Conflict, inertia, and Phillips curve from a Sraffian standpoint

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September 24, 2023

Recently, there have been important debates on models of conflict inflation. On the one hand, the most important and recent textbooks in pots-Keynesian economics present two different views on how to model conflict inflation. One view is based on a heterodox interpretation of the NAIRU, where distributive conflict manifests through unexpected inflation (Stockhammer 2008; Hein and Stockhammer 2010; Hein, 2023). The other view considers inflation (and not accelerating inflation) as a result of conflicting claims, and it is inflation that makes the conflicting claims compatible (Blecker and Setterfield 2019; Lavoie 2022). Finally, some new-Keynesian authors have recently introduced conflict in their inflation models (Ratner and Sim, 2022, Lorenzoni and Werning, 2023; Blanchard and Bernanke, 2023).

Post-Keynesian textbooks (Blecker and Setterfield 2019; Lavoie 2022) present conflicting claims models in two steps. In the first, price and wage inflation depend on the aspiration gaps of capitalists and workers multiplied by 'bargaining parameters'. In the second step, the first component is added of the effect of lagged price and wage inflation and parameters reflecting the degree of indexation of such variables. Blecker and Setterfield (2019) and Lavoie (2022) argue that partial indexation describes the more general case of conflict inflation processes, although they also analyze particular cases in which each (or both) indexation parameters are complete. In contrast, Hein (2023) argues that indexation of prices and wages should be complete. Assuming otherwise would undermine the coherence of conflicting claims models, as it would mean that capitalists and workers want to partially mitigate the effects of rising costs and prices, all the while maintaining the desire and ability to demand a larger portion of income (in the conflict component of the model). It is easy to note that having two components in conflict inflation models may give rise to potential contradictions, especially if the theoretical fundamentals of the model are not deeply discussed. As a drawback, Hein's (2023) solution of including full indexation in the conflict inflation model brings back the notion

of NAIRU (SIRE - Stable inflation rate of employment), which was rejected by Lavoie (2022) and Blecker and Setterfield (2019).

We propose a reinterpretation for conflict inflation theory, taking a closer look into the determinants of the "bargaining" and the "indexation" parameters. We address the criticism of Hein (2023) and provide a coherent framework for the two components of conflict inflation models. However, in contrast with Hein (2023), our contribution implies the rejection of any notion of NAIRU - refuted both from theoretical (Setterfield and Leblond, 2003, Serrano, 2019, Summa and Braga, 2020) and empirical (Fair, 2000, Lang et al 2021, Meloni et al, 2022) standpoints. We propose a model in which conflict inflation depends on the aspiration gap and the absolute and relative frequency of wage and price increases. Our model directly relates the bargaining power parameters that drive price and wage increases to their relative frequency of increases within a given period, which in turn determines the degree of price and wage inertia. In line with Serrano (2019), Summa and Braga (2020), and Morlin and Pariboni (2023), we derive a plausible conflict augmented Phillips curve by adding the effect of the employment rate on the target or aspired real wage[1].

After deriving our results, we compare our assumptions and results with both heterodox and a few recent mainstream contributions, particularly regarding the existence of some type of NAIRU. We will critically assess the models in which income distribution is determined unilaterally by a given exogenous real markup determined independently of the actual pattern of nominal wage and price increases. These models make conflict inflation difficult to justify theoretically as nominal wage increases do not affect distribution therefore being pointless and irrational. We conclude that for models to be coherent, a change in the speed of money wage growth must have an impact on real wages, which precludes these curves from being accelerationist and the derivation of a NAIRU.

Section 2 revisits the baseline theoretical conflict inflation model and the expanded version that includes a role for expectations. Section 3 discusses the recent debates on

[1] We use the employment rate as a general indicator for labor market slack. Of course, other measures of labor market slack are used in the empirical literature to relate labor market conditions and wage and/or price dynamics (Blanchflower and Bryson, 2023). As the objective of our paper is purely theoretical and our general formulation of conflict inflation and Phillips curve is compatible with any indicator of labor market slack, we choose this variable as it is widely used in the theoretical literature and better to compare with other models.

conflict inflation theory from post-Keynesian scholars. After critically reviewing these different perspectives, we propose a reinterpretation of the conflict inflation model in section 4. In section 5, we show how the theoretical foundations for the bargaining power parameters relate to the (conflict augmented) Phillips curve. A final section summarizes the main findings.

2) 2.1 The basic conflict inflation model

We start with a distinction between demand-pull and cost-push inflation. Demand-pull inflation occurs when effective demand - *i.e.*, the monetary spending measured at supply or normal prices - is higher than potential output, causing a rise in prices as a result of scarcity. Cost-push inflation, i.e., the nominal increase in the supply price of one unit of output, follows the rise in at least one of the nominal incomes determining the final price[2], and occurs when effective demand is lower than potential output.

We use a simple model of distribution for this unit of output, a simple "corn model". We consider an economy that produces, using a single method, only one basic good ('corn'), which is also the single wage good and the circulating capital input. The economy uses homogenous labor for its production, besides corn itself, and real wages are paid at the end of the period. The price level equation, assuming a uniform (between producers) real rate of profits on replacement costs for this economy, is given by:

(1) $P = aP(1 + r) + bPl$

Where P corresponds to the price level of a unit of gross output, a is the technical coefficient, r is the real rate of profit, b is the real wage, and l is the labor coefficient. Defining B as the net output per worker (the maximum real wage) and R as the normal net output to capital ratio (the maximum rate of profit), we can derive a wage curve that shows the set of distributive possibilities:

(2) $1 = \frac{b}{B} + \frac{r}{R}$

Actual real wages and real profit rates must be positive and lower than the maximum real wage and the maximum real profit rate. The conflict between workers and capitalists

[2] In the case of an open economy, the rise in prices can be caused by the rise in the international price of inputs or tradable goods. However, an increase in these prices is caused by an increase in foreign distributive variables in the first place. See Morlin (2023).

determines the final result of distribution, through setting nominal wages and prices. As Keynes (1936, p. 8-9) noted, workers can negotiate nominal wages in a monetary economy but cannot directly bargain real wages since they do not control the price level. Also, we stress that the profit margin is as nominal as the nominal wage, and firms can set prices, under the constraint of competition, but cannot directly control the rate of increase of their wage costs (Serrano, 1993). The dynamics of these nominal variables affects income distribution, which is a necessary condition for a coherent approach to conflict inflation.

Let's connect our simple model with the basic conflict inflation model (Rowthorn, 1977; Dutt, 1984) that is now consolidated in post-keynesian textbooks (Blecker and Setterfield, 2019; Lavoie, 2022). From equation (2), we know that the sum of the share of profits and wages must be equal to 1. The basic intuition of the models of conflicting claims comes from the assumption that workers desire a real wage, b^w , incompatible with the real rate of profits desired by the firms, $r^{k.}$. Equation (3) defines the real wage desired by firms b^k , derived from their desired profit rate.

$$(3)\ b^k = B(1 - \frac{r^k}{R})$$

If the real wage aspired by workers is greater than the real wage that corresponds to firms' desired real rate of profits (that is, $b^w > b^k$), then there are conflicting claims over distribution.

The basic model relates this distributive conflict to cost-push inflation by taking the price and wage inflation rates, p and w, as a function of firms' and workers' aspiration gaps. Minus one subscript means a lagged variable:

$$(4)\ w = \beta^w(b^w - b_{-1})$$
$$(5)\ p = \beta^k(b_{-1} - b^k)$$

The conflict process of setting nominal wages and prices causes them to grow at the same rate, as in equation (6). Therefore, the inflation rate achieves equilibrium, and income distribution stabilizes.

$$(6)\ p = w$$

This will result in the actual real wage b tending to b^* and the rate of inflation to p^* as in equations (7) and (8).

$$(7)\ b^* = \frac{\beta^w b^w + \beta^k b^k}{\beta^w + \beta^k}$$

$$(8)\ p^* = \frac{\beta^w \beta^k (b^w - b^k)}{\beta^w + \beta^k}$$

The actual real wage will be somewhere in between the levels desired by workers and the firms, depending on the relative size of the two bargaining power coefficients, $\beta^w$and β^k. Moreover, the rate of inflation will depend both on the size of the distributive conflict $(b^w - b^k)$ and the absolute sizes of the bargaining power coefficients, $\beta^w$and β^k.

We can have four possibilities for the closure of such model depending on the bargaining power of workers and firms, as expressed in the values of $\beta^w$and β^k: (1) when workers have very strong bargaining position and β^w is infinite, but firms have a finite β^k; (2) when firms have very strong bargaining position and β^k is infinite, but workers have a finite β^w; (3) when both firms and workers have very strong bargaining position and β^w and β^k are infinite; (4) when both firms and workers have not so strong bargaining position and β^w and β^k are finite.

In case (1), when workers have a very strong bargaining position and β^w is infinite, the real wage will be the one desired by workers $b^* = b^w$. Any resistance from firms through price increases will only generate inflation without affecting the level of the real wage. Equilibrium inflation rate, in that case, is described by equation (9).

$$(9)\ p^* = \beta^k (b^w - b^k)$$

Conversely, in case (2), if the firms have a very strong bargaining position, it is β^k that is infinite, and the real wage target for firms will prevail, $b^* = b^k$. In this case, money wage increases will only generate inflation and cannot affect the actual level of the real wage.

$$(10)\ p^* = \beta^w (b^w - b^k)$$

A third case occurs when both firms and workers have a very strong bargaining position, so that both β^w and β^k are infinite. In this case, the incompatibility between desired real wages and real rates of profits will cause the acceleration of inflation. Since workers and firms react strongly to increases in prices and wage costs to achieve their distributive

target, there is no finite rate of inflation capable of reconciling the conflicting claims. Therefore, inflation can accelerate continuously due to any degree of conflict over distribution (i.e. any positive difference between b^w and b^k).

Finally, there is the case (4) when both parameters β^w and β^k are finite, and workers and firms have not completely strong bargaining power to achieve their distributive targets. The solution is the one discussed in equations (7) and (8), where inflation depends on the magnitude of the conflict $(b^w - b^k)$ and the bargaining power parameters. Therefore, in this case, there is a finite rate of inflation capable of reconciling conflicting claims. The equilibrium real wage lies between workers' (b^w) and capitalists' (b^k) targets, depending also on the relative values of the bargaining parameters.

2.2. Extended model with inflation expectations

The more complete version of the model introduces expected wage and price inflation for firms and workers, respectively[3]. The parameters α^w and α^k link nominal wage change to expect inflation and price increases to expect wage inflation. This version is presented in Blecker and Setterfield (2019), Lavoie (2022) and Hein (2023):

$$(11)\ w = \beta^w(b^w - b_{-1}) + \alpha^w p^e$$

$$(12)\ p = \beta^k(b_{-1} - b^k) + \alpha^k w^e$$

Let's suppose a general formulation for expectations following an adaptive mechanism, in which (price and wage) inflation expectations depend on an exogenous term, p^e and w^e, and a correction of the exogenous term with the actual past (price and wage) inflation. The parameters γ^w and γ^k reflect how expectations relatively depend on past and exogenous expected inflation. We can write price and wage inflation expectations as:

$$(13)\ p^e = \gamma^w p_{-1} + (1 - \gamma^w)\,\overline{p^e}$$

$$(14)\ w^e = \gamma^k w_{-1} + (1 - \gamma^k)\overline{w^e}$$

[3] Here we are sweeping under the rug the recent criticism that expected inflation indicators do not really matter for workers when they set their wages (Rudd, 2022), and in practice, they use their observed cost of living increases when negotiating labor contracts (see Braga and Serrano, 2023, for references). Firms, however, probably know better how much the wages they are paying are currently increasing, so it is unclear why they use expected wage increases in their price increase equation. Lavoie (2022, p. 601-602) addresses this asymmetry, by assuming that workers consider expectations as equal to *past inflation*, while firms consider the *current nominal wage change* in their equations.

We start with the first case where expectations are completely exogenous, or as it is said more recently, anchored (Blanchard, 2016). Therefore, we set the parameters $\gamma^w = \gamma^k = 0$. With this latter assumption, we can solve equations (11) and (12) for b^* and p^*:

(15) $b^* = \frac{\beta^w b^w + \beta^k b^k}{\beta^w + \beta^k} + \frac{\alpha^w \overline{p^e} - \alpha^k \overline{w^e}}{\beta^w + \beta^k}$

(16) $p^* = \frac{\beta^w \beta^k (b^w - b^k)}{\beta^w + \beta^k} + \frac{\beta^k \alpha^w \overline{p^e} + \beta^w \alpha^k \overline{w^e}}{\beta^w + \beta^k}$

Solution (15) for the real wage shows that the real wage will be an average (depending on the relative bargaining parameters) of desired targets, but will also depend on the difference between exogenous expectations, multiplied by their indexation parameters, α^w and α^k. Thus, if $\alpha^w = \alpha^k$ but workers have a higher exogenous expectations than capitalists, $\overline{p^e} > \overline{w^e}$, equilibrium real wage will increase. Solution (16) shows that inflation will depend on the conflicting claims and on the average between exogenous price and wage expectations.[4]

However, it seems quite unrealistic to suppose that distribution, in equilibrium, can be a result of which social class - capitalists or workers - is more pessimistic about the future (in the sense that one expects permanently a higher inflation than the other). Also, it seems difficult to accept that expectations are completely exogenous, or anchored, in the long run, despite what is happening with actual price and wage inflation. In fact, Fair (2022) shows that inflation expectations are not independent of past inflation. And even the idea of exogenous anchored expectations put out by Blanchard (2016) now seems to clearly represent the idea that an exogenous anchored expectation is slowly corrected through past inflation (Blanchard and Bernanke, 2023).

We can then move to the opposite case regarding expectations, equations (13) and (14), that is, naive adaptive expectations for both workers and firms. In this case, $p^e = p_{-1}$ and $w^e = w_{-1}$. The model then becomes[5]:

[4] If we assume, for simplifying reasons that all the alpha and beta the parameters are equal to 1 (we quill discuss the significance of such assumptions in the next sections of this paper), we can see from equation 15 that the real wage will depend 50% on the sum of desired real wages and 50% on the difference between exogenous price and wage expectations. From equation 16, 50% of inflation will depend on the aspiration gap, and 50% on the sum of exogenous wage and price indexation. It is important to notice that in this case, with fully exogenous expectations, even if both alpha parameters are equal to 1, inflation will be stable.

[5] Again, as we explained in footnote 4, this model is a little bit different than the one proposed by Lavoie (2022, p. 601-602), as he supposes that firms know their wage increase, and price inflation depends on actual nominal wage change instead of past wage change.

(17) $w = \beta'^{w}(b^{w} - b_{-1}) + \alpha^{w} p_{-1}$

(18) $p = \beta'^{k}(b_{-1} - b^{k}) + \alpha^{k} w_{-1}$

Equilibrium requires that $p = w = p_{-1} = w_{-1}$. In this case, we can find the solutions for the actual real wage and inflation:

(19) $b^{*} = \frac{\left(\frac{\beta'^{w}}{1-\alpha^{w}}\right) b^{w} + \left(\frac{\beta'^{k}}{1-\alpha^{k}}\right) b^{k}}{\left(\frac{\beta'^{w}}{1-\alpha^{w}}\right) + \left(\frac{\beta'^{k}}{1-\alpha^{k}}\right)}$

(20) $p^{*} = \frac{\beta'^{w}\beta'^{k}(b^{w} - b^{k})}{\beta'^{w}(1-\alpha^{k}) + \beta'^{k}(1-\alpha^{w})}$

The solutions (19) and (20) of the complete model are very similar to the ones obtained in the simple model, as equations (7) and (8). However, now not only the bargaining parameters β'^{w} and β'^{k}, but also the parameters that measure the degree of wage and price indexation (α^{w} and α^{k}) affect equilibrium real wage and inflation. The higher the degree of wage indexation to prices, the greater will be the equilibrium real wage and the inflation rate. The higher the degree of price indexation to wages, the greater will be the rate of inflation and the lower the equilibrium real wage.

Moreover, even with finite bargaining power coefficients β'^{w} and β'^{k}, we can obtain the solutions in which one side's target completely determines distribution if the correspondent indexation parameter is equal to e. In other words, if the degree of indexation of wages (α^{w}) is equal to one, the equilibrium real wage will be equal to workers' desired real wage. We then have here one situation analogous to the case 1 discussed in subsection 2.1. Conversely, a situation analogous to case 2, subsection 2.1, occurs if, despite finite bargaining power coefficients β'^{w} and β'^{k}, the degree of indexation of prices to wage costs (α^{k}) is equal to one. In this case, the real wage will be equal to the target real wage for the firms, b^{k}. The third case, analogous to case (3), subsection 2.1, occurs when both α^{w} and α^{k} are equal to one. We will then have hyperinflation as a result of any degree of conflict (i.e., whenever $b^{w} > b^{k}$). Finally, a

result analogous to case 4 of subsection 2.1 appears when both finite bargaining power coefficients β'^{w} and β'^{k} and degrees of inertia α^{w} and α^{k} are lower than 1.

We can finally discuss the intermediate case regarding expectations, that is where both workers and capitalists have initial exogenous expectations, but the latter are corrected by observed past inflation. i.e., when parameters are $0 < \gamma^{w}, \gamma^{k} < 1$. With these conditions, expectations of price and wage inflation converges to $p^{e} = p_{-1}$ and $w^{e} = w_{-1}$. Here in the process towards the equilibrium, the exogenous initial expectations leads to the results given by solutions (15) and (16), where difference between initial exogenous expectations can influence the real wage and inflation, and when inflation expectations converge to its past values, the system converge to solutions (18) and (19).

3. Theoretical controversies on conflicting claims modelling

As explained in section 2, conflict inflation models usually contain two components: one describing how aspiration gaps affect prices and nominal wages growth, and another that shows the effect of expected (or past) wage and price inflation on the current evolution of those variables. It is important to notice that in the textbooks of Blecker and Setterfield (2019) and Lavoie (2022) the difference between these two alternatives is not fully explained.

Blecker and Setterfield (2019) first present the model in which price and wage inflation depend on the aspiration gaps multiplied by 'bargaining parameters', similar to our model presented in sub-section 2.1. They relate these parameters, in our notation β^{w} and β^{k}, as "institutional aspects of the labour market and labour bargaining, such as the frequency of contract renegotiations or wage increases and the ability of workers (or their unions) to win the increases they seek" (p. 212) and "the speed of adjustment of prices" (p. 213). After, they present a version of wage inflation based on conflicting claims and indexation, similar to what we present in sub-section 2.2, that is, incorporating also the parameters α^{w} and α^{k} in our notation. They explain the case of this extended model as related with "high-inflation environment" (p. 219), but they do not discuss in detail what is now the meaning of the α and β parameters when taken together.[6]

[6] In inflation debates, past or expected inflation usually becomes relevant when it persists at moderate or high levels. For instance, Rowthorn (1977, p. 226) assumes that there is a threshold "below which expected

Lavoie (2022) also presents conflict inflation theory with these two model specifications. The first and simpler one includes only the conflict component, which in our notation includes only the parameters β^w and β^k. According to him, this specification consists of a "a simplified version of the price inflation equation [which] can very well represent conflicting-claims price inflation [that is, the model that includes indexation,] without losing much substance" (Lavoie, 2022, p. 602). He states that the second model specification which also includes the indexation component, α^w and α^k in our notation, is a more complete version, but however, does not change the main results. So Lavoie (2022) also does not discuss in detail what is now the meaning of the α and β parameters when taken together.

According to Blecker and Setterfield (2019) and Lavoie (2022), and also Setterfield and Blecker (2022), at least in the short-run, the assumption that indexation parameters α^w and α^k are smaller than one seems to be the normal case. Lavoie (2022) argues that incorporating past inflation on wage increases is usually incomplete, meaning that $\alpha^w < 1$. This is justified empirically, as wage increases usually incorporate past inflation only partially. In fact, wage indexation coefficients estimated in the wage inflation equation seem to be lower than 1 (see Lavoie, 2022, p.603, for references). Palley (2018) points out that the important thing concerning this assumption of $\alpha^w < 1$ has nothing to do with how expectations of workers are formed but to the often limited power of workers to actually incorporate all of the expected or past inflation into their money wage increases. Also, it is assumed that usually in these models the indexation of price inflation to wage increases is incomplete, and thus $\alpha^k < 1$. This could be justified empirically by partial pass through of changes in labor costs to prices (Sylos-Labini, 1979).

This perspective, however, has recently attracted some criticism. Hein (2023) uses the complete model, with α and β parameters, to represent both Lavoie (2022) and Blecker and Setterfield (2019). He then d criticizes the assumptions of partial indexation of wages and prices in these models - i.e. the assumption that both α^w and α^k are smaller than one - which explicitly incorporate conflicting claims. He argues that the idea that workers bargain a desired real wage is incompatible with the inclusion of partial past inflation in their wage negotiations. Therefore, for Hein (2023) α^w should be equal to one and not

inflation is ignored completely, and above which it is fully taken into account by all concerned". Similar arguments were put forward in earlier debates about wage inflation (see Forder, 2014, p. 81-89).

vary according to workers relative bargaining power. If workers have a reduced bargaining power, this should be reflected in a lower level of workers' desired real wage (b^w). In the same vein, assuming $\alpha^k < 1$ in the equation of price increases is inconsistent with the idea of a desired real wage by firms, as to achieve such target firms cannot pass on only part of their cost increases. Hence, also firms should completely pass through nominal wage increases to prices, with $\alpha^k = 1$.

We can extrapolate the criticism made by Hein (2023). As we discussed in subsection 2.2, case 2, firms can fully protect their desired real profit rate (the real wage is equal to the desired real wage target of firms b^k) either when they have an infinite bargaining power coefficient, β'^k, or when the coefficient on wage increases in the price increase equation, α^k, is equal to one. But the rate of profit cannot remain at the desired level if higher costs are not being fully passed on into price increases. What then is this "infinite bargaining power" if not the capacity to fully pass on cost increases into prices? Similar objections could be made concerning the money wage increase equation.

Thus, it seems that the meaning of these parameters of bargaining power β'^w and β'^k and wage and price indexation α^w and α^k, when taken together, deserves a deeper reflection. In fact, the precise theoretical foundations behind these well-known equations are less than totally clear.

4.A reinterpretation proposal

4.1 Frequency of wage and price adjustments

We already discussed the implications of the different values for the β coefficients. But let's take a step back and reflect on the meaning of such parameters.

In his seminal paper, Rowthorn (1977) interprets the parameter β as the product of two elements: 1) the number of price (or wage) increases, N, within the period of analysis; and 2) the proportion of the respective aspiration gap that is filled in each increase, λ. Thus, for workers and firms, their respective parameters are $\beta^w = N^w\lambda^w$ and $\beta^k = N^k\lambda^k$.

Let us begin by discussing the meaning and the probable values of these λ coefficients related to the proportion of the aspiration gaps filled for workers and firms in each wage

and price increase. Consider first the case of wage increases (our equations 4) or (11)). If workers really want to get a desired real wage b^w, it seems that the value of λ^w should not be below one. A λ^w lower than one would mean that the nominal wage would have increased less than the gap between the actual real wage b_{-1} and the desired real wage b^w. In this case, it is not clear why workers negotiate a lower than desired real wage, and not reduce their desired real wage. For the same reason, λ^w should also not be greater than one, as in this case workers would be in fact trying to get a real wage higher than the target b^w at each wage bargain. If workers desire a target real wage, it is not clear why they will increase nominal wages more than the amount necessary to fill the gap between actual and desired real wage, and not increase their target real wage. The same could be said about firms. If they have a given profit rate target r^k that implies that their desired real wage is b^k and not more nor less than that, then λ^k should also be set to one.

Of course, if we introduce some kind of heterogeneity between workers, such as that not all workers get wage increases each time, or that they have heterogeneous or biased expectations, λ^w can be lower than one. But let's not add this kind of complexity into the model. To keep the model as simple as possible, we assume homogeneous labor, so we set λ^w equal to one for workers. Formally, we could say the same for prices. The parameter λ^k could be lower than one if not all firms change prices each time. We will also not add this kind of complexity, to keep the model simple[7]. Thus, in our very simple framework with homogenous labor and one good, we assume $\lambda^w = \lambda^k = 1$, as was done by Okishio (1977).

So, the parameters β^w and β^k depend on the frequency of wage and price increases in a given period, N^w and N^k. This will be an objective way that the bargaining power of workers or firms enters into the model, given their desired real wage and profit rate (which also reflects the degree of bargaining power of workers and firms). A stronger bargaining power manifests itself as more frequent wage or price increases. This was how Okishio (1977) presented his model and represents well the view held by the old Cambridge

[7] The problem here is that if two firms sell the same goods, it is difficult to guarantee that due to competition, a situation when one firm changes prices and the other not would occur systematically, as demand would shift completely to the firm that keeps the lowest price and this possibility would prevent the firm from changing its price. In new-Keynesian models, this kind of competition is ruled out, as firms adjust prices according to a given probability distribution - when they receive 'the visit of the Calvo Fairy' - and this kind of behavior is justified by market imperfections, such as that firms are monopolistic and produce goods that are imperfect substitutes for the goods produced by their competitors. We think that these assumptions are arbitrary.

Economic Policy Group (Coutts et al., 1976, Godley & Cripps, 1983, Tarling & Wilkinson, 1985) that conflict inflation depends on the aspiration gap and on the absolute number of wage and price increases. And the resulting real wage will depend on the relative frequency of wage and price increases[8].

Therefore, as under our assumptions that $\lambda^w = \lambda^k = 1$, the "bargaining power" coefficients are equal to the frequency of wage and price increases, $\beta^w = N^w$ and $\beta^k = N^k$. So we can rewrite equations (4) and (5) as:

(21) $w = N^w(b^w - b_{-1})$

(22) $p = N^k(b_{-1} - b^k)$

Again, as in section 2, we can find the equilibrium condition for the real wage and inflation when $w = p$:

(23) $b^* = \frac{N^w b^w + N^k b^k}{N^w + N^k}$

(24) $p^* = \frac{N^w N^k (b^w - b^k)}{N^w + N^k}$

Equilibrium real wage will be an average between the desired real wages of workers and firms, the weight being more favorable for workers or for firms, depending on the relative frequency of wage and price increases. Inflation will be higher the more frequent are price and wage increases. Hence the absolute number of increases of wages and of prices matter for the determination of the equilibrium rate of inflation, p*. On the other hand, for income distribution, i.e., the real wage b*, only the relative frequency of wage and price increases is relevant.

4.2 Inertia

This simple reformulation of the basic conflict inflation model can also help to clarify some of the issues discussed in section 3 concerning the complete model and the coefficients of wage and price indexation, α^w and α^k.

[8] Here we should mention an important difference between the view held by the CEPG and Rowthorn (1977). Rowthorn (1977, p.218) used this explanation of the bargaining parameter as depending on the number of 'bargains per year' price (or wage) increases and the proportion of the respective aspiration gap that is filled in each increase to depict what he called "anticipated inflation", in contrast to what he called the unanticipated inflation, i.e. "the difference between price rises which actually occur and those anticipated in the wage bargain" (p.218). Luckily, the CEPG did not follow this route and used this scheme of relative frequencies and aspiration gaps to explain actual inflation.

To do so, let's start with the complete model from equations (17) and (18)[9]. This model includes both the bargaining parameters and the parameters of wage and price indexation. We can set the coefficients β'^{w} and β'^{k} as equal to one, to represent the idea that the respective aspiration gaps are fully filled in each increase. So we are making the model compatible with the assumptions of $\lambda^w = \lambda^k = 1$. Now, the parameters of indexation, α^w and α^k will be related to the frequency of adjustments of wage and price. To see this correspondence, we can solve equations (17) and (18) for nominal wage and price when $p = w = p_{-1} = w_{-1}$. We then get the following equilibrium wage and price inflation:

$$(25)\ w = \frac{1}{1-\alpha^w}(b^w - b_{-1})$$

$$(26)\ p = \frac{1}{1-\alpha^k}(b_{-1} - b^k)$$

We can now compare equations (25) and (26) with the corresponding equations (21) and (22) of our reformulated basic model. This gives us the corresponding conditions:

$$(27)\ w = N^w(b^w - b_{-1}) = \frac{1}{1-\alpha^w}(b^w - b_{-1})$$

$$(28)\ p = N^k(b_{-1} - b^k) = \frac{1}{1-\alpha^k}(b_{-1} - b^k)$$

From equations (27) and (28) we can easily see the relation between the coefficients of indexation and frequency of wage and price increases:

$$(29)\ \alpha^w = 1 - \frac{1}{N^w}$$

$$(30)\ \alpha^k = 1 - \frac{1}{N^k}$$

From the conditions (29) and (30) we can see that the coefficients of indexation can only be equal to one if the number of price (or wage) increases tends to infinity. This means that prices (or wages) must increase continuously within the period of analysis to keep the desired level of the distributive variable by firms (or workers). Otherwise, for a finite number of adjustments, the coefficients of indexation will be lower than one.[10]

[9] This can be derived both from the case in which inflation expectations are naive, when expectations converge to past inflation, and/or more generally when there is formal and informal indexation of price and wage contracts following past inflation.

[10] Note that this equation does not work if N=0. But in this case either the money wage or the price level or both are constant over time and thus there is no conflict inflation anyway.

These results suggest an alternative way of presenting our reformulated model (equations 21-22) in terms of these indexation coefficients as:

$$(31)\ w = (b^w - b_{-1}) + \alpha^w p_{-1}$$

$$(32)\ p = (b_{-1} - b^k) + \alpha^k w_{-1}$$

Here, the "bargaining parameter" will be equal to 1, as reflecting the aspiration gap which is fully filled in each increase, and the parameters of indexation reflecting the frequency of wage and price increase in each period. Again the equilibrium condition for the real wage and inflation when $p = w = p_{-1} = w_{-1}$ is:

$$(33)\ b^* = \frac{(1-\alpha^k)b^w + (1-\alpha^w)b^k}{(1-\alpha^k)+(1-\alpha^w)}$$

$$(34)\ p^* = \frac{(b^w - b^k)}{(1-\alpha^k)+(1-\alpha^w)}$$

The result (33) shows that the relative degree of wage and price inertia affects the result for income distribution. The solution (34) shows that inflation will depend on both the absolute degree of inertia, and the size of the distributive conflict, as pointed out by Serrano (1986).

Thus, the results of our simple model can be reinterpreted in these two alternative (but equivalent) ways, with the number of adjustments (equations 21 and 22) or indexation (equations 32 and 33). And we get a more robust argument for partial inertia, which is also compatible with the conflicting claims component of price and wage dynamics. According to this specification, workers may always ask for full compensation for past inflation. But often they do not have the power to have nominal wage increases as often as they would like. Prices also may not increase as often as firms would like due to competition.

This allows us to avoid the problem of the possible redundancy, or double counting, of the α coefficients, when taken together with the β coefficients, that we mentioned in section 3. The upshot is that fortunately we can keep using the complete model with the α coefficients being usually lower than one with no fear of irrealism, assumptions of irrationality or inconsistency. And we can also have perhaps a more interesting way to discuss the particular role that expectations about inflation may play, through their possible effects on the frequency of wage and price increases.

4.3 Conflict, Inertia and Inflation

We can use our simple model to discuss the four cases, to represent different assumptions about conflict and degree of inertia in the literature and to critically discuss them, following Aidar and Serrano (2023). The first two cases represent the idea that workers have infinite bargaining power of workers, but firms have finite or the contrary, that firms have infinite bargaining power of workers, but workers have finite. The problem with this kind of model is that if one of them has the capacity to fully index their real wage/real profits to the desired ones, why do the finite coefficients of the other not fall to zero? From solutions (27) and (28) it is easy to see that if $\alpha^w = 1$, $b^* = b^w$ and $\alpha^k > 0$ will only increase inflation, and cannot change distribution. But even if that was the case, why do firms keep increasing their prices?

The same is valid for the opposite case, when firms can fully protect their real rate of profits. An example of this case is found in Lavoie (2022, 2023b) who correctly argues that this is the usual assumption of most post-Keynesians and considers that in the long run firms tend to have the upper hand. If this is the case, why would workers keep asking for money wage increases, given that they cannot change distribution but only increase inflation?[11]

The third case occurs when both firms and workers have infinite bargaining power. In this case, any conflict accelerates inflation if both coefficients are infinite, and distribution is not changed by the level of inflation. As we discussed before, this case is quite extreme, although it can happen in the case where fierce distributive conflict leads to a process of increase in the frequency of price increases and the shortening of the duration of wage contracts[12].

A special case when both workers and firms can fully protect their real wages and real profit rates, but there is no conflict, is the theory of "inertial inflation" (Modigliani and Padoa-Schioppa, 1978, Arida and Resende, 1985, Modiano, 1985, Bresser-Pereira and Nakano, 1987). This theory assumes that distribution is determined independently from

[11] Another example from a new Keynesian perspective is Lorenzoni & Werning (2023).

[12] In historical experiences of accelerating inflation, like Brazil in the 80s, this process of shortening the length of wage contracts and increase in frequency of price increases was aggravated by the daily indexation of the nominal exchange rate and the nominal base interest rate. The resulting rate of inflation was, of course, quite high.

the inflation process, by assuming exogenous real markups, fully protected from wage cost increases (*i.e.*, $\alpha^k = 1$). At the same time, this theory assumes that wages are fully indexed ($\alpha^w = 1$). Inflation does not affect income distribution, in this theory, since both sides can protect their real incomes from changes in prices or money wages. Since markups are exogenous, the real wage is also exogenous and the equilibrium distribution is given by $b^* = b^k$. Another key point is that "inertial inflation" theory assumes that workers accept the real wage, $b^* = b^w$, thereby making their aspiration gap null and implying that there is no conflict over income distribution (Ros, 1989). The absence of distributive conflict makes inflation rate stable. Otherwise, any positive aspiration gap of the workers would cause inflation to accelerate indefinitely. Of course, we should ask again why workers bother to ask and obtain nominal wage increases equal to past inflation, if this has no impact on distribution. This has never been satisfactorily explained (Serrano, 1986, 2010).

Finally, the case where finite bargaining power for firms and for workers, as expressed in their incapacity to fully set their real wages and real profit rates according to their desired ones, can be found in the literature. For example, as mentioned in Aidar and Serrano (2023), Okishio (1977) proposes a model of conflict without inertia, as he considers only one wage and price increase within a period. Later, he shows that when firms increase prices twice as often as the wage increases, the result is a lower real wage and a higher inflation compared to the first example. Also, Sylos Labini (1982) believes that conflict causes a positive level of inflation for finite values of the bargaining power coefficients, as he believes that the passthrough is always partial and asymmetric. This seems to be the usual case apart from situations of very high inflation or hyperinflation, where the economy would tend to increase the degree of inertia by increasing the frequency of prices and wage increases, up to the limit of full indexation, usually with a positive aspiration gap.

5. Conflict augmented Phillips Curve

Equipped with the results of the previous section, we can now discuss what we call conflict augmented Phillips curve (Serrano, 2019, Braga and Summa, 2020, Morlin and Pariboni, 2023). In the last sections, we have defined the desired real wages by workers and firms (and so the desired real profit rate) as exogenous variables. Here, to transform

our system of conflict inflation into a Phillips curve, we add two new assumption: (1) that the real wage desired by workers is a positive function of the level of the employment ratio, $\frac{L}{N}$, where L stands for the level of employment and N is some broad indicator of available labor reserves. The employment ratio reflects the assumption that less slack in the labor market would strengthen the bargaining power of workers, who change their desired real wage according to that; (2) that firms increase their desired real profit rate when the actual degree of capacity utilization, measured by output Y divided by normal or potential output Y_{-1}^{*} is higher than 1. Equations 35 and 36 below show these assumptions:

$$(35)\ b^w = b_0^w - \rho^w\left(1 - \frac{L}{N}\right)$$

$$(36)\ b^k = b_0^k + \rho^k\left(\frac{Y}{Y_{-1}^{*}}\right)$$

If productive capacity adjusts to demand, as we would expect from the operation of the Sraffian Supermultiplier (Serrano, 1995), the effect of demand shocks on prices is temporary, as utilization converges to the normal rate, but the effects of long term unemployment on wages will be permanent (Serrano, 2019). In this case, we can substitute equation (35) for (37) below:

$$(37)\ b^k = b_0^k$$

Inserting equations (35) and (37) into equation (34) gives us the following long run "old" Phillips curve, in which higher employment ratio leads to a higher level of inflation:

$$(38)\ p^* = \frac{(b_0^w - b_0^k)}{(1-\alpha^k)+(1-\alpha^w)} - \frac{\rho^w}{(1-\alpha^k)+(1-\alpha^w)}\left(1 - \frac{L}{N}\right)$$

It is important to notice that the old-type Phillips curve will occur if at least one of the degrees of inertia, from workers and/or firms, is smaller than 1.[13] This is another way to see the "four cases" discussed in sections 2.1 and 2.2. We will only have an "accelerationist-type" Phillips curve when both degrees of inertia from workers and firms are equal to 1. In this latter case, there is a single employment ratio that makes distributive claims compatible and inflation stable (a single NAIRU). At any other level of the

[13] See Serrano (2019, p. 9-10) and Summa and Braga (2020, p. 92-3).

employment rate inflation will be either accelerating or decelerating continuously.We can find this type of NAIRU in many heterodox works, as we will discuss further in subsection 5.1.

Also, we can insert equations (35) and (37) into equation (33) to see the effect of employment rate on equilibrium real wage:

$$(39)\ b^* = \frac{(1-\alpha^k)b_0^w+(1-\alpha^w)b_0^k}{(1-\alpha^k)+(1-\alpha^w)} - \frac{\rho^w(1-\frac{L}{N})}{(1-\alpha^k)+(1-\alpha^w)}$$

Empirical evidence of both the "nominal" and "real" Phillips curves, equations (38) and (39), is provided in Stirati and Meloni (2018).

5.1 Heterodox NAIRU

Post-Keynesians also believe that the dynamics of nominal variables are important to determine distribution. Nevertheless, Lavoie (2023b) proposes as a normal case the scenario that in a longer run $\alpha^k = 1$ for firms, and $\alpha^w < 1$ for workers. The result is also an old-type Phillips curve, with no NAIRU. But here the Phillips curve is only nominal, because it leads to the result that as firms can fully protect their real markups, workers cannot change distribution by increasing money wages, even if the employment ratio and thus workers' bargaining power is high.

Contrary to this neutrality of conflict on distribution, Stockhammer (2008), Hein and Stockhammer (2009, 2010) and Hein (2023), propose an attempt to make bargaining power of workers, as a result of higher employment rate, to have an impact on distribution. However, they also postulate the existence of a Stable Inflation Rate of Employment (SIRE)[14], analogous to the NAIRU, meaning that the model produces accelerating or decelerating inflation as a result of positive or negative employment gaps. The SIRE therefore corresponds to the the employment rate that regulates workers'

[14] The SIRE is defined as the one which makes the claims of workers compatible with those of capitalists.

bargaining power, bringing workers' real wage target down to (b_0^w) firms' real wage target (b_0^k), and therefore eliminating the conflict component of inflation.

According to them, when the employment rate exceeds the SIRE, workers enjoy greater bargaining power and can raise nominal wage growth above expected inflation thereby increasing real wages[15]. "Unexpected inflation", the difference between actual and expected inflation, is not fully passed through into prices because of the heterogeneity among firms.[16] Therefore, the firm sector as a whole does not fully pass-through nominal wage increase into prices, and thus real wages increase while the real profit rate is reduced[17].

To represent this model in our scheme, we have to conciliate two things that are not so easy to put together: the SIRE (NAIRU) and conflict changing distribution. As we discussed, the SIRE (NAIRU) in our scheme occurs when $\alpha^k = \alpha^w = 1$, and in this case the employment rate has no role to shift distribution. A possible way to model the partial passthrough would be to suppose that firms have no capacity to fully adjust their real mark-ups, meaning an $\alpha^k < 1$. This is the way we think is relevant and compatible with the view of Sylos-Labini (1979,1982) which is used by Hein (2023) as a reference. However, we will not interpret Hein's (2023) model in this way because (i) he himself is critical to the idea of $\alpha^k < 1$; (ii) this result would lead to a stable inflation, which is incompatible with the existence of a SIRE (NAIRU).

An attempt to represent this model in our scheme would be to incorporate the "unexpected inflation" as an asymmetry in expectations by workers and firms. As the model consists of two social classes, workers and capitalists, and both have expectations, we should ask for which class the inflation was unexpected, to impact distribution. As in Stockhammer

[15] Our specification, as already discussed, is in terms of the real wage and real profit rate, while in Hein (2023) the model is constructed in terms of the wage and profit shares.

[16] Firms are heterogeneous with respect to technology, management, and region. In fact, only the price-leading firm - i.e., the one with the lowest unit labour cost - could completely pass-through the nominal wage increase to prices. The other firms would increase prices less than proportionally to the increase in nominal unit labour costs, to preserve their market share (Hein, 2023, p. 148).

[17] A shortcoming of this approach is that eventually firms with lower productivity would increasingly lose mark-ups for not passing through nominal wage increases. At the same time, the relative price of the goods sold by these firms would continuously fall with respect to the price of the leading firm, even though they all compete in the same market.In our view, even though firms with different cost structures have a different pass-through of cost increases, we do not think this situation could persist in time, and should only happen sometimes and temporarily, after which, eventually, we would have alpha k=1 again. If this is the case, though, the possibility of changes in distribution in Hein's (2023) approach to inflation become very limited. If, on the contrary, firms were homogeneous, as it is the case in Hein (2006), then nominal wage growth would be fully transmitted to inflation (thus, $\alpha^k=1$) and no change in distribution would be possible.

(2008), Hein and Stockhammer (2009, 2010) and Hein (2023), it is the firms that are unable to passthrough unexpected inflation, we will incorporate this in our model as a higher exogenous initial inflation expectations by workers than firms, i.e. $p^e > w^e$ in terms of our model from equations (15) and (16). We should include in the latter equations the assumption that $\alpha^k = 1$ and $\alpha^w = 1$, which are necessary to the existence of a SIRE (NAIRU). By also including equations (35) and (37), to represent the model in terms of employment rate, we have:

$$(40)\ b^* = \frac{\beta^w b_0^w + \beta^k b_0^k}{\beta^w + \beta^k} - \frac{\beta^w \rho^w (1 - \frac{L}{N})}{\beta^w + \beta^k} + \frac{p^e - w^e}{\beta^w + \beta^k}$$

$$(41)\ p^* = \frac{\beta^w \beta^k (b_0^w - b_0^k)}{\beta^w + \beta^k} - \frac{\beta^w \beta^k \rho^w (1 - \frac{L}{N}))}{\beta^w + \beta^k} + \frac{\beta^k p^e + \beta^w w^e}{\beta^w + \beta^k}$$

In this case, the result is that, while expectations are totally exogenous, the employment rate will shift distribution by changing the real wage, as shown in condition (40). Inflation will increase with a higher employment rate, but will not accelerate. This, however, seems to be a temporary condition, since Hein (2023) assumes that expectations are adaptive. So, when inflation expectations of both workers and firms converge to past inflation of prices and wages, the model becomes accelerationist again, behaving according to equations (19) and (20) with $\alpha^k = 1$ and $\alpha^w = 1$, and the employment rate stops to have an impact on distribution.

We can also find heterodox NAIRU in Sraffian authors. Levrero (2023) and Stirati (2001, p. 439) base conflict inflation on a dispute between money wages and nominal interest rates, pegged by Central Banks targeting real interest rates.[18] The NAIRU and the accelerationist Phillips curve emerge as a particular case in which Central Banks deliberately and successfully fully protect the real interest rate from wage inflation while,

[18] According to Pivetti (1991), the nominal interest rate on long-term riskless bonds, which is influenced by monetary policy, determines the opportunity cost of capital. The profit rate, in its turn, is determined by the opportunity cost of capital plus a factor of industry-specific risk premia, corresponding to the remuneration of the 'risk and trouble' of productive investment. Simply put, wage inflation reduces the real interest rate as well as the real profit rate, for increasing wages and reproduction costs of capital. In this view, firms cannot autonomously react to wage inflation and protect their real mark-ups, since pricing decisions are constrained by competition and follow the historical costs of capital. However, increases in the nominal interest rate increase the opportunity cost of capital therefore allowing firms to increase prices more than proportionally to cost increases, recovering real profit margins. Therefore, by targeting a real interest rate as in the Taylor rule, Central Banks implicitly target an outcome for income distribution (as pointed out by Levrero, 2023).

at the same time, workers can fully protect their real wages from price increases. In other words, both α^K and α^w are assumed equal to one. The accelerationist result thus occurs in a context where workers fully protect their desired wages, and profit rate indexation relative to wage costs becomes perfect due to the interest rate setting by the Central Bank. In this case, the NAIRU is the unemployment rate that makes workers' wage claims compatible with the Central Bank's target for the real interest rate (which can be expressed as a target for real wages), stabilizing the distributive conflict and making inflation solely dependent on the indexation/expectational component. The NAIRU "shows the unemployment rate that is 'structurally' needed to ensure, for a given degree of workers' organisation, a stable inflation rate and a certain *real* interest rate *when it is pursued* by the Central Bank." (Levrero, 2023, p. 15, emphasis in the original). In this case, the real wage converges to value corresponding to the real interest rate targeted by the Central Bank. Therefore in this NAIRU scenario, the conflict over distribution is completely solved in favor of the Central Bank (and thus capitalists). Under such assumptions, acceleration or deceleration of inflation would not have any distributive impact.

However, while we agree that the Central Bank can help to protect the real profit rate, we don't think that monetary policy can always lead to a full indexation of the real profit rate. We follow a reflection of Aidar and Serrano (2023, p.16) on Pivetti (1991): "the rate of interest that could set a floor to the rate of profits would depend on the rate of interest of longer safe public debt bonds plus the level of private bank interest rate spreads that are usually not directly controllable by monetary policy. Moreover, while the rate of profits is unlikely to remain lower than that reference level of the interest rate, it may be persistently above it, if there are elements of net profits of enterprise in the normal rate of profits." So, while the monetary authority has the capability to peg the nominal interest rate of the economy, it lacks a complete control over income distribution, as workers can respond to interest rate hikes to safeguard their real wages[19]. Hence, the real interest rate remains to be determined by the nominal interest rate and wage bargaining (Serrano, 1993; see also Garegnani, 1979, p. 81).[20] So, we believe that the idea that $\alpha^K = 1$ is quite

[19] And we should notice, even the frequency of the adjustment of the base interest rate does not tend to be infinite, despite this frequency is probably higher than the adjustment of wage contracts. For example, the FOMC holds eight regularly scheduled meetings per year.

[20] See Morlin (2022) for a more detailed comparison between Kaleckian and Sraffian approaches to conflict inflation.

extreme even in this case where the Central Bank try to protect the real interest and the profit rate, and of course we have no reason to agree, as discussed, with the assumption of $\alpha^w = 1$.

5.2 Mainstream views on conflict and NAIRU

In the mainstream, the accelerationist Phillips curve based on conflicting claims appears in a few contributions. Carlin and Soskice (1990) assume both α equal to one to get a NAIRU. But again we wonder why workers bother asking for higher wages when unemployment is lower, if distribution is given by an exogenous real markup.

The same accelerationist Phillips curve can be found recently in Bernanke and Blanchard (2023). Here, they suppose that workers' expectations are anchored, as they depend strongly on exogenous expectations, but also on past inflation. In terms of our model with equations (13), (14), (15) and (16), this would mean a γ^w very close to zero. This kind of adaptive expectation with a strong weight on an exogenous initial value of expectation, however, as we showed, has the property that expectations will converge to past inflation, and wage inflation will be fully indexed by past inflation in a longer run. The accelerationist Phillips curve from Blanchard and Bernanke (2023), thus, produces slow inflation acceleration in the short-run, more compatible with the data, but a (slow) trend to hyperinflation in the long run if unemployment rate is different than the NAIRU[21].

Another contribution is a new-Keynesian Phillips curve with "Kaleckian assumptions", by Ratner and Sim (2022). They claim that lower bargaining power of workers reduced the volatility of inflation by changing the slope of the New-Keynesian Phillips curve. In our model, the flattening of the Phillips curve can be interpreted as a fall in the parameter ρ^w, associated with periods of lower worker bargaining power and lower unionization rates. As seen in equation (32), a lower ρ^w implies a reduction in the response of the inflation rate after changes in unemployment, which is the scenario discussed by Ratner and Sims (2022). The explanation of the change in the slope of the Phillips curve based on the weakening of workers is also found in the works of heterodox scholars (see, among many others, Summa and Braga, 2020, p. 100; Setterfield and Blecker, 2022).

[21] Notice that Blanchard and Bernanke (2023) use another indicator for the NAIRU, as they use the Beveridge Curve instead of the unemployment rate, so the "NAIRU" here is given by the natural or steady-state vacancy-to unemployment ratio.

Ratner and Sim's (2022) model, however, does not establish a connection between distribution and the dynamics of nominal wage and price increases. Following Sen and Dutt (1995), the authors introduce the effect of workers bargaining power in the determination of firms' mark-up. Steady-state mark-up therefore depends on two factors: the elasticity of substitution among final consumption goods produced by monopolistically competitive firms - as in New Keynesian markup pricing rule -, and inversely on the bargaining power of workers. Curiously, the underlying reasoning is that unions would bargaining for a lower relative price in order to increase consumers' demand and thus employment (Ratner and Sims, 2022, p. 6). Workers are assumed capable of affecting firms' decisions on the price of the final good, and would do that in order to dispute a greater share in monopoly rents by increasing the employment level.

The key issue for our purposes is that the introduction of the so-called Kaleckian assumptions does not bring this model closer to the notion of conflict inflation. In fact, distribution appears to be completely exogenous to the dynamics of nominal wages. The effect of bargaining on distribution happens outside of the inflation part of the story. In this Phillps curve, inflation depends on past and expected inflation, current and future marginal costs, not so far from the traditional New Keynesian Phillips curve.

5.3 Is the NAIRU compatible with conflict inflation?

What all these analyses of the NAIRU have in common is their inability to compatibilize a meaningful conflict over distribution with the vertical Phillips curve. In these models, wage claims are fully passed through into prices, whereas price increases are fully indexed inside wage contracts. Under the full indexation assumptions, any positive aspiration gap would lead to continuously accelerating inflation rates (see equation 32, for $\alpha^w = \alpha^k = 1$) with no changes in distribution.

The NAIRU solves the distributive conflict by dampening wage claims, as a higher unemployment rate (or a lower employment rate in the case of a SIRE) weakens workers' bargaining power and reduces their distributive target. In other words, the conflict is solved by suppressing workers' target until it is equal to capitalists' (or the Central Bank's) target. In this scenario, conflict no longer plays any role in explaining inflation, which is totally explained by the inertial or expectational component. Why would either

party (workers or capitalists) demand a larger portion of income when such demands only serve to accelerate inflation without changing distribution?

Moreover, once the NAIRU (or SIRE) scenario is considered, the possibility of conflict inflation becomes an exception - as in the case of "unexpected inflation" by firms, as in Hein (2023) - rather than a regular phenomenon. Additional assumptions become necessary to explain how conflict and the NAIRU scenario can be compatible. We conclude that the NAIRU is hardly compatible with the notion of conflict inflation. Moreover, empirical evidence challenges any notion of NAIRU and the accelerating Phillips curve whereas the old Phillips curve better fits macroeconomic data (Blanchard, 2016; Stirati and Meloni, 2018, Summa and Braga, 2020).

In section 4, we showed that wages and price inertia parameters (α^w and α^k) are equal to one only if the number of price and wage increases within the period of analysis converges to infinity. In other words, the NAIRU result depends on instantaneous adjustments on both prices and wages to any cost shock or conflict inflation.

The conflict augmented Phillips curve (Serrano, 2019, Braga and Summa, 2020, Morlin and Pariboni, 2023) is thus the most plausible general case, since it does not assume instantaneous adjustments but rather that both inertia parameters are smaller than one. Our proposal of interpretation for the Phillips curve is compatible with the notion of conflict inflation because it allows distribution to change after inflation, so that nominal income variables can persistently affect distribution.

6. Final remarks

In this paper, we took a closer look into the theoretical foundations of conflicting-claims models to discuss the foundations of the determinants of the "bargaining parameters" and the "indexation" parameters. We show how these parameters are related, and propose a basic framework in which conflict inflation depends on the aspiration gap and the absolute and relative frequency of wage and price increases. We derived a conflict augmented Phillips curves from this simple framework by adding the effect of employment relative to labor reserves as a determinant of the target or aspired real wage. We argued that for conflicting claims models to make sense, it is required that faster money wage growth must have some effect on real wages. This precludes these curves from being

accelerationist, as conflict usually causes inflation, and not acceleration of inflation. Conflict inflation thus persists only if both sides, or at least one of them, lose something by not increasing their wages and prices.

As a general conclusion, although we agree with Hein(2023) that wage bargaining is not pointless, and the meaning of the parameters in the usual conflict model when bargain and indexation is taken together needs tp be clarified, we believe that there is no need to abandon the usual standard conflict inflation model, let alone follow some sort of temporary NAIRU.

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