive demand policy reduces the actual unemployment rate, workers will ask for higher nominal wages, based on the expected price level, to obtain higher real wages. The price will immediately adjust to keep the mark-up unchanged and the real wage will turn equal to the previous one. In the New Keynesian framework, the change in the rate of inflation generates a Central Bank's response: an aggregate demand adjustment through interest rate changes. Therefore the temporary shock will disappear and the NAIRU will be restored. Suppose we start from an equilibrium point corresponding to inflation equal to 2% and that a positive shock of aggregate demand reduces the effective unemployment rate, we will have a positive unemployment gap corresponding to a point of *WS* higher than *PS*. In correspondence with this higher level of employment, the workers will bargain real wages 2% higher. To achieve these higher real wages, they will negotiate money wages 2% higher. To keep their profit margin unchanged, employers will raise prices by the same amount. The new real wage will therefore be equal to the previous one, but not equal to that expected by workers, inflation will be 4% and employment will return to equilibrium (on the long-term Phillips curve), corresponding to a new, upward, short-term Phillips curve. In this theoretical framework, the equilibrium unemployment is independent of actual unemployment rates and represents an attractor. Its changes can be explained only by supply-side factors.

2.3 Hysteresis, NAIRU and long-term unemployment

The concept of NAIRU is strictly related to the long-run vertical Phillips curve. The logical implication is that we should observe an acceleration in inflation able to restore long-run equilibrium in the case of an effective unemployment rate lower than NAIRU. On the contrary, if the unemployment rate persists at a higher level, a process of increasing deflation would restore the equilibrium. However, empirical evidence does not support this idea, and, although high unemployment rates persist, a negative path in the percentage change of prices does not occur. The presence of high unemployment rates and stable inflation fostered the development of hysteresis models that challenged the exogeneity of the NAIRU with respect to aggregate demand (Blanchard and Summers, 1986; 1988). Intuitively, hysteresis means that a persistently high actual unemployment rate, caused by a negative demand shock, can influence also the NAIRU. In this sense, it seems that the NAIRU is no longer interpreted as totally independent of aggregate demand (Ball and Onken, 2021). The change in the NAIRU followed by an increase in the actual unemployment rate is the theoretical implication of empirical evidence of stable inflation and a high unemployment rate (Ball, 1999). However, this has also another implication: the unemployment rate no longer seems to be able to reduce inflation (Roed, 1997).

Moreover, conversely to the theory, the estimation of the NAIRU has been revised significantly over time, also in absence of structural change in the economy. In addition, higher (e with different levels among nations) and increasing unemployment rates have been associated with a stable inflation rate, implying by definition a change in the NAIRU. The variation of the NAIRU afterwards to a change in the actual unemployment rate is called hysteresis. As said, this concept has two faces: it means that, to some extent, the NAIRU is, endogenous because it is influenced by the level and dynamic of the actual unemployment rate. On the other side, it also means that changes in the actual unemployment rate are no more accompanied by inflationary processes, that is the Phillips curve becomes flat. This second point is called 'missing deflation'.

A seminal work by Blanchard and Summers (1986) explains the hysteresis by means of an insider-outsider model (Linder and Snower, 1987). The idea is that strong (pro-workers) labour market institutions and/or the rent power of insider workers prevent the downward movement of the wages and prolong the impact of the shock (Layard et al, 1991 p. 202). However, as mentioned, an increasing stream of empirical research questioned the role of labour market institutions in determining low levels of employment (e.g., Baker et al., 2005; Howell et al., 2007; Stockhammer, 2011;

Stockhammer and Sturn, 2012; Brancaccio et al., 2020) and some rethinking has emerged also in the mainstream side of literature (Blanchard and Katz, 1997; Blanchard, 2006).

However, nowadays the most discussed interpretation refers to the role of long-term unemployment. The idea is that people experiencing a long spell of unemployment are detached from the labour market, and it is supposed that they are "no good inflation fighters". This means that they, although unemployed, do not exert downward pressure on wages because other workers do not perceive them as competitors. This occurrence is explained in several ways, for example referring to depreciation in human capital and loss of employability that induce discrimination by employers. It's the so-called stigma effect (Blanchard and Diamon, 1994; Kroft et al. 2016) and implies that the unemployment spell is a signal of workers' individual characteristics. However, some studies suggest that this effect is stronger in a tight labour market – when the unemployment rate is low – and, for the employers, the operation of screening is easier (Imbens and Lynch, 2006; Kroft et al., 2016).

Moreover, some scholars argue that a longer duration of unemployment is associated with a decrease in the job searching effort, especially in presence of a generous system of unemployment benefits (Bean, 1994, Krueger and Mueller, 2012; Ljungqvist and Sargent, 1998; Bassanini and Duval, 2006). Moreover, some scholars argue that a longer duration of unemployment is associated with a decrease in the job searching effort, especially in presence of a generous system of unemployment benefits (Bean, 1994, Krueger and Mueller, 2012; Ljungqvist and Sargent, 1998; Bassanini and Duval, 2006). In this regard, it is worth noticing that, to cause an increase in the NAIRU, the long-term unemployed have not to abandon their job search and must remain unemployed, although they are at the margins of the labour market. On the contrary, if they would leave the labour force, the estimated NAIRU would not increase. From an empirical side, the supposed behaviour of long term unemployment means that it has the feature of irreversibility, which means that if total unemployment falls, the long-term unemployment does not fall with it. However, some scholars argue that considering an adequate structure of lags and referring to the long-term unemployment rate (the ratio of long-term unemployed in the labour force) instead of the incidence of long-term unemployed in total unemployment, the matter of irreversibility disappears (Webster, 2005; Paternesi Meloni et al., 2022).

Anyway, the new-Keynesian theory of hysteresis supposes that if long-term unemployment is a characterizing phenomenon for an economy, the downward effects of total unemployment on real wages are depressed or, in other words, the total unemployment is no longer useful explain inflation dynamics. This means that if, after a recession the long-term unemployment increases, the NAIRU will increase too. For such reason, long-term unemployment is responsible for the presence of hysteresis.

Once the hysteresis is admitted, it is possible also to understand how long-term unemployment is linked to the matter of missing deflation. As above-mentioned, for a given unemployment rate, an increase in the long-term component would represent a brake on wage disinflation, which is needed to restore the equilibrium unemployment rate (if actual unemployment is greater than the NAIRU). Disregarding this shift in the NAIRU, therefore ignoring that the hysteresis is at work, would lead one to speak of missing deflation: one would expect, with an 'old' NAIRU, a more pronounced percentage reduction in prices than is occurring. In other words, the number of 'relevant' unemployed in the bargaining process (the short-term unemployed) would be insufficient to ensure the appropriate reduction in the rate of inflation.

In sum, the role of long-term unemployment in causing hysteresis would be expressed in two ways. On the one hand, due to a progressive loss of the individual's employability and progressive discouragement in job seeking, long-term unemployed would have little chance of leaving unemployment status (Krueger et al., 2014; Kroft et al. ., 2016). On the other hand, this condition would represent a source of friction in the competitive mechanisms in the labour market, preventing full downwards flexibility of wages and would determine an increase in the unemployment rate capable of guaranteeing the stability of the inflation rate (Rusticelli, 2015; Mathy, 2016; Blanchard, 2018).[1]

In the following, the paper will focus on testing the latter point, that is if long-term unemployed – conversely to the short-term ones - are not relevant in wage determination (and wage reduction).

3. Long-term unemployment in mainstream Phillips curve: an empirical review

In order to understand the matter of missing deflation, the literature has followed two ways, in particular: i) using only the short-term unemployment rate as a measure of unemployment in Phillips curve estimations, (Ball and Mazumder, 2019; ii) constructing an unemployment index which would consider the distribution of unemployment duration in order to provide a different estimation of the NAIRU (Llaudes, 2005; Lehmus, 2018; Rusticelli, 2015; Speigner, 2014). The aim of this cited approach is to estimate the weight of the different (expected) role of the short and long-term unemployed in the wage-setting and use it to construct the unemployment index.

For our purpose, we will focus on the literature, recent and not particularly extensive, that looks at the role of the long-term unemployed in the estimation of the Phillips curve, expressly referring to the hysteresis theory and therefore to the link between long-term unemployment and NAIRU.

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[1] However, to support the presence of hysteresis and increasing NAIRU due to a higher long-term unemployment rate, a strong reduction in this latter would cause accelerating inflation but this does not find evidence in the data (Girardi et al, 2020; Paternesi Meloni et al., 2021).

Llaudes (2005), estimates a 'duration version' of the Phillips Curve which consists in constructing an unemployment index in which the weights attributed to the short and long term unemployed are obtained through the use of statistical filters for the estimation of latent variables. Then, the estimation of the NAIRU comes from a standard system of simultaneous equations, starting from the 'weighted' index of unemployment. This latter is the peculiarity of this work: that is to use, in the estimation of the Phillips curve, instead of the aggregate unemployment rate, an index which assigns different weights to the unemployed according to the length of the unemployment period. The estimated coefficients would confirm that the short-term unemployed have a greater role in determining wages and prices. Therefore, like the insiders, where their number is lower (as in European countries) there should be less downwards flexibility of wages and higher values of the NAIRU. However, the results obtained show great variability in the NAIRU estimates. And, interestingly, its estimated level does not increase, monotonically, as the estimated weight of the long-term unemployed increases. Rusticelli (2015), estimates a Phillips curve in which the NAIRU equation considers both the risk of hysteresis (therefore the dependence of the current value of the NAIRU on its past values) and the relevance of long-term unemployment in determining its extent. Consistent with the hysteresis theory[2], it is believed that not considering the role of long-term unemployment has led to an underestimation of the NAIRU and therefore to the disappearance of the Phillips curve. Although, following this approach, the author is able to regain a negative coefficient in the relationship between the employment gap and the variation in inflation, the variance between countries is very significant and the author herself suggests that further study is necessary.[3]

Speigner (2014), with respect to the situation in Great Britain, supports a different thesis: considering a linear Phillips curve is misleading and leads to a wrong interpretation of the role of the long-term unemployed.[4] He argues that, if we admit that the Phillips curve has a convex shape, long-term unemployment would become a relevant phenomenon in the flat part of the curve, in correspondence with high unemployment rates. In that condition, the already lower rate of change in wages will represent a kind of floor. The linear version Phillips curve, therefore, would have made that the downward rigidity of wages - found for these levels of unemployment - was attributed to the long-

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[2] *The risk of hysteresis associated with protracted unemployment spells increases proportionally with the rise in long-term unemployment rates. In particular, during severe recessions as labour-market conditions worsen, the NAIRU increases significantly in line with the increase in long-term unemployment in the European periphery* (Rusticelli, 2015 p. 116).

[3] *This methodological modification helps increasing both the size and the statistical significance of the coefficient on the unemployment gap in the estimated Phillips curve, while improving its goodness-of-fit. However, in line with the very few studies previously considering the inclusion of long-term unemployment to model the unemployment gap (Box 1), the change in long-term unemployment which translates into a rise of structural unemployment differs across countries and is statistically significant only in the case of the European peripheral countries* (Rusticelli, 2015 p. 117-118).

[4] *The conclusion that long-term unemployment is only weakly related to inflation depends on the assumption of linearity in the Phillips curve* (Speigner, 2014 p.2)

term unemployed. On the contrary, once the non-linearity is considered, also without abandoning the estimate of a NAIRU and the employment gap, the ability of long-term unemployment in depressing wage inflation would reappear. This means that, unlike in the linear model estimated by Llaudes (2005), the coefficient of the short-term unemployed decreases and that of the long-term unemployed increases. Furthermore, Kiley (2015), with reference to the USA, using cross-sectional data on 24 US metropolitan areas, shows that the inverse relationship between inflation and unemployment changes reappears when the differences between the different regional labour markets are taken into account. Kiley includes both the short-term and long-term unemployment rates. In this context, does not emerge any significant difference between the role of the short-term and long-term unemployed and the hypothesis that the short-term and long-term unemployed have the same effect on inflation cannot be rejected.

4. Conflict claim explanation of inflation

Referring to an alternative theory of inflation, combined with the long-term extension of the effective demand principle, a more convincing explanation could be found for the unemployment-inflation relation observed in recent years without the need to adduce the exceptions proper to the marginalist theory (Morlin, 2022). We refer to a theory of cost inflation, typical of the post-Keynesian approach, in which the root of inflation is to be found in the conflicting claims over income distribution that can take different results in different situations, depending on historical, institutional and political conditions, and that could be influenced by the dynamics of "exogenous" nominal variables (Pivetti 1991; Stirati, 2001; Levrero, 2013) as they can influence the monetary costs of production. Recalling the classical and Keynesian interpretations of employment and of the labour market, periods of high involuntary unemployment represent a normal situation in capitalist economies, especially in absence of appropriate aggregate demand stimulus (Garegnani 1990, Stockhammer, 2008). According to this approach, the level and evolution of wages are determined by political, historical and institutional factors that could also change the relationship between unemployment and wage. Indeed, unemployment is one of the most important drivers of the bargaining power of workers, although not the only. This means that wage inflation can occur much before a situation of full employment is reached but also that a lower level of unemployment can be associated with a weak inflation dynamic due to the effects of other factors. Therefore, a central role in determining the outcomes of bargaining is attributed to the institutional context, understood in a broad and political sense (Kalecki, 1943) and to its interaction with economical and labour market conditions (Garegnani 1990). Two consequences follow: (i) an increasing inflation path can occur even if the economy is still quite far away from a

situation of labour scarcity, and (ii) the relationship between unemployment and wage can also change over time due to the influence of political-institutional factors. And, above all, the wage and price dynamic could result in a new distributional equilibrium with the same unemployment rate. This means that the movements in prices and wages do not restore any natural equilibrium of unemployment. In this sense, also the slope of the Phillips curve can change over time without the need of introducing particular exceptions to the normal functioning of the system. While in the European countries the labour market has experienced a strong and widespread process of deregulation, in the US, even without particularly reforms, the bargaining power of workers has been shrinking. Problems such as the depressed role of trade unions (Stansbury and Summers, 2020), the precariousness (the matter of "partly unemployed") and the high duration of unemployment (Yellen, 2014; 2016) could have increased the "cost of job loss" (Pacitti, 2020) and depressed the ability of workers to achieve wage increases. However, while academics have now disproved the effectiveness of labour market deregulation in achieving higher employment levels (Brancaccio et al., 2020), its effect on wage dynamics is still debated, although even some mainstream authors sustain its detrimental effect on wages (Blanchflower and Poser, 2014; Yellen, 2014, 2016; Stansbury and Summers, 2020). Furthermore, reference to classical distribution theory and subsistence wage theory can provide an argument for the concomitance of high unemployment rates and stability of the percentage change in money wages. Phillips himself (1958), noted that in correspondence with high and persistent unemployment rates, the bargaining strength would already be exhausted to the point of having reached a sort of minimum level beyond which a further weakening of the dynamics of nominal wages would affect the levels of subsistence of wages, understood as historically determined and not necessarily linked to mere biological survival. Indeed, in the presence of particularly low nominal wage growth rates, even minimal price growth can erode real wages. It is also plausible to believe that the rate of change in money wages grows more rapidly in phases of growth than it falls in phases of rising unemployment (Phillips, 1958; Serrano, 2019) and that therefore the Phillips curve is anything but linear and stable.

Before introducing our estimation of the Phillips curve, a point has to be emphasised. In this alternative context, the role of the expectations of workers on price inflation changes diametrically. Indeed, although inserted in the equation of the Phillips curve formulated both as adaptive or rational ones, they are not automatically "incorporated" in the Phillips curve and in the wage resulting from bargaining. On the contrary, their coefficient represents the ability of workers to translate their expectations of price inflation into higher bargained wages. This ability depends on the same factors that influence the bargaining system overall. In this sense, we can think that several Phillips curves exist in different institutional-historical moments.

5. Data and findings

I refer to a panel data of 25 OECD economics from 1960 to 2016. Data are summarised and detailed in Appendix 1. Following Kiley (2015), I test a linear version of the Phillips curve. To discuss the New-Keynesian explanation of hysteresis based on the role of long-term unemployment and its consequence on the estimated Phillips curve, I consider both long-term (ltu) and short-term (stu) unemployment rate as two separate covariates. Moreover, according to Summa and Braga (2020), I explicitly consider the role of institutions, that can influence the bargaining potion of workers, besides the level of unemployment. Specifically, the estimated equation is:

1. $\dot{w}_{i,t} = \alpha_i + \delta_t + \beta_{stu}stu_{i,t} + \beta_{ltu}ltu_{i,t} + \beta_p\dot{p}_{i,t-1} + \beta_\pi\hat{\pi}_{i,t} + \beta_{REP}REP_{i,t} + \beta_5EPL_{i,t} + \varepsilon_{i,t}$

Where, in addition to the variables defined above, the monetary wage inflation ($\dot{w}$), the inflation rate ($\dot{p}$) and the growth of labour productivity ($\hat{\pi}$) are considered. REP is the *replacement rate* and represents the generosity of unemployment benefits, while EPL is the Employment Protection Legislation. It is an index referred to as the extension of pro-workers labour market institutions. α_i and δ_t are two-way fixed effects. To avoid multicollinearity issues coming from the joint use of stu and ltu we show, in Table 1, that the correlation coefficient between these two variables is equal to 0.27 and so they can be introduced together in our regression.

Table 1 Correlation matrix of Phillips curve estimation

	stu	ltu	$\hat{\pi}$	epl	$l.infl$	Replacement rate
stu	1.00					
ltu	0.27	1.00				
$\hat{\pi}$	-0.05	0.05	1.00			
epl	-0.30	0.28	-0.01	1.00		
$l.infl$	0.04	0.05	0.13	0.06	1.00	
Replacement rate	-0.05	-0.05	-0.07	0.19	-0.15	1.00

Table 2 shows the findings of the estimated linear Phillips curve. Albeit with a different intensity due to the magnitude of different coefficients, both the short- unemployment rate and the long-term unemployment rates engender a negative significant effect on nominal wage inflation. It is worth noting that the significance of the short-term unemployment rate coefficient decreases in the last two model specifications. This may testify that also the long-term unemployed contribute to weakening the bargaining power of workers and then nominal wage inflation, contrary to what was postulated by the new-Keynesian approach and the alleged role that would not be played by the long-term

unemployed as considered non-inflation fighters. The short-term unemployment rate, however, seems to have a higher coefficient than the long-term one, although the latter does not assume in any/all specification a value that is not statistically different from zero, as supposed by the new-Keynesian hysteresis theorists. Therefore, in order to verify whether exists a statistically significant difference between the coefficients of the variables referring to the duration of unemployment, we carried out the Wald Test. The null hypothesis it assumes is that β_{stu}-$\beta_{stu} = 0$. In the last two specifications, where however the number of observations is reduced due to the introduction of the replacement rate variable (for which there is a substantial limitation of available data) the Wald Test does not allow rejecting the null hypothesis showing that a difference between the two coefficients does not exist. We, therefore, believe that we can interpret these results as an element of substantial weakness in the idea presented above according to which the long-term unemployed would be ineffective in determining the dynamics of monetary wages.

Tabel 2 Linear Phillips curve: nominal wage inflation versus short and long term unemployment. 25 OECD countries

VARIABLES	(1)	(2)	(3)	(4)	(5)
	R.E.	F.E.	F.E.	F.E.	F.E.
stu rate	-0.330***	-0.595***	-0.706***	-0.731**	-0.623*
(<6 months)	(0.0624)	(0.109)	(0.160)	(0.330)	(0.348)
ltu rate	-0.153***	-0.191***	-0.232***	-0.254***	-0.377***
(>6 months)	(0.0270)	(0.0495)	(0.0767)	(0.0372)	(0.0667)
Growth of Labour Productivity	0.447***	0.400***	0.478***	0.284**	0.339***
	(0.0387)	(0.0839)	(0.0897)	(0.0962)	(0.106)
Inflation rate	0.817***	0.724***	0.724***	0.331***	0.321***
(lagged)	(0.0200)	(0.0750)	(0.0861)	(0.148)	(0.099)
Replacement rate				0.0000	0.00015
				(0.0000)	(0.0001)
Employment Protection Legislation			-0.0019		-0.00493
			(0.0055)		(0.0182)
Constant	0.0264***	0.0521***	0.0526***	0.0654***	0.072
	(0.00259)	(0.0080)	(0.0177)	(0.0077)	(0.0435)
Observations	816	816	620	396	307
Wald test (p-value) $\beta_{stu} = \beta_{ltu}$	0.0196	0.022	0.024	0.173	0.489
R-squared	0.762	0.724	0.728	0.522	0.508
Number of countries	25	25	25	25	25

Furthermore, consistent with the literature on the Phillips curve, past inflation seems to have a relevant role in explaining the percentage change in nominal wages. The coefficient associated with

it is always highly significant and always less than 1. Hence, we can argue that in the period considered, there was a run-up of wages over prices, ultimately never perfectly completed (and therefore compatible with a reduction in the purchasing power of wages), and not vice versa. This can be interpreted as a further weakening of the ability of money wages to 'keep' the pace of price growth. We also consider it interesting to focus on the estimated coefficient concerning the replacement rate. Indeed, the literature (e.g., Guichard and Rusticelli, 2010; Rusticelli, 2015) argues that more generous unemployment benefits would increase the incentive of the unemployed to remain in this status, thus limiting the disinflationary effectiveness of unemployment itself. From our estimates, however, the coefficient associated with this variable is never statistically significant. On the other hand, the coefficient referring to the growth of output per worker is always significant and positive. This would not imply any mechanical and univocal relation between productivity and nominal wage growth. We tend to interpret this coefficient as a symptom of a greater inclination of capitalists to accept wage increases when labour productivity also increases or, in other words, of a better opportunity for workers to negotiate higher wages. As a robustness check, we performed the same regressions on a sub-sample of countries that we will define, as in Girardi et al. (2020), mature economies. The results reported in Table 3 confirm our thesis: the Wald test certify the statistical non-significance of the difference between the coefficient of short-term and long-term unemployment. Moreover, in these estimates, the former gradually loses significance, while the magnitude of the latter increases compared to what emerged from the analysis of the whole pool of countries. It seems that, in countries with more advanced capitalism and probably with a structure of deep-rooted bargaining and 'traditional' industrial relations, it cannot be affirmed that the long-term unemployed play a marginal role in affecting wage dynamics. In the last model specification, the long-term unemployment rate seems to be the only one associated with a reduction in the percentage change in nominal wages, certifying the depressing effect on the balance of power of this category of workers. It, therefore, appears that in a linear Phillips curve it is not possible to show that long-term unemployment has a non-significative role in determining money wages. Therefore, it's difficult to admit that the worsening of the phenomenon of long-term unemployment contributes to the disappearance of the Phillips curve, because of causing a weakening of the link between unemployment and inflation.

Tabel 3 Linear Phillips curve: nominal wage inflation versus short and long term unemployment. 21 OECD mature economies

| VARIABLES	(1) R.E.	(2) F.E.	(3) F.E.
STU rate (<6 months)	-0.626*** (0.133)	-0.667* (0.321)	-0.531* (0.286)
LTU rate (>6months)	-0.248*** (0.0947)	-0.329*** (0.0552)	-0.377*** (0.0795)
Growth of Labour Productivity	0.441*** (0.0911)	0.197** (0.0837)	0.272** (0.0748)
Inflation rate, lagged	0.547*** (0.0881)	0.089 (0.682)	0.123 (0.104)
Employment Protection Legislation index	0.0047 (0.00594)		0.0123 (0.0152)
Replacement rate		0.0000 (0.00005)	0.000048 (0.00008)
Constant	0.0462*** (0.0157)	0.0685*** (0.0111)	0.0366 (0.0354)
Observations	556	332	262
Wald test (p-value)	0.065	0.291	0.592
R-squared	0.685	0.599	0.579
Number of countries	21	21	21

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

To corroborate these results we carry out a further exercise. Outside of the literature linked to an accelerationist Phillips curve, contrarily admitting that inflation originates in the distribution conflict, the unemployment rate maintains its inverse relationship with respect to the inflation rate. Indeed, it is an important indicator of workers' bargaining power and therefore of their ability to negotiate wage increases or resist wage reductions (Stirati, 2001; Stirati and Paternesi, 2018; Serrano, 2019; Summa and Braga, 2020). We have also seen how Phillips (1958) was firmly convinced of the non-linearity of the relationship between the unemployment rate and inflation and how Speigner (2014) believed that not considering this non-linearity had determined the conclusions about the role of the long-term unemployed in wage bargaining. In fact, long-term unemployment is a phenomenon that emerges with greater gravity in correspondence with high levels of overall unemployment. At these levels, as argued by Phillips (1958), the flat part of the Phillips curve emerges: what has been interpreted as the

lack of impact on wage inflation of the long-term unemployed, would be nothing more than the manifestation of this condition, namely a sort of zero lower bound of monetary wages that is difficult to be overcame due to the resistance of workers (Speigner, 2014). We, therefore, try to keep these arguments together by verifying: i) whether there is non-linearity in the relation we are investigating; ii) which is the relation between unemployment and inflation of money wages and iii) whether or not the incidence of long-term unemployment is a variable useful to explain money wages inflation. The motivation for believing that the Phillips curve is not linear, in addition to what Phillips (1958) already noted, can be well understood by looking at the scatterplot between nominal wage inflation and the unemployment rate. As the Figures 1 and 2 show, the slope of the curve, for particularly low levels of the unemployment rate (in our case the red line refers to unemployment rates below 3%) is significantly greater than the slope of the curve (the green line) for higher unemployment rates. This is true when considering mature economies, or when looking at the full sample. A lower slope, therefore, corresponds to a lower propensity to change of nominal wages, which can testify to a certain downward 'resistance' of nominal wages.

Figures 1 and 2. Different slopes in the Phillips curve for different levels of the unemployment rate. Mature economies and total sample
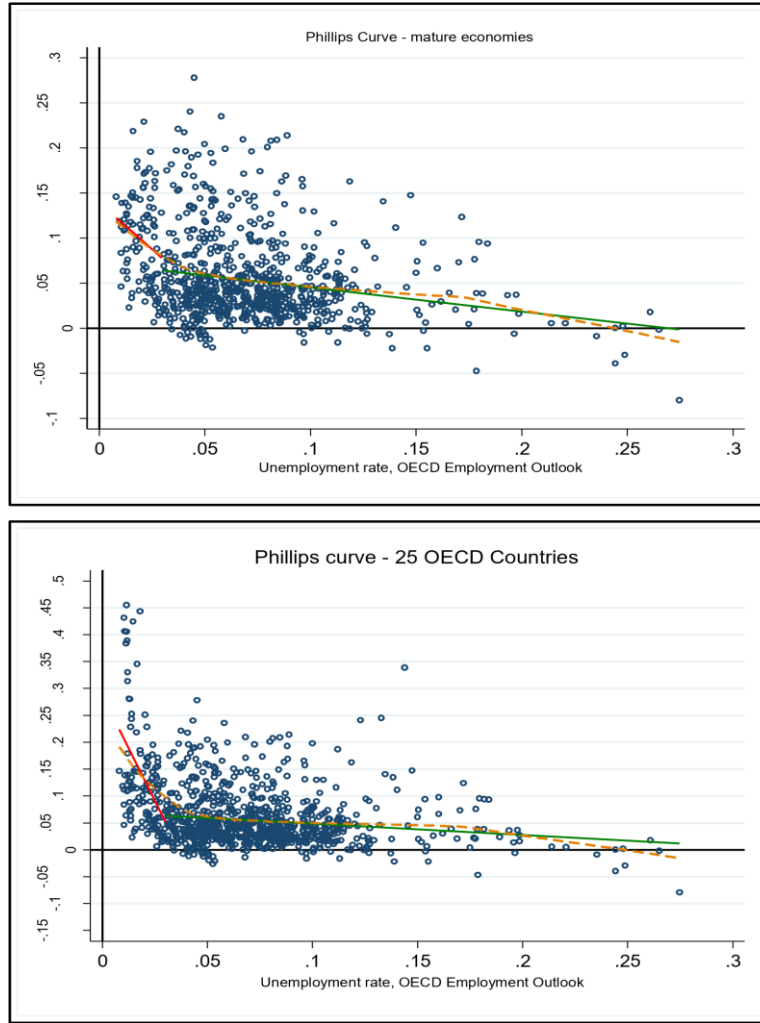
The 'non-linearity' that emerges on a graphic level leads us to empirically verify the possible existence of a convex shape in the Phillips curve. To verify the feasible non-linear effects on nominal wages we will therefore estimate the following equation:2

$$2. \quad \dot{w}_{i,t} = \alpha_i + \beta_u u_{i,t} + \beta_{usq} u^2_{i,t} + \beta_{cub} u^3_{i,t} + \beta_p \dot{p}_{i,t-1} + \beta_\pi \hat{\pi}_{i,t} + \beta_{REP} REP_{i,t} + \delta_t + \gamma\, I_{i,t} + \varepsilon_{i,t}$$

Compared to equation 1, the total unemployment rate (u) is the main covariate. Its square (u^2) and its cube (u^3) serve the purpose to verify whether the Phillips curve is convex-shaped. Moreover, to test the role of the long-term unemployed, the dummy $I_{i,t}$ is included in equation 2. Its value is 1 whenever the incidence of long-term unemployed on total unemployment is above one standard deviation than the country's average. According to the literature on hysteresis, its coefficient (γ) is expected to be both positive and statistically significant because long-term unemployment is at the root of wage rigidity. Alternatively, if we find either a non statistically significant or a negative coefficient, there would be evidence in favour of an alternative explanation of inflation behaviour.

Table 4. The convex Phillips curve and the role of long-term unemployment incidence

VARIABLES	(1) FE - convexity	(2) FE - convexity - two different incidences of LTU	(3)	(4) FE - convexity -two different incidences of LTU and Replacement rate	(5)
Unemployment rate	-1.152***	-1.206***	-1.165***	-1.313***	-1.270***
	(0.237)	(0.282)	(0.246)	(0.243)	(0.217)
Unemployment rate square	0.0695***	0.0721***	0.0700***	0.0628***	0.0603***
	(0.0232)	(0.0252)	(0.0235)	(0.0162)	(0.0151)
Unemployment rate cube	-16.13**	-16.58**	-16.19**	-12.44***	-11.98***
	(5.842)	(6.189)	(5.896)	(3.599)	(3.479)
Inflation rate, lagged	0.757***	0.757***	0.756***	0.491***	0.486***
	(0.0476)	(0.0472)	(0.0488)	(0.116)	(0.117)
Growth of labour productivity	0.442***	0.438***	0.442***	0.337***	0.342***
	(0.0803)	(0.0779)	(0.0799)	(0.0919)	(0.0924)
LTU_1 Incidence		0.00167		0.00222	
		(0.00224)		(0.00270)	
LTU_2 Incidence			0.000908		0.00289
			(0.00277)		(0.00360)
Replacement rate				0.000143*	0.000129
				(8.24e-05)	(7.86e-05)
Constant	0.0614***	0.0631***	0.0620***	0.0698***	0.0696***
	(0.00764)	(0.00892)	(0.00822)	(0.00796)	(0.00794)
Observations	817	816	816	396	396
R-squared	0.723	0.723	0.723	0.477	0.477
	25	25	25	25	25

The coefficient referred to the unemployment rate has the expected (negative) sign and is always significant. An increase in the unemployment rate of 1% is associated with a fall in the growth rate of nominal wages which varies, depending on the specifications, between -1.15% and -1.3% approximately. The variable u^2, useful for evaluating the existence of a convex form of the relation between nominal wage inflation and unemployment rate, is always significant and positive. It confirms that the slope of the Phillips curve changes for different levels of unemployment. Therefore, for high levels of the unemployment rate, we are witnessing a weakening of the reduction in wages which is not directly attributable to the incidence of long-term unemployment. To verify this, we considered a dummy variable. It represents the average difference in the effect of the unemployment rate on wage inflation, between the case of a high incidence of long-term unemployment (dummy = 1) and the case of low incidence (dummy = 0). This variable is associated with a non-significant coefficient. Therefore, considering the non-linearity and recovering the original contribution of Phillips, findings show the impossibility of ascribing, univocally, the weakening of the relationship between unemployment and inflation and the flattening of the Phillips curve, to the high average duration of unemployment. Thus, there is no longer the possibility of considering long-term unemployment not effective in reducing nominal wage inflation. Furthermore, for the other control variables used, the considerations made in the previous econometric exercise remain unchanged and,

in particular, the very limited role played by the replacement rate in determining wage inflation is confirmed.

6. Conclusive remarks

Our findings seem to suggest the existence of some inconsistency between the empirical evidence and the postulates of the new-Keynesian hysteresis theory, based on the role of long-term unemployment. Indeed, in the last instance, the persistence of unemployment should be attributed to the lack of appropriate wage deflation due to detachment from the labour market of long-term unemployed. On the contrary, our exercise supports the idea the also this category of workers has a role in achieving wage deflation. If it is true, it is more difficult to argue that hysteresis in unemployment and missing deflation are caused by high long-term unemployment rates. On the other hand, they support an alternative theory of inflation that provides a more convincing explanation of the situation of high unemployment and stable inflation rate and for the absence of accelerating inflation (or deflation), corresponding to low (or high) unemployment rates. Indeed, a theory as the marginalist, that explains situations of imbalance in the markets as caused by price stickiness, in particular of factors of production, has to be find a source of rigidities able to explain why neoclassical mechanisms are not activated, even in the long term. The long-term unemployment represents this source of these rigidities. If the marginalist mechanisms were at work, in the long run, it should be admitted the neutrality of the money, and so the impossibility of guaranteeing stable and lasting increases in the activity rates of the economy, albeit at the expense of a growing inflation rate (Serrano, 2019). The hysteresis theory that we have analyzed in this paper, therefore, while attempting to consider the role of aggregate demand in determining the long-term equilibrium, remains anchored to a supply-side interpretation of the NAIRU in which the persistent effect of a drop in aggregate demand comes from the presence of wage rigidities. Furthermore, favoured by the empirical evidence of the US unemployment rate close to full employment (Pacitti, 2021) without a strong recovery in wage and price inflation, a flourishing trend of research - while anchored within the dominant paradigm - has looked at long-term unemployment from a different direction. Accordingly, it would represent a further cause of weakening of workers' bargaining power, who would look with fear at the possibility of running into a high duration of unemployment and therefore would not be incentivized to engage in the distributive conflict to obtain higher wages. According to Yellen (2016), a condition of widespread and long-lasting unemployment would make higher the cost of job loss. This phenomenon worsened after the Great Recession, animating the search for better measures of labour market slack able to considering the worsening of the contractual and social security conditions of workers, the growing insecurity, the spread of part-time and fixed-term contracts and the reduction of participation in the labour market (Yellen, 2014, 2016; Bell and Blanchflower, 2014; Linder et al.,

2014; Blanchflower, 2015; Stansbury and Summers, 2020). It is important to underline that this approach looks at the slack of the labour market to justify the existence of an even lower NAIRU than the actual unemployment rate, therefore it remains within the new-Keynesian paradigm. Nevertheless, it seems to underline some important aspects that have characterized the labour market for almost thirty years. As Figure 3 shows, the flattening of the Phillips curve begins well before the Great Recession and the rediscovery of the role of the long-term unemployed as a cause of hysteresis.

Figure 3. The change in the slope of the Phillips curve in recent times
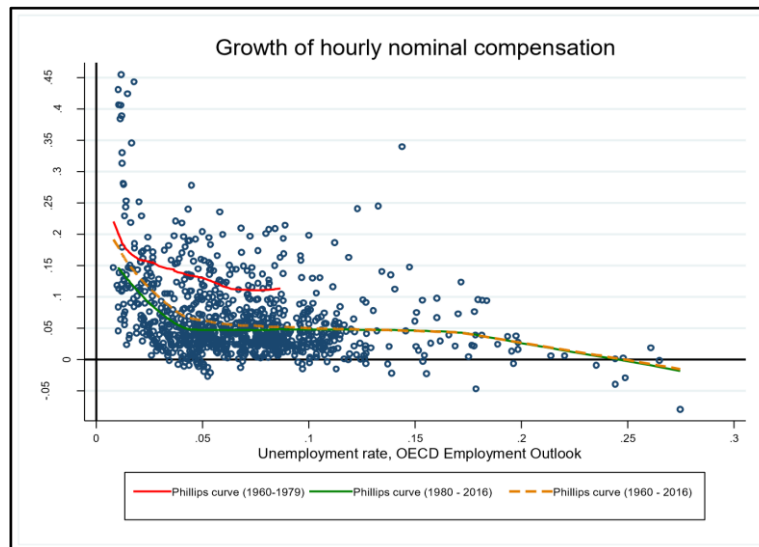
If we considered the period from 1980 to 2016 (green line), the relation between the unemployment rate and the percentage change in nominal wages becomes much flatter than that estimated for the 1960-1979 time span (red line). This emerges also looking at the intercept and the slope of the curve referred to the total sample (the dotted yellow curve). As argued by several scholars, a relevant cause of this phenomenon is the progressive process of deregulation of the labour market (Seccareccia, 1996; Stockhammer, 2011; Brancaccio et al., 2018) occurred, with a particular emphasis, in the countries of southern Europe. If these reforms, strongly encouraged by international institutions (OECD, 1994, 2012; IMF, 2011; ECB, 2015), have failed to favour an increase in employment (Baccaro and Rei, 2007; Howell et al, 2007); they, however, contributed to weakening the bargaining power of workers and thereby worsening the functional distribution of income (Stockhammer, 2013; Brancaccio et al., 2018). To be fair, the amazement that emerges in the orthodox literature is a bit odd: the weakening of the wage dynamics was in fact a declared objective in both the theoretical and political analysis since, precisely the stringent institutional rules of the labour market, reducing the downward flexibility of wages, would have caused high levels of unemployment. This is especially true if we look at the arguments that have considered the incidence of long-term unemployment as a cause of hysteresis, as it is guilty of not inducing the adequate reduction of wages to reabsorb unemployment. On the contrary, it appears evident that weaknesses are shown by the very concept

of NAIRU, which is at times difficult to grasp, defined as an equilibrium distinct from the unemployment rate corresponding to a full-employment condition and which seems open to multiple and often inconsistent interpretations, also within of the same neo-Keynesian paradigm that elaborated it.

Referring to an alternative approach, in which the explanation of production and distribution are kept logically separate (Eatwell, 1983; Garegnani, 1987) and the intensity of the conflict can alter the distribution without direct consequences on employment levels (Garegnani 1979), it is possible to provide an interpretation of both the persistence of high unemployment rates and the inflation dynamics observed in reality. In particular, by abandoning the new-Keynesian construction of the NAIRU and the full indexation of changes in money wages to expected inflation, it is possible to obtain a Phillips curve compatible with both the absence of inflation and an acceleration of inflation (Summa and Braga, 2020). Indeed, how much workers are able to transfer, in the bargaining of money wages, of their inflation expectations depends substantially on their contractual position. The latter is influenced by the levels of activity and employment but also depends on historical, political and institutional circumstances that can lead to different results of the distributive conflict, corresponding to the same levels of activity. Moreover, macroeconomic and political-institutional circumstances, feed themselves: a prolonged period of low unemployment rates, especially if it occurs in a political and institutional context favourable to workers, can increase their bargaining power (Kalecki, 1943, Garegnani, 1990). In this sense, it is possible to read both the powerful growth of nominal wages experienced in the major capitalist countries after the Second World War, as well as their moderation and the consequent reduction in inflation rates which took place from the 1980s onwards (Cavalieri et al, 2008). These elements, therefore, corroborate the idea that the relationship between unemployment and inflation, summarized by the Phillips Curve, is anything but stable and linear as also supported by recent empirical research (Speigner, 2014; Daly and Hobijn, 2014) but also abandon the interpretation that took hold after the monetarist restoration and recover that of Phillips himself. The Phillips Curve, therefore, would no longer represents the place where each movement of the unemployment rate, in the economic cycle, is uniquely associated with a certain variation in the inflation rate. It would rather assume the features of a trend and long-term relationship in which the unemployment rate maintains its inverse relationship with respect to the inflation rate since, on average, it can be considered that it influences the bargaining power of workers (Palumbo 2010; Paternesi Meloni e Stirati, 2018). How much it affects the bargaining power and the outcome of the resulting conflict are not immutable over time. By doing so, in addition to obtaining an explanation for the flattening of the relationship in phases of prolonged unemployment, it is also possible to explain, without making any particular exceptions, why even in the phases of employment recovery,

a substantial increase in inflation has not occurred. The action that for decades has weakened the power of workers, the reduction of the role of trade unions and the precariousness of labour relations, obtained by the various "structural" reforms, without having produced a reduction in unemployment rates, have instead succeeded in to weaken workers' wage claims.

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Appendix 1. Data and sources

Data	Description and sources

Unemployment rate	Unemployment rate (as a percentage of the active labour force). Source: OECD.Stat, Labour Force Statistics.
Long-term unemployment rate (LTU rate)	Author calculation based on long-term unemployment (persons, 6 months or more) and active labour force (15-64 years). Source: OECD.Stat, Labour force statistics.
Short-term unemployment rate (STU rate)	Author calculation on short-term unemployment (persons, less than 6 months) and labour force (15-64 years). Source: OECD.Stat, Labour force statistics.
Incidence of short-term unemployment (STU incidence)	Author calculation on short-term unemployment (persons, less than 6 months) and unemployment. Source: OECD.Stat, Labour force statistics.
Employment protection legislation Index (EPL)	Source: OECD.Stat, Labour force statistics.
Replacement rate	The ratio between the first unemployment benefits and the last income before becoming unemployed Source: OECD.Stat, Labour force statistics.
Inflation rate (CPI index)	Annual per cent change of CPI index. Source: OECD.Stat, Economic Outlook No 101, June '17.
Labour productivity growth	Annual per cent change of gross domestic product per hour worked (in real terms). Source: OECD.Stat, GDP per capita and productivity levels.