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Harmony in the Theory of Conflict Inflation: Various Conflict Inflation Models as Special Cases of the Generalised Conflict Inflation Model

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Abstract

Disparate assumptions and interpretations across different models of conflict inflation have generated ambiguity and controversy. To address this issue, this paper demonstrates that a variety of prominent conflict inflation models can be derived from one unifying model, which is essentially a log-linear version of the Generalised Conflict Inflation Model (GCIM) seen in Woodgate (2026a, 2026b). Globally stable models (Dutt 1987, Blecker & Setterfield 2019, Lavoie 2022) emerge as special cases when inflation expectations are zero and aspiration-gap coefficients—shown to be frequencies of wage and price changes—are held constant. By reincorporating expectations and allowing frequencies of wage and price changes to rise endogenously with inflation, it is shown that the log-linear GCIM offers a simple but comprehensive post-Keynesian theory of hyperinflation. Unstable models (Hein & Stockhammer 2010, 2011) are then interpreted as special cases where the hyperconflict threshold is surpassed and adjustment frequencies reach their lower bound of one. By unifying these models, this paper helps resolve key controversies while offering a more analytically convenient model than the original GCIM.

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1. Introduction

There is a strong consensus among post-Keynesian economists that inflation is driven by conflicting distributional targets among competing economic groups, primarily labour and capital.[1] Yet, united as they are around the central idea, there remains significant disagreement on how conflict inflation should be modelled. The main workhorse model of conflict inflation that originated in Dutt (1987) and has since been popularised by the textbook treatments in Lavoie (1992, 2022) and Blecker and Setterfield (2019) is simple and intuitive but conspicuously gives no role to inflation expectations. As the seminal work of Rowthorn (1977) makes clear, there may be good reason to suppose expected inflation is negligible when it is low, yet high and rising expected inflation cannot be ignored and may lead to macroeconomic outcomes of an entirely different nature. Addressing this shortcoming, Hein and Stockhammer (2010, 2011) and the work that builds upon this basis summarised in Hein (2023, ch. 5) explicitly incorporate inflation expectations, but the resulting models are generally unstable and thus at odds with the experience of most economies at most points in time. In comparison, the Dutt (1987) model and its textbook descendants are stable and, in this way, more empirically relevant, yet they cannot explain how runaway hyperinflation can ever emerge. Even the Bastian and Setterfield (2015) extension, which shows how inflation may accelerate and reach any arbitrarily high rate, nonetheless always tends to some equilibrium in the long run and thus also struggles to explain hyperinflation, understood as an explosive disequilibrium phenomenon.

Motivated by this puzzling divide in the literature, Woodgate (2026a) develops the "Generalised Conflict Inflation Model" (hereafter GCIM), which incorporates explicit inflation expectations and shows that, unlike the aforementioned Hein and Stockhammer conflict inflation models, there is a domain of conflicting real wage targets for which the model is stable. Rather than assume that inflation expectations add linearly to the real wage aspiration gaps of workers and firms as in the norm in the Hein and Stockhammer approach, Woodgate (2026a) shows that expectations nonlinearly scale the aspiration gaps, explaining how truly explosive dynamics emerge and why they only set in at sufficiently high degrees of conflict. In Woodgate (2026b), the GCIM is extended by formally incorporating indexation and heterogeneous staggered contracts. It shows explicitly how equilibrium real wages and markups erode with high rates of trend inflation and why the effective frequency of wage and price changes must rise endogenously over the long run with inflation to defend the incomes of workers and firms stuck on outdated contracts.

The GCIM is thus considered a *general* theory of conflict inflation for three reasons. First, it shows that conflict inflation is neither globally stable or unstable but rather its stability is conditional on the degree of conflict. Second, it formally incorporates indexation and expectations into one conflict inflation model, rather than treat them as mutually exclusive as previous conflict inflation models have done. Third, it explicitly decomposes inflation into the frequency of price and wage changes (extensive margin) versus their average size (intensive margin). While prominent in early conflict inflation literature as Serrano et al. (2024) summarise, this distinction is implicit or missing in modern treatments.

Be this as it may, the GCIM can be said to be subject to two clear critiques that this paper aims to address. First, it remains unclear how other conflict inflation models relate to the GCIM. If the GCIM reflects a truly general theory of conflict inflation, it would imply that many of the aforementioned models are special cases of the GCIM, which has yet to be demonstrated. Second, while the GCIM is as simple to analyse graphically as any other conflict inflation model, mathematically it is more

[1] Recently, it seems that the conflict theory of inflation also has a growing acceptance among some New Keynesian authors, e.g. Lorenzoni and Werning (2023), Guerreiro et al. (2024), and Jamilov (2025).

cumbersome. This is not because the GCIM is less parsimonious—in fact, it assumes as few parameters as the simplest conflict inflation models—but rather because it is inherently nonlinear. Mathematical inconvenience limits the appeal of the GCIM not only for pedagogical purposes but also for further research—including model extensions, integration into larger macroeconomic models, and empirical estimation.

Against this backdrop, this paper makes two main contributions. The first is to show that many earlier conflict inflation models can indeed be derived from the GCIM. By showing the conditions under which this is possible, this paper helps make sense of some of the differences and controversies that exist in the conflict inflation literature. The second contribution is the presentation of a log-linear approximation of the GCIM. Besides allowing for the derivation of well-known linear conflict inflation models, the log-linear GCIM also dramatically simplifies the mathematics associated with the original GCIM. While the log-linear GCIM inevitably deviates from the original GCIM at high rates of inflation, it nonetheless has the same features (a model with expectations, indexation, and contract heterogeneity) and captures the same qualitative results (conditional stability).

The paper proceeds as follows. Section two summarises the original GCIM before introducing log-differences to derive its linear approximation. Section three demonstrates that the globally stable textbook models of Lavoie (1992, 2022) and Blecker and Setterfield (2019) result from the GCIM when one assumes expected inflation is zero, and the foundational Dutt (1987) model results when indexation is also ignored. Section four reintroduces both expectations and indexation in the full log-linear GCIM, demonstrating how stability is now conditional on the degree of conflict. This section also contrasts the log-linear GCIM to other models with hyperinflationary tipping points, such as Rowthorn (1977) and Bastian and Setterfield (2015). Section five then shows that the unstable models of the Hein and Stockhammer approach can be seen as instances of the GCIM beyond the hyperconflict threshold, where any nonzero degree of conflict leads to explosive inflationary dynamics. Section six concludes.

2. Linearising the Generalised Conflict Inflation Model

In this section, we briefly summarise the GCIM and log-linearise it before examining its behaviour under various structural assumptions in later sections. Throughout this paper, upper case variables denote levels, while lower case variables denote natural logarithms (i.e., $x \equiv \ln X$).

The GCIM differs to many conflict inflation models in that it recognises that if workers and firms are to reach their real wage targets, T_W and T_F, their *nominal* wage and price targets, W_t^T and P_t^T, must account for what they expect the price and wage levels to be in that period, P_t^e and W_t^e respectively.[2] If their real wage targets are time invariant and (for now) exogenously given, then their nominal targets must vary over time t with the expected price or wage level, such that

$$W_t^T = T_W P_t^e, \tag{1}$$

$$P_t^T = W_t^e / T_F. \tag{2}$$

These nominal targets can also be referred to as the "reset wage" and "reset price" and we will use the terms interchangeably in this paper. By "reset" we mean that workers and firms *actively* deliberate and negotiate in order to achieve their nominal target. This is in contrast to indexed wages and prices,

[2] For some early precedents for setting nominal targets in this way, see Turnovsky and Pitchford (1978) and Dalziel (1990).

which result *passively* from previously agreed indexation rules. In contrast to the reset wage and price, the indexed wage (W_t^I) and indexed price (P_t^I) are

$$W_t^I = W_{t-1}\left(1 + \gamma_w \hat{P}_{t-1}\right), \tag{3}$$

$$P_t^I = P_{t-1}\left(1 + \gamma_p \widehat{W}_{t-1}\right), \tag{4}$$

where $0 \leq \gamma_w, \gamma_p \leq 1$ are the degrees of indexation of wages and prices respectively.[3]

Normally, workers and firms cannot reset their wages and prices at a moment's notice due to the existence of explicit and implicit contracts. Many firms and workers (and their unions) are willing to enter such contracts because the process of resetting is itself costly, likely involving information gathering, deliberation, coordination, risk-taking, negotiating and so on (Rotemberg 1982, Guerreiro et al. 2024). Hence, especially in a context of low inflation, there is a clear rationale for infrequent rather than frequent (e.g. annual rather than monthly) wage and price resetting. Crucially, however, the implication for these conventions around wage and price setting is that they are a state-dependent institutional adaptation to inflation. That is to say, how frequently wages and prices reset or the extent to which they are indexed may reasonably be considered fixed in the short and medium run, bound by pre-existing arrangements, but variable over the long run if a substantially different trend inflation rate emerges. The insight that the frequency of wage and price changes (or, equivalently, the duration of wages and prices) is endogenous to inflation has a long lineage in structuralist and post-Keynesian thought as summarised by Vera (2013)—a point to which we will return in section 4.

To operationalise this insight within the formal framework of the GCIM, we must account for the timing of contract adjustments. We assume contract heterogeneity[4], where different workers (firms) have different wages (prices) solely because they update their wages (prices) at different points in time. The most convenient way of incorporating this kind of heterogeneity is by taking a stochastic approach[5], essentially the discrete-time version of Calvo's (1983) approach found in Rotemberg (1987). It ought to be stressed, however, that we import this New Keynesian concept without the baggage of rational expectations and optimising agents. We let λ_w and λ_p denote the *reset probability of wages and prices,* where $0 \leq \lambda_w, \lambda_p \leq 1$. To see what this means, let us focus on workers' wages, though the same essential story applies to firms. In any given period t, there is a share of workers (λ_w) who reset their wage and achieve W_t^T. There is then a smaller share ($\lambda_w[1-\lambda_w]$) who reset their wage in the last period but have been unable to reset in the current period who thus earn the passive wage, $\left(1 + \gamma_w \hat{P}_{t-1}\right)W_{t-1}^T$. Then there is the even smaller share ($\lambda_w[1-\lambda_w]^2$) who reset their wage two periods ago and have been unable to reset since who earn $\left(1 + \gamma_w \hat{P}_{t-1}\right)\left(1 + \gamma_w \hat{P}_{t-2}\right)W_{t-2}^T$, and so on and so forth. Hence, the current wage level, W_t, is a geometrically weighted sum of past reset wages, updated by cumulative price indexation (if any), as in Equation (5). The price level, P_t, is determined likewise as per Equation (6).

$$\begin{aligned} W_t = \lambda_w W_t^T &+ \lambda_w(1-\lambda_w)\left(1 + \gamma_w \hat{P}_{t-1}\right)W_{t-1}^T \\ &+ \lambda_w(1-\lambda_w)^2\left(1 + \gamma_w \hat{P}_{t-1}\right)\left(1 + \gamma_w \hat{P}_{t-2}\right)W_{t-2}^T + \cdots , \end{aligned} \tag{5}$$

[3] We suppose prices are indexed to past wage growth here ($\widehat{W}_{t-1}$), but we could equally suppose individual firms' prices are indexed to growth of the lagged average prices ($\hat{P}_{t-1}$) without affecting the results of this paper.
[4] One can assume homogeneity instead and skip to Equations (7) and (8). The parameters then have a more abstract interpretation and some of the later results around distribution do not follow—see Woodgate (2026b).
[5] While stochastic staggered contracts imply a certain conceptual strangeness on the micro-level (e.g. it is possible if also infinitely unlikely that a worker or firm is stuck with the same wage or price forever), the alternative of deterministic contracts is not only analytically inconvenient, but also overly restrictive in that it implies that *all* wages and prices are guaranteed to updated by a certain time. See Woodgate (2026b) for more.

$$P_t = \lambda_p P_t^T + \lambda_p(1-\lambda_p)(1+\gamma_p \widehat{W}_{t-1})P_{t-1}^T + \lambda_p(1-\lambda_p)^2(1+\gamma_p \widehat{W}_{t-1})(1+\gamma_p \widehat{W}_{t-2})P_{t-2}^T + \cdots \quad . \tag{6}$$

Usefully, Equations (5) and (6) can be reduced to their compact recursive forms, which are

$$W_t = \lambda_w W_t^T + (1-\lambda_w)W_t^I, \tag{7}$$

$$P_t = \lambda_p P_t^T + (1-\lambda_p)P_t^I. \tag{8}$$

Hence, λ_w and λ_p can also be thought of as the shares of all workers and firms that are able to reset their wages and prices in a given period, implying that $1-\lambda_w$ and $1-\lambda_p$ are the remaining shares of workers and firms who have been stuck (i.e. unable to reset) for at least one period.

A last, particularly useful interpretation of λ_w and λ_p is that they are the *reset frequency of wages and prices* on the aggregative level. To see this, note that the expected duration of a wage (D_w) or a price (D_p)—i.e. the number of periods a wage or price lasts in expectation—is equal to the inverse of λ_w and λ_p respectively. This is shown in Equations (9) and (10)

$$E[D_w] = \lambda_w + 2(1-\lambda_w)\lambda_w + 3(1-\lambda_w)^2\lambda_w + 4(1-\lambda_w)^3\lambda_w + \ldots \quad = \quad \frac{1}{\lambda_w}, \tag{9}$$

$$E[D_p] = \lambda_p + 2(1-\lambda_p)\lambda_p + 3(1-\lambda_p)^2\lambda_p + 4(1-\lambda_p)^3\lambda_p + \ldots \quad = \quad \frac{1}{\lambda_p}. \tag{10}$$

Since $0 \leq \lambda_w, \lambda_p \leq 1$, expected durations of wages and prices can be no shorter than one period. Thus, our discrete-time model requires that the period of analysis is defined appropriately—that is to say, it is must be sufficiently short—since a period of analysis that is too long trivially implies that wages and prices can always reset from one period to the next.

Converting Equations (7) and (8) into conventional growth rates (denoted by hats), we get the following expressions for wage and price inflation

$$\widehat{W}_t = \lambda_w\left(\frac{W_t^T}{W_{t-1}} - 1\right) + (1-\lambda_w)\gamma_w \widehat{P}_{t-1}, \tag{11}$$

$$\widehat{P}_t = \lambda_p\left(\frac{P_t^T}{P_{t-1}} - 1\right) + (1-\lambda_p)\gamma_p \widehat{W}_{t-1}. \tag{12}$$

By inserting the nominal targets into Equations (11) and (12) and reducing, Woodgate (2026a) analyses the resulting system without the heterogeneous contracts interpretation and without explicit indexation, whereas Woodgate (2026b) makes this interpretation clear and adds indexation. The departure point in this contribution, however, is marked by the replacement of growth rates with log-differences—again, noting that lower case variables denote logs. This yields the simpler system

$$\Delta w_t = \lambda_w(w_t^T - w_{t-1}) + (1-\lambda_w)\gamma_w \Delta p_{t-1}, \tag{13}$$

$$\Delta p_t = \lambda_p(p_t^T - p_{t-1}) + (1-\lambda_p)\gamma_p \Delta w_{t-1}, \tag{14}$$

which approximates the original system in Equations (11) and (12) for low rates of inflation due to the usual first-order Taylor series approximation where $\Delta \ln X \approx \widehat{X}$. The nominal targets in logs are

$$w_t^T = \tau_W + p_t^e, \tag{15}$$

$$p_t^T = w_t^e - \tau_F, \tag{16}$$

which we insert into (13) and (14) to yield

$$\Delta w_t = \lambda_w(\tau_W - \omega_{t-1} + \Delta p_t^e) + (1-\lambda_w)\gamma_w \Delta p_{t-1}, \tag{17}$$

$$\Delta p_t = \lambda_p(\omega_{t-1} - \tau_F + \Delta w_t^e) + (1-\lambda_p)\gamma_p \Delta w_{t-1}. \tag{18}$$

The system in Equations (17) and (18) is a statement of the log-linear GCIM in its non-reduced form. In each equation, there are two distinct components. The first term is the active component, where the share of resetting workers (firms) generates wage (price) inflation in accordance with their expectations-adjusted distributional aspirations. The second term is the passive component, where the remaining share of workers (firms) only contribute to wage (price) inflation if some degree of indexation is at play ($0 < \gamma_w, \gamma_p \leq 1$).

Before we proceed to show how other conflict inflation models can be seen as emerging from Equations (17) and (18), let us clarify how the short, medium, and long run are defined in Woodgate (2026b) and also in this paper. Equations (17) and (18) show the log-linear GCIM in the short run, where the institutional λ and γ parameters and expectations are taken as given. If inflation and distribution are stable, such that

$$\Delta w_t = \Delta p_t = \Delta p_{t-1} = \Delta w_{t-1} = \Delta p_t^e = \Delta w_t^e \tag{19}$$

then the medium run is marked by the reduced forms that emerge from the insertion of Equation (19) into Equations (17) and (18), where expectations are no longer exogenous but the λ and γ parameters are. Lastly, the long run is defined by the possibility of adjustment of the structural λ and γ parameters to high rates of medium-run inflation, which otherwise may excessively erode the real income of cohorts of workers and firms that are stuck in outdated wage and price contracts. We note at the outset that this conception of a long run, where the reset frequencies and indexation may vary, does not apply to conflict inflation models besides the GCIM. As we shall see, starting with Dutt (1987) and its textbook model descendants, such models instead assume exogenously fixed structural parameters, obviating the need for a long run defined in these terms.

3. Stable Conflict Inflation Models as Special Cases of the GCIM with No Expected Inflation

The Dutt (1987) model ranks among the simplest expositions of conflict inflation, since it assumes away both inflation expectations and indexation. We can derive it from the log-linear GCIM by supposing that $\Delta p_t^e = \Delta w_t^e = 0$ and $\gamma_w = \gamma_p = 0$ in Equations (17) and (18), yielding

$$\Delta w_t = \lambda_w(\tau_W - \omega_{t-1}), \tag{20}$$

$$\Delta p_t = \lambda_p(\omega_{t-1} - \tau_F), \tag{21}$$

Besides specifying inflation in terms of log-differences, this system mirrors Dutt's model with an important caveat. Whereas Dutt defines the speed-of-adjustment parameters as being positive but unbounded, the underlying foundations of the GCIM imply a stronger restriction, namely that λ_w and λ_p are bounded between 0 and 1. Similarly, while Dutt (1987, p. 79) rather vaguely states these parameters "depend on the state of the class struggle", the GCIM implies they are reset frequencies or, equivalently, the shares of all workers and firms that are able to reset their wages and prices in a given period. Other than this difference in interpretation, the log-linear GCIM and its results are essentially the same as the Dutt model if we incorporate the dual restriction of no expected inflation and no indexation.

It is likely the simplicity of Dutt's model which explains why it serves as the base of the textbook model seen in, most notably, Lavoie (1992, 2022) and Blecker and Setterfield (2019). These textbook treatments include a number of extensions to Dutt's model, the most basic being indexation of wages and prices. Adding positive degrees of indexation back into the log-linear GCIM, we get

$$\Delta w_t = \lambda_w(\tau_W - \omega_{t-1}) + (1 - \lambda_w)\gamma_w \Delta p_{t-1}, \tag{22}$$

$$\Delta p_t = \lambda_p(\omega_{t-1} - \tau_F) + (1 - \lambda_p)\gamma_p \Delta w_{t-1}. \tag{23}$$

The system in Equations (22) and (23) is analytically equivalent to the textbook models for low rates of inflation. Again, there is just the difference in interpretation, most clearly elucidated by expressing Equations (22) and (23) in their medium-run reduced forms as follows

$$\Delta w_t = \frac{1}{d_w}(\tau_W - \omega_t), \tag{24}$$

$$\Delta p_t = \frac{1}{d_p}(\omega_t - \tau_F), \tag{25}$$

where

$$d_w = (1 - \gamma_w)\frac{1}{\lambda_w} + \gamma_w, \tag{26}$$

$$d_p = (1 - \gamma_p)\frac{1}{\lambda_p} + \gamma_p. \tag{27}$$

Recalling Equations (9) and (10), d_w and d_p are weighted averages of expected contract durations ($1/\lambda_w$ and $1/\lambda_p$) and one (the shortest possible contract duration), where the degrees of indexation serve as the weights. Thus, we follow Woodgate (2026b) in referring to these parameters as the *effective duration* of wages and prices respectively. Effective durations can be understood as a measure of the number of periods a certain wage or price level exists before being altered due to deliberate resetting or automatic indexation. They are bounded below by one, but unbounded above.

Hence, from the log-linear GCIM we get a clearer understanding of what the coefficients on the aspiration gaps of the textbook model are. Being reciprocals of durations, the aspiration gap coefficients can be interpreted as *effective frequencies* of all wage and price adjustments. This leads to us to a similar conclusion, albeit from a different basis and by more rigorous means, as that reached by Serrano et al. (2024), who also argue for a frequency interpretation of the aspiration gap coefficients. Referring back to Equations (24) and (25), then the usual decomposition of inflation across extensive and intensive margins implies that the aspiration gaps reflect the average size of aggregated wage and price changes.

Moving to the equilibrium real wage and inflation rate, we arrive at what look like the usual solution forms to the textbook model

$$\omega_t^* = \left(\frac{d_p}{d_w + d_p}\right)\tau_W + \left(\frac{d_w}{d_w + d_p}\right)\tau_F, \tag{28}$$

$$\Delta w_t^* = \Delta p_t^* = \frac{1}{d_w + d_p}(\tau_W - \tau_F). \tag{29}$$

However, besides the interpretation of the parameters, we emphasise the difference at this point by converting back into levels and conventional growth rates to yield

$$\Omega_t^* = T_W^{\left(\frac{d_p}{d_w+d_p}\right)} T_F^{\left(\frac{d_w}{d_w+d_p}\right)}, \tag{30}$$

$$\widehat{W}_t^* = \hat{P}_t^* = \left(\frac{T_W}{T_F}\right)^{\left(\frac{1}{d_w+d_p}\right)} - 1. \tag{31}$$

Hence, the equilibrium real wage in levels is a geometric mean of the real wage targets, weighted by the relative rigidity of prices and wages. Equilibrium wage and price growth is a nonlinear and concave (because $d_w + d_p \geq 2$) function of the degree of conflict, i.e. the ratio of workers' to firms' real wage targets.

Despite the elegant simplicity of the stable textbook model, there remains a significant issue: It is *too* stable. Explosive hyperinflation cannot be explained, not even with a high degree of conflict nor with reset frequencies and degrees of indexation tending to their extreme bound of one. The model always settles into an equilibrium, with a finite and stable inflation rate no matter how low or high the equilibrium real wage is. To reflect a reality in which explosive inflation is possible and where some real wage values are simply untenable, we must reconsider the role of expectations.

4. Conditionally Stable Conflict Inflation Models and Hyperinflationary Tipping Points

A most simple, if also simplistic, way of incorporating hyperinflation into a conflict inflation model is offered within the seminal work of Rowthorn (1977), wherein a hyperinflationary threshold is asserted rather than derived. Above the assumed threshold, expected inflation is "fully taken into account" by workers whereas below the threshold "expected inflation is ignored completely" since "workers may expect prices to rise but, for a variety of reasons, may do nothing about it—they may have little faith in their own predictions, or may consider it easier to seek compensation in the future, if and when prices actually do rise" (Rowthorn 1977, pp. 225-226). By stating that expected inflation is "fully taken into account" above the threshold, Rowthorn stresses that he means that workers are both willing *and able* to completely convert expected inflation into wage growth. It is for this reason that hyperinflation sets in, as it is impossible in a state of conflict to have a steady-state inflation rate that covers both redistributive inflation arising from an aspiration gap *and* fully anticipated inflation expectations.[6]

In Rowthorn's (1977, p. 226) own words, the assumed threshold is "an extremely crude formalisation of a rather subtle relationship, its faults are only too obvious" including that "it makes no allowance for the certainty with which expectations are held", "the transition from one kind of behaviour to another is too abrupt", and there is no explanation as to what determines the threshold. Crude as it may be, Rowthorn's approach clearly indicates the direction of travel if one wants to explain how hyperinflation can emerge in a conflict inflation model. With this motivation in place, we now reincorporate inflation expectations back into the GCIM.

4.1 The complete log-linear Generalised Conflict Inflation Model

With expected wage and price inflation in addition to indexation, inserting Equation (19) into (17) and (18) we now get the reduced form system

$$\Delta w_t = \frac{1}{d_w - 1}(\tau_W - \omega_t), \tag{32}$$

$$\Delta p_t = \frac{1}{d_p - 1}(\omega_t - \tau_F). \tag{33}$$

The similarity of Equations (32) and (33) to the reduced form system without expectations in Equations (24) and (25) is clear, with the only difference being in the denominators. Since our model is in discrete time, $(d_w - 1)$ and $\left(d_p - 1\right)$ can be considered the *effective number of periods in which wages and prices are fixed* given that the first period (which is subtracted) is the one in which wages and prices change. In the extreme case, where d_w and d_p tend to their lower bound of one, wages and prices are never stuck and so there is nothing to thwart or attenuate inflation expectations from being always

[6] In equations, if $\hat{p} = R + \hat{p}^e$, where $R > 0$ is redistributive inflation generated by the aspiration gap, then a steady state where $\hat{p} = \hat{p}^e$ presents a contradiction, implying there is no steady rate of inflation.

and fully realised, hence why Equations (32) and (33) blow up as $d_w \to 1$ and $d_p \to 1$ now that inflation expectations have been reintroduced into the GCIM.

To express the equilibrium values implied by the equality of Equations (32) and (33), we first define d by

$$d = \frac{d_p - 1}{d_w - 1}, \tag{34}$$

which, as in Woodgate (2026b), can be considered the relative *rigidity of prices to wages*, and find

$$\omega_t^* = \left(\frac{d}{1+d}\right)\tau_W + \left(\frac{1}{1+d}\right)\tau_F, \tag{35}$$

$$\Delta w_t^* = \Delta p_t^* = \frac{1}{d_w + d_p - 2}(\tau_W - \tau_F). \tag{36}$$

Expressed in levels and conventional growth rates, we get

$$\Omega_t^* = T_W^{\left(\frac{d}{1+d}\right)} T_F^{\left(\frac{1}{1+d}\right)}, \tag{37}$$

$$\widehat{W}_t^* = \widehat{P}_t^* = \left(\frac{T_W}{T_F}\right)^{\left(\frac{1}{d_w + d_p - 2}\right)} - 1. \tag{38}$$

From these results we see that the introduction of expectations means that any arbitrarily high rate of inflation can now be generated, even if the degree of conflict (T_W/T_F) is not particularly high, as long as d_w and d_p sufficiently close to their lower bounds of one. However, true hyperinflation, understood as disequilibrium phenomenon, still cannot be generated by the model as it stands thus far unless we trivially assume reset frequencies (λ) or indexation parameters (γ) are at their upper bounds of one (so that $d_w = d_p = 1$).

Introducing expectations is necessary but not sufficient to explain true hyperinflation in the *log-linear* GCIM with exogenously given wage- and price-setting institutions, in contrast to the original GCIM, where it is shown in Woodgate (2026a) that hyperinflation can emerge with effective durations that are fixed and above unity if the degree of conflict is sufficiently high. However, a critique of the first formulation of the GCIM seen in Woodgate (2026a) is that if frequency of wage and price changes does not rise during runaway inflation[7], then it is the average size of wage and price changes that must explode, which is simply counter to the empirics on high and hyperinflation. Indeed, this critique comprises part of the motivation behind the extension to the GCIM seen in Woodgate (2026b), where effective durations (and frequencies) are endogenous in the long run. We will show that we can reproduce the essence of the theory of hyperinflation seen there in our simpler log-linear GCIM.

4.2 Long-run endogeneity of effective durations as a response to real income erosion

The notion that effective durations may shrink in response to rising inflation has a long pedigree in structuralist and post-Keynesian theory, as the excellent summary in Vera (2013) shows. Dornbusch (1985, p. 12) calls this "Pazos-Simonsen mechanism", crediting Simonsen (1983) and Pazos (1972) with its independent formulation. This mechanism is perhaps most neatly defined by Vera (2013, p.261) as a vicious cycle where "as inflation accelerates, contracts shorten, and that shortening of contract is itself a factor that causes inflation to accelerate." However, as Vera (2013) also shows, analysis of the same mechanism could also be attributed to the much earlier work of Kaldor (1957). Aspects of this mechanism—perhaps more appropriately named Kaldor-Pazos-Simonsen mechanism—have also

[7] Here we note that, while the account seen in Woodgate (2026a) does in fact *describe* a process of rising frequency and degrees of indexation during accelerating inflation, it is not formally *modelled*.

been described but not formally modelled by Robinson (1938), Jackson and Turner (1972), Rowthorn (1977, p.225), Carvalho (1993), Bastian and Setterfield (2015), Charles and Marie (2016), Lavoie (2022, p. 607), and Bastian et al. (2024), for instance. In terms of formal modelling, Vera (2013) offers a simple demonstration of the mechanism, whereas Woodgate (2026b) explicitly incorporates it into a full conflict inflation model, which is simplified here.

The endogeneity of effective durations is motivated by recognising that the real income of workers and firms is eroded in every period that they are stuck in outdated contracts, and so they eventually push for new contracts. By rearranging Equations (32) and (33), we can show the equilibrium real wage *erosion* of workers and firms in terms of steady-state inflation[8],

$$\tau_W - \omega_t^* = (d_w - 1)\Delta p_t^*, \tag{39}$$

$$\omega_t^* - \tau_F = \left(d_p - 1\right)\Delta p_t^*. \tag{40}$$

Equation (39), for instance, says that the average worker experiences a peak log real wage at their target, which is then eroded for $d_w - 1$ periods by equilibrium inflation before being reset to τ_W whereafter the cycle repeats. Hence, plotting these equations over time reveals a sawtooth pattern of real wages, the so-called "Simonsen Curve" (Vera 2013), seen in, for example, Jackson and Turner (1972, p.38), Carvalho (1993, p.68), and Woodgate (2026b, p. 13), for example. From this, we also see that sufficiently higher rates of inflation imply destitution or bankruptcy for a growing share of the population of workers and firms, unless combatted with lower effective durations. Given this, it is argued that d_w and d_p are not exogenous, but instead it is assumed that workers and firms reshape wage- and price-setting behaviour and institutions over the long run, decreasing d_w and d_p in response to the experience of high trend inflation, i.e. medium-run equilibrium inflation as described in Equation (36). As alluded to above, this assumed behaviour also reflects the empirics on the matter, where frequency of wage and price changes tends to rise with higher rates of inflation across countries and time (for example, see Gödl and Gödl-Hanisch (2024) for wage contract duration and Alvarez et al. (2019) for price adjustment frequency across various inflation regimes).

The way the endogeneity of effective durations is operationalised in Woodgate (2026b) is simple and so we follow it here, only amending it to express inflation in log-differences. We also follow the notational convention, motivated by the fact that we are moving from a time-dependent medium run to a state-dependent long run, in which we are engaged in comparative statics across institutional (or inflation) regimes. We thus make use of the subscript r to emphasise we are comparing long-run institutional adaptations to different medium-run equilibrium inflation rates. Hence, d_r^w and d_r^p represent the effective durations of wage and prices given a certain inflation regime. These are now variable over the long run, assumed to evolve across regimes according to Equations (41) and (42)

$$d_r^w = d_0^w + (1 - d_0^w)\frac{\Delta p_{r-1}^*}{1 + \Delta p_{r-1}^*}, \tag{41}$$

$$d_r^p = d_0^p + \left(1 - d_0^p\right)\frac{\Delta p_{r-1}^*}{1 + \Delta p_{r-1}^*}. \tag{42}$$

If a zero-inflation regime is observed ($\Delta p_{r-1}^* = 0$), the effective durations of wage and prices are assumed to be at their baseline or default values, d_0^w and d_0^p respectively, which we take as exogenously given. Higher inflation regimes lead to lower effective durations as workers and firms

[8] Equations (39) and (40) can also be derived as the logs of Equations (27) and (28) in Woodgate (2026b) and again using the log-linear approximation around a zero-inflation steady state. Following the logic in that paper, it follows that ω^* is the log of workers' expected real wage (a weighted arithmetic mean of workers' real wages) *and* the log of firms' expected price markup over wages (a weighted harmonic mean of firms' real wages). For more on this, see Woodgate (2026b).

seek to protect themselves against the eroding effects on real income of high inflation. In a hypothetical infinite inflation regime, d_r^w and d_r^p tend to their lowest possible values of one.

Importantly, although effective durations of wages and prices fall with trend inflation, Equations (41) and (42) also imply that the relative rigidity of prices to wages (d) remains constant over the long run since

$$d = \frac{d_r^p - 1}{d_r^w - 1} = \frac{d_0^p - 1}{d_0^w - 1}. \tag{43}$$

From Equation (35), we know that if d (and the real wage targets) are constant over the long run, then so too is the real wage. As Woodgate (2026b, p. 15) argues, the result that d is exogenously fixed, which arises from the assumed functional forms in Equations (41) and (42), is considered more than a simplifying device. If workers or firms could exact a distributional advantage by increasing the effective frequency of wage or price adjustments, the option to do so would presumably become exhausted. At which point, any further decrease in effective duration by one side would be matched by a fall in duration by the other, leaving d and thus ω^* unaltered. Hence, while Equations (41) and (42) may be somewhat ad hoc, they capture the desired behaviour of falling effective durations with rising trend inflation without affecting the real wage over the long run nor making the model any less parsimonious.[9]

The long-run rate of inflation ($\Delta w^{**} = \Delta p^{**}$) that results from this endogenous adaptation, found by inserting Equations (41), (42), and (43) into (36), is

$$\Delta w^{**} = \Delta p^{**} = \frac{(\tau_W - \tau_F)}{d_0^w + d_0^p - 2 - (\tau_W - \tau_F)}. \tag{44}$$

It thus follows that there is now a well-defined degree of conflict that triggers hyperinflation. This so-called *hyperconflict threshold* is clearly

$$(\tau_W - \tau_F)_{hyper} = (d_0^w - 1) + \left(d_0^p - 1\right). \tag{45}$$

For stability, the difference in log real wage targets cannot equal or exceed the sum of the effective number of periods in which wages and prices are stuck during a zero-inflation regime. Put crudely, the greater the degree of rigidity when prices are stable, the more conflict the macroeconomic system can handle without unstable inflation. At the extreme, an economy with zero-inflation effective durations (d_0^w and d_0^p) close to their lower bound of one period—perhaps due to the lingering effects of a history of economic and political instability—is hardly able to tolerate any conflict at all without triggering hyperinflation. Expressing this in levels, where we define the ratio of conflicting targets by $T = T_W/T_F$ and the corresponding hyperconflict threshold by

$$T_{hyper} = e^{d_0^w + d_0^p - 2} \tag{46}$$

we get the following expression for the long-run inflation rate in a conventional growth rate

$$\widehat{w}_r^{**} = \hat{p}_r^{**} = T^{\left[1/\ln\left(\frac{T_{hyper}}{T}\right)\right]} - 1. \tag{47}$$

We have thus arrived at the qualitative essence of the theory of hyperinflation seen in Woodgate (2026b) within the confines of the simpler log-linear GCIM.

4.3 Comparing post-Keynesian theories of hyperinflation

[9] By which we mean that the number of total unexplained (i.e. exogenous) parameters in the model does not increase (the effective duration parameters, d_w and d_p, that were taken as given in the short and medium run are endogenised in long run where only two new exogenous parameters (d_0^w and d_0^p) are introduced.)

Quantitatively, the result regarding T_{hyper} in Equation (46) can be shown to be greater in value than the threshold values derived from the original GCIM. Endogenising the effective durations in the original GCIM is shown in Woodgate (2026b) to lead to the lowest hyperconflict threshold, labelled T_1^{hyper} in Table 1. Assuming exogenously given λ-parameters (Woodgate 2026a) as well as γ-parameters (Woodgate 2026b) leads a higher threshold of T_2^{hyper} within the original GCIM. The threshold derived in this paper from the log-linear GCIM, seen in Equation (46) and relabelled in Table 1 as T_3^{hyper} for comparative purposes, can be shown to be greater than T_1^{hyper} and T_2^{hyper} for all permitted values of d_0^w and d_0^p:

$$T_1^{hyper} \leq T_2^{hyper} \leq T_3^{hyper} \qquad \forall\ d_0^w \geq 1, d_0^p \geq 1. \tag{48}$$

Hence, the log-linear GCIM is inherently more stable than the original model from which it derived, which is unsurprising given that it is approximation of the original around a zero-inflation steady state. However, it nonetheless offers a way of describing how instability can emerge from an otherwise stable model of inflation and distribution, filling in the explanatory gaps left in Rowthorn (1977) with high simplicity and analytical convenience.

Table 1. *Comparative summary of hyperconflict thresholds derived from variants of the GCIM*

Setup	Original GCIM with endogenous durations	Original GCIM with exogenously fixed durations	Log-linear GCIM with endogenous durations
Reference	Woodgate (2026b)	Woodgate (2026a, 2026b)	This paper
Threshold	$T_1^{hyper} = \left(\frac{d_0^w+3}{4}\right)\left(\frac{d_0^p+3}{4}\right)$	$T_2^{hyper} = d_0^w * d_0^p$	$T_3^{hyper} = e^{d_0^w+d_0^p-2}$

The theory of hyperinflation derived from the GCIM appears similar to that seen in Bastian and Setterfield (2015), which serves as the basis of the textbook treatment of hyperinflation in Lavoie (2022), but a fundamental incompatibility lies beneath the surface. These authors suppose that the coefficients on workers' and firms' aspiration gaps rise once a critical degree of conflict has been surpassed, said to reflect rising bargaining effort as both sides become more militant in their attempts to secure their targets. However, since the Bastian and Setterfield (2015) and Lavoie (2022) models do not include inflation expectations in their models, it is impossible to derive their theory of hyperinflation from the GCIM. Looking back to the log-linear GCIM with no expected inflation as in Equations (24) and (25), note that the maximum value the aspiration gap coefficients can take is one (when d_w and d_p are at their lower bounds of one) and cannot rise beyond this to the arbitrarily high values that Bastian and Setterfield (2015) suppose. Introducing expectations, as in Equations (32) and (33), is precisely what explains how these coefficients may become unbounded. It is also the introduction of expectations that allows us to solve for the critical degree of conflict (T_{hyper}) that these authors take as exogenously given, similar to Rowthorn's (1977) inflationary threshold. Moreover, Bastian and Setterfield (2015) suppose that their rising aspiration-gap coefficients ultimately tend to finite values, said to reflect either side's bargaining power, meaning that their model still produces a long-run equilibrium. Hence, any arbitrarily high inflation rate can be explained, but not a truly explosive disequilibrium process. Contrast this to the GCIM, where bargaining power is said to constrain the *relative* rigidity of prices to wages ($d = (d_p - 1)/(d_w - 1)$) rather than supposing that the bargaining power of workers determines d_w and the bargaining power of firms determines d_p. Hence, in the GCIM, if the coefficients on the aspiration gaps tend to infinity, it does not problematically imply that the bargaining power of either side becomes infinite as it would in the Bastian and Setterfield (2015) interpretation.

Thus far, we have focused on the process by which hyperinflation may emerge from stability, namely via the vicious cycle between inflation and effective frequency (the Kaldor-Pazos-Simonsen mechanism), but have said little about the trigger behind hyperconflict. Post-Keynesian accounts of hyperinflation tend to focus on currency crises (usually said to be driven by a balance-of-payments crises) as the underlying cause (Robinson 1938, Charles and Marie 2016, Bastian and Setterfield 2020, Lavoie 2022, pp. 607-608; Bastian et al. 2024). Within the GCIM, Woodgate (2026a) demonstrates that currency crises can induce hyperinflation either by driving real exchange rate depreciation that depresses firms' real wage targets or by anchoring inflation expectations to a collapsing nominal exchange rate. Although the GCIM theoretically accommodates causes of hyperconflict other than a currency crisis, such as fiscal expansion in an economy with insufficient rigidity, external account distress remains the main *proximate* cause for two reasons: domestic authorities cannot unilaterally halt a currency crisis as they might with demand-driven overheating, and empirical episodes consistently exhibit real depreciation alongside falling real wages (Woodgate, 2026a). However, in a less proximate sense, persistent public deficits may nevertheless act as an ultimate cause of hyperinflation insofar as they induce said balance-of-payments problems, an issue which is especially relevant for developing and emerging economies (Vernengo and Pérez Caldentey 2020).

In sum, the GCIM supports and advances the general post-Keynesian account of hyperinflation by allowing us to identify the essential mechanisms by which stability is or is not maintained (particularly, the role of expectations), better define what the model parameters mean so as to minimise ambiguity and confusion, and explain what determines the hyperinflationary tipping points that some of the aforementioned authors take as given.

4.4 A graphical comparison of stable conflict inflation models and the GCIM

Let us conclude our discussion of the log-linear GCIM and the stable conflict inflation models with a graphical comparison. Figure 1 graphs the stable textbook models as per Equations (24) and (25), the log-linear GCIM over the medium run as per Equations (32) and (33) and the long-run, which for the sake of comparison we also express as separate wage and price inflation curves, Δw^{LR} and Δp^{LR}, by inserting Equations (41) into (32) and (42) into (33) to yield

$$\Delta w^{LR} = \frac{\tau_W - \omega}{(d_0^w - 1) - (\tau_W - \omega)}, \tag{49}$$

$$\Delta p^{LR} = \frac{\omega - \tau_F}{\left(d_0^p - 1\right) - (\omega - \tau_F)}. \tag{50}$$

We compare these models across three scenarios: symmetrical wage- and price-setting institutions in Panel 1a (where $\lambda_w = \lambda_p$ and $\gamma_w = \gamma_p$ so that $d = 1$), labour-biased institutions in Panel 1b (where $d > 1$), and firm-biased institutions in Panel 1c (where $d < 1$). Relative to the GCIM, we see that the Dutt-Blecker-Setterfield-Lavoie model[10] predicts a much lower rate of inflation across all scenarios and not much distributional change when wage- and price-setting institutions are biased one way or the other. This emphasises the importance of taking expectations into account. The medium-run, log-linear GCIM does relatively well in capturing the same distributional outcomes across all scenarios, but also predicts a lower rate of inflation relative to its long-run version where effective durations shorten endogenously. Indeed, in Panels 1b and 1c, the long-run GCIM reflects an economy that is in a high inflation regime that has institutionalised the underlying conflict with shorter effective frequencies but, in doing so, now stands on the cusp of hyperinflation. A further increase in the degree of conflict or further changes in d will render equilibrium an impossibility. The resulting collision of

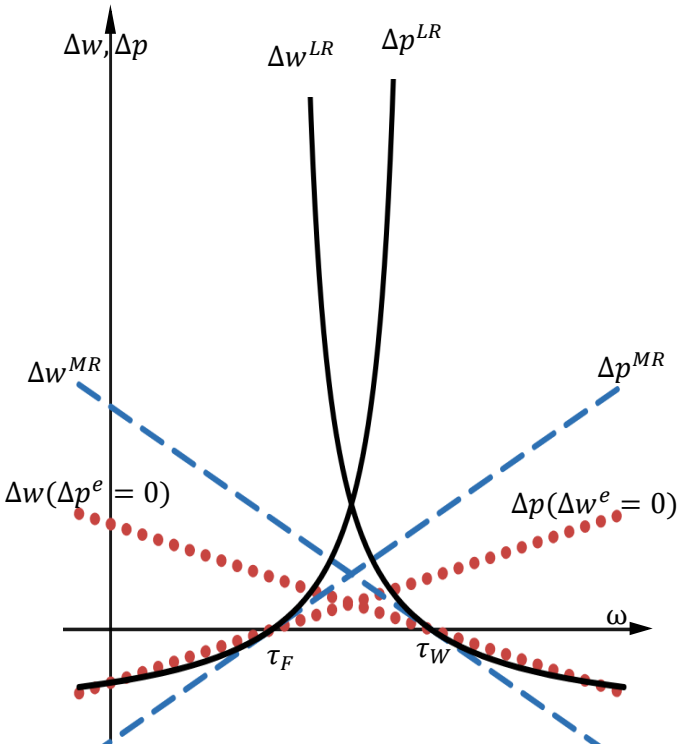
[10] The true Dutt (1987) model (with no indexation) is not graphed in Figure 1 to avoid clutter, but is essentially a flatter version of the red-dotted model seen in Figure 1.

the *barrier wage of workers* (vertical asymptote of Δw^{LR} at $\omega = \tau_W - (d_0^w - 1)$) and the *barrier wage of firms* (vertical asymptote of Δp^{LR} at $\omega = \tau_F + (d_0^p - 1)$), to use the terminology of Woodgate (2026a, 2026b), graphically marks the point at which hyperconflict sets in, effective duration tend to their lower-bound extremes, and inflation explodes.

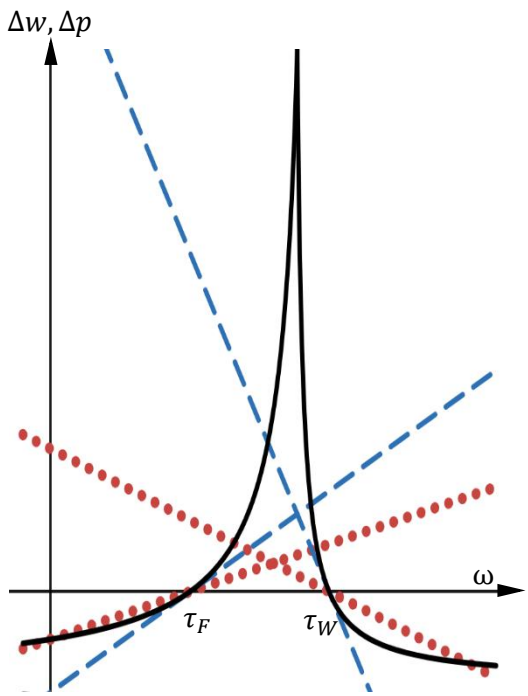
Figure 1 *Stable conflict inflation models as special cases of the Generalised Conflict Inflation Model*

Key:

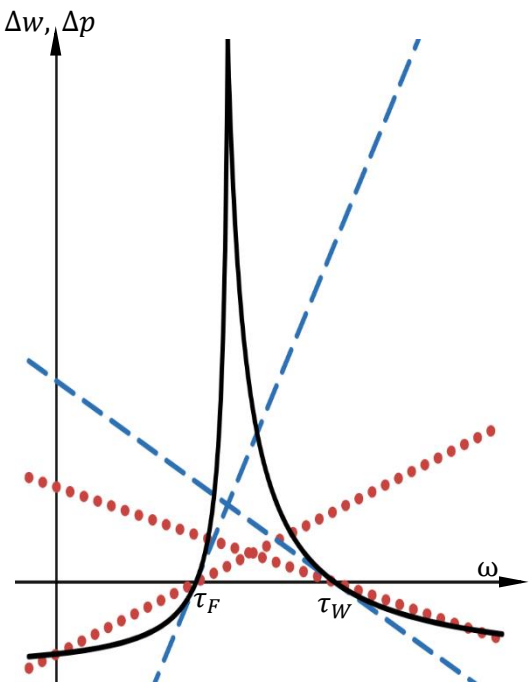
- Dutt-Blecker-Setterfield-Lavoie (no expectations)
- Medium-run, log-linear GCIM (expectations and *exogenous* effective durations)
- Long-run, log-linear GCIM (expectations and *endogenous* effective durations)



Panel 1a. *Symmetrical wage- and price-setting institutions* $(d = 1)$



Panel 1b. *Labour-biased institutions* $(d > 1)$



Panel 1c. *Firm-biased institutions* $(d < 1)$

5. Unstable Conflict Inflation Models as Special Cases of the GCIM with Minimum Effective Duration

The final class of conflict inflation models to relate to the log-linear GCIM is the Hein and Stockhammer (HS) approach. The core model in the HS camp—that found in Hein & Stockhammer (2010, 2011), Hein (2023, ch. 5) and the "HS0 model" in Hein & Häusler (2024)—is marked by knife-edge instability: If real wage targets are not aligned (and so the rate of employment is not at the stable inflation rate of employment), then inflation rises or falls in every period. It is thus an inherently explosive model, in stark contrast to Dutt-Blecker-Setterfield-Lavoie models. Also contrary to the models that we have considered thus far except Rowthorn (1977), the HS class of models assumes a temporal ordering to the bargaining process: Workers negotiate wages first, then firms set prices based on the observed changes in wages. So, to derive the HS approach from the log-linear GCIM, we must start by looking at wage inflation.

Setting it apart from the earlier globally stable models, the HS approach explicitly incorporates inflation expectations, assumed to be set adaptively such that $\Delta x_t^e = \Delta x_{t-1}$. Crucially, the standard HS model assumes that workers can fully convert expected price inflation into nominal wage growth. Referring back to Equation (17), the implication in the context of the basic wage growth equation of the log-linear GCIM is that $\lambda_w = 1$, so that now

$$\Delta w_t = \tau_W - \omega_{t-1} + \Delta p_{t-1}. \tag{51}$$

While we have said nothing of indexation, that does not imply there necessarily is none. From a comparison of Equation (17) and Equation (51), we see that any degree of indexation (including full indexation) may feature but is ultimately immaterial to resulting wage growth since, in order to able to fully realise expected inflation, the implication is that workers are never stuck in an old contract and the effective duration of wages is already at its minimum ($d_w = 1$ since $\lambda_w = 1$).[11] If some workers could not reset their wage in a given period, the coefficient on expected inflation would not be one, it would be lower. Hence, to include the assumption found in the HS model that expectations are fully incorporated means that $\lambda_w = 1$ and thus there are no stabilising effects of rigid institutions and conventions to combat the destabilising effects of inflation expectations.

In the HS approach, the target wage *share* of workers (σ_W^T) is assumed to be linearly determined by the employment rate (E),

$$\sigma_W^T = a_0 + a_1 E, \tag{52}$$

where the a_0 and a_1 are said to depend on the "institutional circumstances of the labour market, the wage bargaining system and the social benefit system in general" (Hein 2023, p. 144). The target wage share of firms (σ_F^T), on the other hand, is assumed to be exogenous to changes in output and employment. If workers' and firms' target shares add up to 100%, then the corresponding employment rate is termed the stable inflation rate of employment (SIRE), E^N,

$$1 = \sigma_W^T + \sigma_F^T \qquad \rightarrow \qquad E^N = (1 - \sigma_F^T - a_0)/a_1. \tag{53}$$

Assuming the employment rate does not affect labour productivity, we can implement employment rates into the GCIM in a similar way by instead assuming it is the log (rather than the level) of workers' real wage target that is determined by the employment rate, such that

[11] Alternatively, one could replicate the same *qualitative* results of HS approach by assuming instead that $\gamma_w = 1$ and $0 < \lambda_w < 1$, which is unsurprising since is also means that $d_w = 1$. Given adaptive expectations, this yields $\Delta w_t = \lambda_w(\tau_W - \omega_{t-1}) + \Delta p_{t-1}$ instead of Equation (51). However, mapping the HS model to the GCIM with $\lambda_w = 1$ is more consistent with the descriptions of the model in the HS camp, so we follow that in the main text.

$$\tau_W = b_0 + b_1 E, \tag{54}$$

where b_0 and b_1 directly relate to their counterparts in Equation (52), a_0 and a_1 respectively. If $E = E^N$, it implies the real wage targets are equal, which in turn means the actual real wage must equal the targets ($\tau_W = \tau_F = \omega$), so we can relate the actual real wage to the SIRE such that

$$\omega = b_0 + b_1 E^N. \tag{55}$$

Inserting Equation (54) and (55) into Equation (51) we get wage inflation in the standard HS form, which tells us how much wage inflation is generated given a departure from compatible real wage targets (where $\tau_W = \tau_F$) or, expressed in employment rates, after a departure from the SIRE

$$\Delta w_t = b_1(E_t - E^N) + \Delta p_{t-1}. \tag{56}$$

Firms are assumed to set prices *after* observing wage growth and incompletely pass on excess wage inflation, defined by $\Delta w_t - \Delta p_{t-1}$, by some factor ϑ such that $0 \leq \vartheta < 1$. The assumption of incomplete passthrough is justified by supposing that heterogeneous firms with different levels of productivity will be able to pass on the growth in unit labour costs to varying extents. This yields the price inflation equation in the HS form

$$\Delta p_t = \vartheta b_1(E_t - E^N) + \Delta p_{t-1}, \tag{57}$$

where lagged inflation features again due to the assumption of additive adaptive inflation expectations. It follows that unexpected inflation, Δp_t^u, which is equal to the rate of change of inflation $\Delta p_t - \Delta p_{t-1}$, is given by Equation (58) in the HS approach.

$$\Delta p_t^u = \vartheta b_1(E_t - E^N). \tag{58}$$

Hence, knife-edge instability is a dominant feature in the core HS model, as the inflation rate changes in every period, unless $E_t = E^N$. Note that if $E_t = E^N$, the HS model tells us inflation is stable but does not say at which rate of inflation, in contrast to the models we considered earlier. In any case, there is no *automatic* mechanism that aligns the employment rates and underlying distributional claims. Indeed, if one incorporates distributional feedback effects on the employment rate, as does for instance Hein (2023, ch. 5.4), then the instability is amplified further. Policy could, in principle, aim to align workers' and firms' targets (and the actual employment rate with the SIRE), thus stabilising inflation (Hein 2023, chs. 5.5-5.6). Yet, in practical terms, this would seem to be a difficult undertaking, the success of which is far from guaranteed in a real-world setting. Lastly, recognising that the expectations of workers and firms are unlikely to remain adaptive as assumed in the HS approach in an environment of constant change in the inflation that the HS model generates as per Equation (58), changes in the basis of expectations formation (to extrapolative or forward-looking) may compound the instability further still.

As a final exercise, let us graphically compare the log-linear GCIM to the core HS model. We start by noting that, while it is impossible to graph the true HS model over the same axes as in Figure 1, one can motivate where the difference between the log-linear GCIM to the HS model arises by letting d_w be infinitesimally close but not equal to one. This results in the wage inflation curve of the GCIM being L-shaped rather than curved, with the kink located at workers' real wage target, whereas price inflation is assumed in the HS approach to be a fraction ϑ of the excess wage inflation that this generates. Rather than remain focussed on inflation rates, a more direct graphical comparison arises from comparing the HS approach to the GCIM in terms of *the change* in inflation rates.

The root of the comparison must be based on wage inflation since, as noted, the order assumed in the HS approach means that price inflation follows wage inflation whereas the GCIM imposes no such order. Suppose there is some positive degree of conflict such that $\tau_W > \tau_F$ and $E >$

E^N. Equations (36) and (41)-(43) of the log-linear GCIM tell us that the (price and) wage inflation rate evolves over the long run by

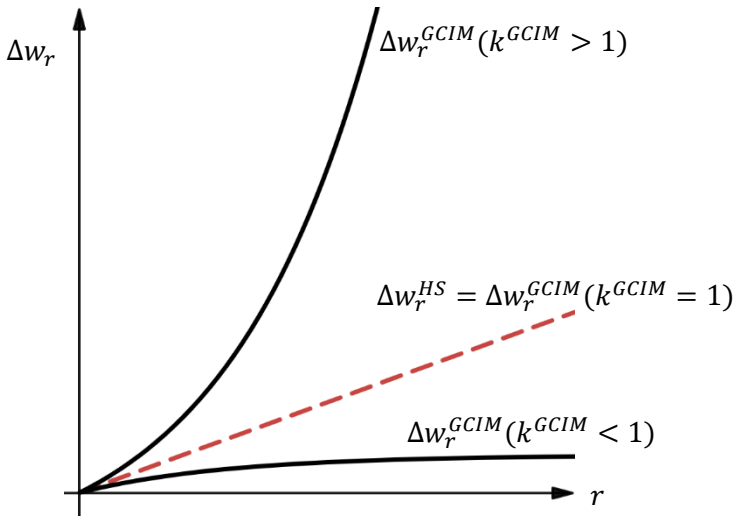
$$\Delta w_r^{GCIM} = k^{GCIM}(1 + \Delta w_{r-1}) \qquad \text{where } k^{GCIM} = \frac{(\tau_W - \tau_F)}{d_0^w + d_0^p - 2}. \tag{59}$$

Contrariwise, Equation (58) of the HS model says that the long-run evolution of the wage inflation rate is of the form

$$\Delta w_r^{HS} = k^{HS} + \Delta w_{r-1} \qquad \text{where } k^{HS} = b_1(E_t - E^N) = \tau_W - \tau_F. \tag{60}$$

Given any degree of conflict, the unit root in Equation (60) ensures there is no steady rate of inflation, and the precise value of k^{HS} (i.e. the exact degree of conflict) is immaterial for stability, in stark contrast to the GCIM as per Equation (59). As shown in Figure 2, Δw_r increases steadily over all r in the HS approach, whereas in the GCIM it converges to the long-run equilibrium rate ($\Delta w^{**} = \Delta p^{**}$) if $0 < k_G < 1$, and diverges otherwise.[12] Crucially, the dynamic evolution of wage inflation becomes mathematically identical between the two frameworks when $k^{GCIM} = k^{HS} = 1$. This implies precise values for the baseline effective durations ($d_0^w = 1$ and $d_0^p = 2$) and that the degree of conflict sits precisely at the hyperconflict threshold that results ($\tau_W - \tau_F = 1$). That the baseline effective duration of prices is longer than that of wages ($d_0^p > d_0^w$) could be said to reflect the structural asymmetry in the core HS model, where prices only partially passthrough prior wage growth.

Figure 2 *Unstable (HS) conflict inflation model as a special case of the Generalised Conflict Inflation Model (GCIM)*



In sum, we see the core HS model as a kind of linearised model of hyperinflation, one that results as a special case of the GCIM in which the hyperconflict tipping point has been surpassed such that the effective duration of wages is now one. There are thus no thwarting conventions or regulations to prevent all workers from fully anticipating price inflation. Where the core HS model shown here and other HS models—such HS1, HS2, and HS3 models seen in Hein & Häusler (2024)—deviate from the GCIM is in how they arbitrarily assume an order to the bargaining process (wages are set before prices) and supposes that firms in particular are heterogenous in terms of the productivity

[12] For Figure 2, Equations (59) and (60) inflation is expressed in terms of its initial position (Δp_0) over the number of runs/regimes r elapsed, which gives $\Delta p_r = (\Delta p_0 - \Delta p^{**})k_G^r + \Delta p^{**}$ and $\Delta p_r = \Delta p_0 + k_{HS}r$ respectively. We arbitrarily set $\Delta p_0 = 0$ for the purpose of illustration.

of technologies or management employed. Instead of this asymmetry, the GCIM assumes that both workers and firms are heterogeneous but bases this heterogeneity in the context of (implicit and explicit) contracts rather than productivity differentials—although one could imagine an extension to the GCIM in which workers and firms have different productivity levels and real wage targets.

6. Concluding remarks

The array of conflict inflation models in the literature, each based not only on varying assumptions but also differing interpretations of what certain parameters do or do not mean, has generated controversy and a degree of incommensurability. By uniting stable and unstable approaches in one conditionally stable framework whose parameters are well defined and using it to explain what had been hitherto taken as given (e.g. hyperinflationary thresholds) and formally model what has been informally described by many authors (e.g. endogeneity of effective frequencies to trend inflation), it is hoped that this paper may help bring clarity and thus harmony to the theory of conflict inflation.

While progress has been made by simplifying the original GCIM, some of its limitations remain. Prime among these are the rather ad hoc formalisation of the Kaldor-Pazos-Simonsen mechanism, where one might suspect that the λ and γ parameters underlying the effective durations of wages and prices change more discretely, asymmetrically, and perhaps more irreversibly than what Equations (41) and (42) imply. The baseline effective durations when steady-state inflation is zero (d_0^p and d_0^w), which we took as given, also deserve some further attention. The determinants of real wage targets, of which we have said very little in this paper, remain a subject of debate, and the effects of monetary policy are conspicuous by their absence. So, while there is plenty of further work to be done, it is hoped that the unifying GCIM, particularly the more analytically convenient log-linear version presented in this paper, may serve as a fruitful basis for extensions and applications.

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