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**Working Paper**

## Inflation and distribution during the post-COVID recovery

FMM Working Paper, No. 82

**Provided in Cooperation with:**

Macroeconomic Policy Institute (IMK) at the Hans Boeckler Foundation

*Suggested Citation:* Setterfield, Mark (2022) : Inflation and distribution during the post-COVID recovery, FMM Working Paper, No. 82, Hans-Böckler-Stiftung, Macroeconomic Policy Institute (IMK), Forum for Macroeconomics and Macroeconomic Policies (FMM), Düsseldorf

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# FMM WORKING PAPER

No. 82 • October 2022 • Hans-Böckler-Stiftung

# INFLATION AND DISTRIBUTION DURING THE POST-COVID RECOVERY: A KALECKIAN APPROACH

Mark Setterfield<sup>1</sup>

## ABSTRACT

The early stages of recovery from the recession induced by the COVID-19 pandemic have been accompanied by a marked increase in inflation in the US and elsewhere. Much has been made of this outcomes, and the economic distress associated with it, in popular discussion of the economy. This paper provides a Kaleckian conflicting-claims analysis of inflation during the post-COVID recovery, that distinguishes between rising wages, pandemic-related supply shocks, and corporate price-setting behaviour as sources of inflationary pressure. A key conclusion that arises from the co-determination of inflation and distributional outcomes in the Kaleckian framework is that distributional developments that have further disadvantaged working households, rather than inflation per se, are the chief source of recent economic distress – and should be the chief cause for concern among policy makers.

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# Inflation and distribution during the post-COVID recovery: a Kaleckian approach

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October 17, 2022

## Abstract

The early stages of recovery from the recession induced by the COVID-19 pandemic have been accompanied by a marked increase in inflation in the US and elsewhere. Much has been made of this outcomes, and the economic distress associated with it, in popular discussion of the economy. This paper provides a Kaleckian conflicting-claims analysis of inflation during the post-COVID recovery, that distinguishes between rising wages, pandemic-related supply shocks, and corporate price-setting behaviour as sources of inflationary pressure. A key conclusion that arises from the co-determination of inflation and distributional outcomes in the Kaleckian framework is that distributional developments that have further disadvantaged working households, rather than inflation *per se*, are the chief source of recent economic distress – and should be the chief cause for concern among policy makers.

*JEL codes:* E02, E11, E12, E25, E31, E64

*Keywords:* Inflation, COVID-19, conflicting claims, wage share, income distribution

## 1. Introduction

During the third quarter of 2022, inflation in the US economy – having exceeded 5% and risen steadily since the middle of the previous calendar year – reached a 40-year high of approximately 9%. These events have captured media attention and met with widespread public disapprobation as a result of their implications for the cost of living.

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\*New School for Social Research; email mark.setterfield@newschool.edu. An earlier version of this paper was presented at the workshop *Heterodox Perspectives on the Current Inflation Surge*, Campus Condorcet, Paris, September 15th, 2022. I would like to thank workshop participants, and in particular Antonella Palumbo and Carlos Pinkusfeld, for their helpful comments. Any remaining errors are my own.

Having previously identified the rise in inflation as a temporary phenomenon associated with supply shocks in the aftermath of the COVID-19 pandemic, the Federal Reserve changed course during the first half of 2022. In keeping with orthodox wisdom, it set about a single-minded pursuit of lowering the rate of inflation by raising interest rates in order to suppress demand and so arrest (or even reverse) the rapid fall in unemployment witnessed to that date. The ambition of this policy intervention was to reduce pressure on wages, wage inflation being (purportedly) the source of higher price inflation.

The position taken in this paper is that the policy response outlined above risks further disadvantaging working households who, having previously lost out to four decades of real wage stagnation, lost out again to adverse redistributive outcomes associated with inflation during the first two years of the post-COVID recovery. In order to advance this argument, a Kaleckian conflicting-claims inflation model is developed that has two important properties. First, it facilitates distinction between three sources of inflationary pressure, arising from wage-push in the labour market, pandemic-related supply shocks, and corporate price-setting behaviour. Second, it models the co-determination of inflation and distributional outcomes. As will become clear, the latter are critical to understanding the socio-economic costs associated with the post-COVID inflationary episode.

The remainder of the paper is organized as follows. Section 2 reviews some stylized facts, putting events during the first two years of the post-COVID recovery into the broader context of developments in wage and price dynamics over the last 3-4 decades. Section 3 then develops a Kaleckian conflicting-claims inflation model (following Rowthorn, 1977) and uses this model to explain inflation, real economic performance, and developments in the wage share during the neoliberal era (1990-2019). In section 4, the same model is used to explain inflation, real performance, and wage share outcomes during the post-COVID recovery. Emphasis in this section is on three developments: tightening of the labour market; supply shocks; and increasing mark ups caused by increased corporate concentration and a

facilitated by a ‘permissive’ price-setting environment. Section 5 concludes, emphasizing that distributional outcomes (rather than inflation *per se*) were the source of household economic distress during the first two years of the post-COVID recovery, and ought to be the focus of policy intervention.

## 2. Some stylized facts

According to popular wisdom, inflation increased after the second quarter of 2021 because the pace of recovery from the COVID-induced recession of early 2020 caused the labour market to tighten so quickly and to such an extent that the US economy encountered labour shortages. These labour market conditions put upward pressure on wage costs and hence prices and, in turn, create the risk of a self-perpetuating wage-price inflationary spiral. But the evidence of business cycle expansions in the US since 1990 suggests that if this account is true, then it is truly extraordinary.

Table 1 presents the average annual rates of growth of real wages in the US economy over successive business cycle upswings since 1949. As can be seen, the average rates of growth of real wages during cyclical booms falls from 2.9% during the Golden Age (1949-73) to 1.2% during the 1975-1990 inter regnum, and then falls *again* to just 1.1% during the neoliberal era (1990-2019). Moreover, the rate of growth of real wages falls during each of the three consecutive cyclical booms since the beginning of the neoliberal era in 1990. The inability of workers to bid up real wages, even during cyclical booms, has been worsening over time.

Of course, real wage growth is linked to productivity growth and, with the exception of a brief period around the turn of the millennium, US productivity growth is known to have declined since the end of the Golden Age. However, the diminishing growth of real wages during US cyclical booms is not simply a result of slower aggregate productivity growth.<sup>1</sup>

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<sup>1</sup>The slowdown in real wage growth is, in part, a result of productivity growth dynamics, especially as a result of structural change involving deindustrialization and the rise of the service sector. Not only does

Table 1: Average Annual Rates of Growth of the Real Wage in the US over Successive Cyclical Upswings, 1949-2019

	Average Rate of Growth of Real Wages
1949II – 1953II	3.3
1954III – 1957III	3.6
1958III – 1960II	2.7
1961II – 1969IV	2.4
1971I – 1973IV	2.1
1975II – 1980I	1.2
1983I – 1990II	0.9
1991II – 2001I	1.6
2002I – 2007IV	1.0
2009III – 2019IV	0.8
Golden Age (1949-73)	2.9
Inter Regnum (1975-90)	1.2
Neoliberal Era (1991-2019)	1.1

*Source:* Author's calculations based on Federal Reserve Economic Data (FRED) and NBER business cycle dating.

This is clear from figure 1, which plots the wage share against the employment rate in the US economy 1991-2019. From 1991-2001 a typical ‘Goodwin pattern’ is observed, as the wage share falls then rises as the boom progresses, so that the real wage keeps up with productivity growth (leaving the wage share unchanged) over the course of the cycle.<sup>2</sup> But this pattern is not evident thereafter: from 2002-2007, the wage share falls until the very last year of the expansion and only then begins to rise; and from 2009-2019 we observe another net decline in the wage share over the course of the cyclical boom, the wage share remaining essentially constant 2010-2019 even as the unemployment rate dropped by over 6 percentage points to levels last seen in the early 1970s.

The essential lesson from all this is that since 1990, workers have barely succeeded in bidding up real wages – even as the labour market has, at times, ostensibly tightened towards record-low rates of unemployment. Moreover, real wage increases have consistently failed to match productivity growth (at whatever rate), resulting in a secular decline in the wage share of income.

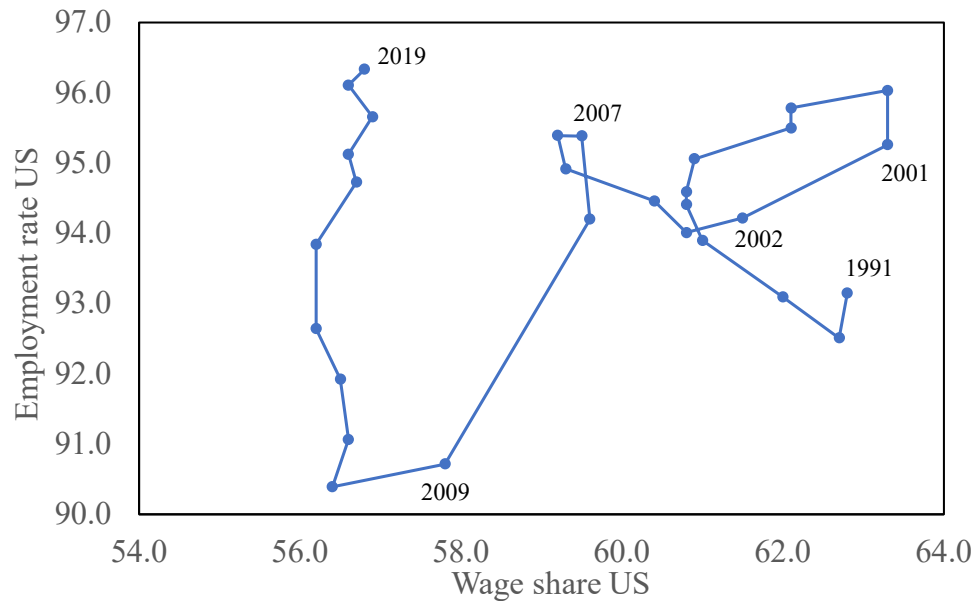
But what of the post-COVID recovery? Have workers suddenly found the means to bid up nominal wages to such an extent that they threaten profitability unless ‘excessive’ wage increases are ‘passed through’ in the form of higher prices – thus generating inflation? Several of the extraordinary features of the post-COVID recovery discussed by Setterfield (2022) may well have contributed to labour market tightness as the recovery gathered pace, despite the historic depth of the pandemic-induced recession in spring 2020. For example, absent any equivalent of the German *Kurzarbeit* work sharing system (which responds to recessions by

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deindustrialization contribute to deunionization (a theme that will be taken up below), it also has a direct effect on real wage growth. Hence the low productivity/(near) zero productivity growth that characterizes so-called ‘stagnant’ service sector industries (Baumol et al., 1989) means that not only are these industries labour-attracting (employment in stagnant services grows rapidly as output in these industries grows because of their lack of productivity growth), they are also low wage/(near) zero wage growth industries, by virtue of their low productivity/(near) zero productivity growth. On the direct contribution of deindustrialization to recent patterns in real wage growth, see Mendieta-Muñoz et al. (2021).

<sup>2</sup>Recall that  $v = \frac{\omega}{q}$  where  $v$  is the wage share of income,  $\omega$  is the real wage, and  $q$  denotes output per worker. Hence constancy of  $v$  requires  $\hat{\omega} = \hat{q}$ .

Figure 1: The wage share – employment relationship in the US, 1991-2019 (Source: Bureau of Labor Statistics (BLS))



reducing hours worked and compensating employees for loss of income due to short hours), the US economy responded to the onset of pandemic lock-downs by means of *ad hoc* reliance on extensions to the unemployment insurance system. These were designed to compensate workers for total loss of income due to the sudden onset of mass unemployment. In other words, labour in the US economy was underutilized during the COVID-19 recession in a manner that maximized worker-firm separations and thus hampered quantity adjustments during the recovery, as firms who laid off workers *en masse* subsequently struggled to re-hire.<sup>3</sup> Concerns also arose during the recession of a possible hysteresis effect on labour force participation, owing to lingering health care concerns, re-evaluations of work/life balance, and/or the realization (resulting from the ‘natural experiment’ forced upon many working families by a combination of involuntary unemployment and reorganization of the provision

<sup>3</sup>See also Giupponi et al. (2022) on the effectiveness of short-time work as a response to large and transitory shocks.



of child care and schooling) that combining low-wage work and costly child care makes less financial sense than reverting to more traditional household structures that involve unpaid provision of care-giving. Meanwhile, other workers forced through the same natural experiment may have brought forward decisions to retire that would otherwise have been more evenly dispersed over a period of years.

According to Forsythe et al. (2022), few of these developments appear to be having enduring effects on the US labour market, however (with the exception of retirement ‘bunching’). And the extent of labour market tightening during the post-COVID recovery is otherwise debatable. ‘Headline’ unemployment (U3) fell rapidly following the onset of recovery, and the unemployment-vacancy (UV) ratio fell below 1.0 as early as July 2021.<sup>4</sup> But U3 does a notoriously poor job of capturing slack in the US labour market, because of the prevalence of involuntary part-time work and discouragement (Setterfield, 2021; Blanchflower et al., 2022).<sup>5</sup> That said, both U3 *and* U6 – the measure of US unemployment that accounts for involuntary part-time work and discouragement – suggest the relative (if not absolute) tightness of the US labour market after two years of the post-COVID recovery. This is illustrated in figure 2, which plots the values of U3, U6 and the difference between U6 and U3 during the first two years of the three most recent business cycle expansions in the US economy.<sup>6</sup> As can be seen from figure 2, in the course of the early stages of the post-COVID recovery, U6 (as well as U3) fell rapidly as, indeed, did the *gap* between U6 and U3. These developments are unprecedented in the course of recoveries during the neoliberal era, being observable

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<sup>4</sup><https://www.bls.gov/charts/job-openings-and-labor-turnover/unemp-per-job-opening.htm>. For purposes of comparison, in the preceding recovery from the Great Recession, the UV ratio did not fall below 1.0 until February 2018, almost 9 years into the expansion.

<sup>5</sup>There is certainly anecdotal evidence of this problem during the post-COVID recovery. For example, some part-time workers report that they are working fewer hours than they desire even as their employers claim to be struggling in the face of a labour shortage (“Despite Labor Shortages, Workers See Few Gains in Economic Security,” *The New York Times*, February 3, 2022).

<sup>6</sup>Data from the recovery that began during the second quarter of 1991 is not available because BLS measurement of the U6 data reported in figure 2 did not begin until January 1994. See Bregger and Haugen (1995) on the recent history of ‘broad’ BLS measures of unemployment.

Table 2: TITLE

Date	Nominal Wage Growth Leisure & Hospitality	Nominal Wage Growth All Employees	Inflation	Productivity Growth	Real Wage Growth Leisure & Hospitality	Real Wage Growth All Employees	Growth of Wage Share	Growth of Gross Mark Up	Unemployment Rate
2009-07 – 2011-07	N/A	2.0	1.6	2.7	N/A	0.4	-2.3	2.3	9.5
2020-05 – 2022-05	6.7	4.7	4.2	2.0	2.5	0.5	-1.5	1.5	6.2
2020-05 – 2021-03	2.7	5.1	1.3	3.2	1.4	3.8	0.6	-0.6	8.1
2021-04 – 2022-05	9.8	4.5	6.5	0.8	3.3	-2.0	-2.8	2.8	4.6

*Source:* Author’s calculations based on Federal Reserve Economic Data (FRED) and NBER business cycle dating.

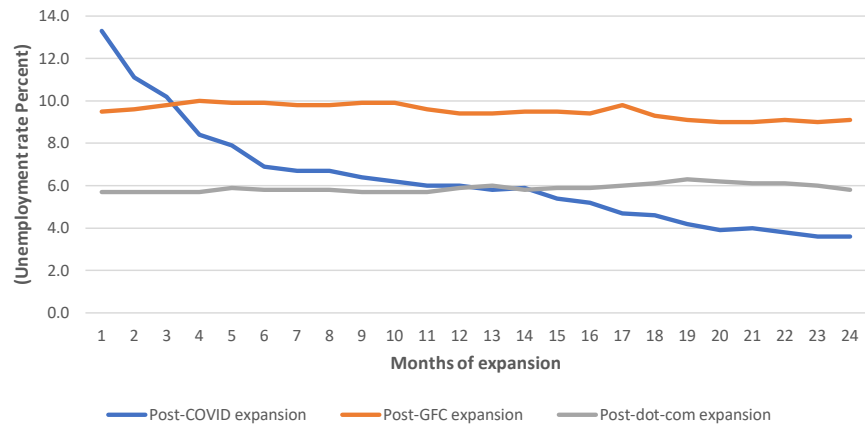
during neither of the two previous recoveries. On balance, then, there is evidence to suggest that after two years of the post-COVID recovery, the US labour market had tightened considerably, at least relative to recent historical standards.<sup>7</sup>

But despite the evidence of labour market tightening during the post-COVID recovery, there is scant evidence of aggressive wage inflation driving price inflation. Table 2 presents the average rates of growth of several key variables, together with the average rate of unemployment, during the first two years of the post-COVID recovery and the previous recovery (from the 2007-09 Great Recession). The first thing to note (from the first two rows of table 2) is that the rate of growth of real wages for all employees during the first two years of the post-COVID recovery was not markedly different from its rate of growth during the first two years of recovery from the Great Recession and did not exceed productivity growth, as a result of which the wage share fell. All this transpired despite the average rates of unemployment during the two year intervals under consideration being markedly different. None of this is immediately suggestive of exceptional labour market tightness translating into exceptional wage gains fuelling inflationary pressure.

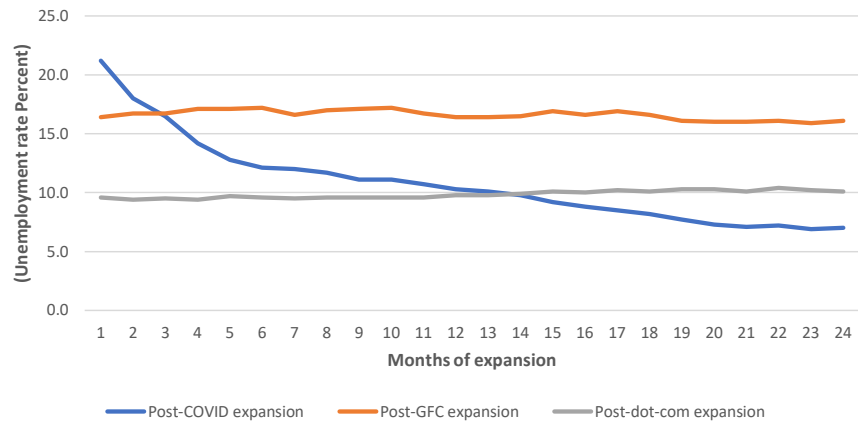
Nonetheless, the figures in columns three and four of table 2 show that the nominal dynamics of the first two years of the post-COVID recovery were markedly different from those of recovery from the Great Recession, suggesting that further investigation of the link

<sup>7</sup>This conclusion is supported by the behaviour of other ‘alternative’ measures designed to broaden discussion of US labour market slack beyond reference to U3. See, for example, Michailat and Saez (2022).

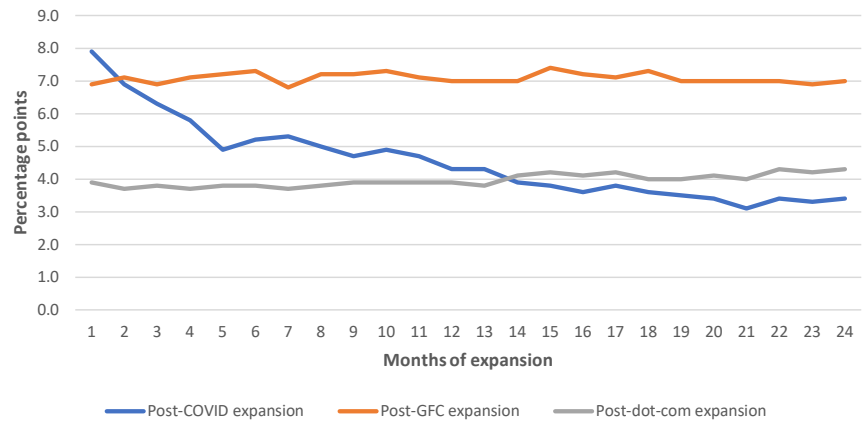
Figure 2: Unemployment Rates During the Early Stages of Recent US Business Cycle Expansions (Source: Author's calculations based on Federal Reserve Economic Data (FRED)).



(a) U3



(b) U6



(c) U6 - U3

between the labour market and the rate of inflation is warranted. This is the purpose of the third and fourth rows of table 2, which decompose the first two years of the post-COVID recovery into the period from May 2020 to March 2021 (when the annual average rate of inflation was 1.3%) and the period from April 2021 to May 2022, when inflation ‘surged’ (increasing to an annual average rate of 6.5% and reaching heights, during this interval, that were last witnessed during the early-mid 1980s). Note, however, that it is during the *first* of these sub-periods (May 2020 to March 2021) that nominal wage growth was sufficiently robust to increase real wages in excess of productivity growth and so (modestly) increase the wage share. During the ‘inflation surge’ sub-period (April 2021 to May 2022) nominal wages in the leisure and hospitality industries grew at close to double-digit rates. But these were the industries in which mass layoffs were concentrated during the pandemic. In other words, they were the epi-centre of the worker-firm-separation-maximizing inefficiency described earlier, that hampered quantity adjustments to the large and rapid reduction and then increase in employment following the advent and subsequent relaxation of pandemic-related lockdowns. In general, workers fared substantially less well: the rate of growth of nominal wages for all employees *fell* during the second (April 2021 to May 2022) sub-period even as the labour market tightened considerably (the average rate of unemployment falling from 8.1% to 4.6%); real wage growth turned *negative*; and the wage share fell. Note, however, that as workers were losing out in this fashion, the gross mark up grew aggressively during the April 2021 to May 2022 sub-period. The gross mark up is, of course, the mirror image of the wage share.<sup>8</sup> However, the behaviour of the gross mark up in the fourth row of table 2 is more than just a reflection of the relative weakness of workers *vis a vis* firms in the labour market. As noted by De Loecker et al. (2020), markups in the US economy have risen steadily since 1980,

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<sup>8</sup>To see this, write  $p = \frac{\kappa w}{q}$ , where  $p$  denotes the price level,  $w$  is the nominal wage,  $q$  denotes output per worker and  $\kappa$  is the gross mark up. It follows that  $\hat{p} = \hat{\kappa} + \hat{w} - \hat{q} \Rightarrow \hat{\kappa} = \hat{p} - \hat{w} + \hat{q}$ . Meanwhile, as previously stated,  $v \equiv \frac{w}{p} \equiv \frac{w}{pq}$  where  $v$  denotes the wage share of income. It follows from this second expression that  $\hat{v} \equiv \hat{w} - \hat{p} - \hat{q}$ . Finally, it follows by inspection that  $\hat{\kappa} = -\hat{v}$ .

especially among firms in the upper tail of the markup distribution that have also increased their market share over the past four decades. Building on this work, Konczal and Lusiani (2022) report a sudden and large increase in markups during 2021 that is especially marked among firms in the upper tail of the pre-pandemic markup distribution. As will be argued in greater detail in section 4, this reflects (in part) the capacity of firms to increase prices in excess of increases in costs as a result of increased corporate concentration, coupled with the ‘permissive’ pricing environment that emerged during the post-COVID recovery.

### 3. A Kaleckian explanation

Consider the following structural equations:

$$\hat{w} = \mu(v_W - v) \tag{1}$$

$$\hat{p}_F = \phi(v - v_F) \tag{2}$$

$$\hat{p} = \hat{p}_F + \varepsilon \tag{3}$$

$$\varepsilon = \alpha\varepsilon_{-1} + \eta, \quad \eta \sim (0, \sigma_\eta^2) \tag{4}$$

where  $\hat{w}$  is the rate of growth of nominal wages,  $v_W$  is the target wage share of workers,  $v$  is (as previously defined) the actual wage share,  $\hat{p}_F$  is the rate of price inflation intended by firms,  $v_F$  is the target wage share of firms,  $\hat{p}$  is the realised (actual) rate of inflation, and  $\varepsilon$  captures the persistent effects of supply shocks,  $\eta$ , such as increases in energy or commodity prices. Finally, the parameters  $\mu$  and  $\phi$  denote the relative power of workers in the wage bargain and the relative power of firms in product markets, respectively. Equations (1) and (2) together specify a simplified form of the Kaleckian conflicting-claims model of inflation due originally to Rowthorn (1977), in which both productivity growth and expectations have been omitted as independent variables. Note, for example, that in equation (1) (and

*ceteris paribus*), workers would need to increase nominal wages at a rate equivalent to the growth of labour productivity simply to maintain the *current* value of the wage share (much less improve its alignment with their target value,  $v_W$ ), given that  $v = \frac{\omega}{q} = \frac{w/p}{q}$  where (as previously noted)  $q$  represents output per worker. Here, we abstract from this concern by assuming for simplicity that  $\hat{q} = 0$ .<sup>9</sup> Workers may also make reference to an expected rate of inflation when bargaining for nominal wage increases given that *ceteris paribus*, and once again recalling that  $v = \frac{w/p}{q}$ , raising nominal wages in tandem with any increase in prices is required in order to maintain the current value of the wage share. We also abstract from this concern for the sake of simplicity.<sup>10</sup> The underlying theory in equations (1) and (2) is that workers and firms seek ‘fair shares’ of total income (reflected in the targets  $v_W$  and  $v_F$ ), striving to raise nominal wages and prices (respectively) in the pursuit of these goals.<sup>11</sup> Hence  $\hat{w}$  is increasing in  $v_W$  and decreasing in  $v$  in equation (1), while  $\hat{p}$  is increasing in  $v$  and decreasing in  $v_F$  in equation (2). Equation 3 makes clear that ‘surprises’ can ultimately separate realized inflation ( $\hat{p}$ ) from its intended rate ( $\hat{p}_F$ ) – which surprises are associated with persistent supply shocks, as in equation (4). The distinction here between realized and intended inflation is rooted in the Hicksian distinction between ‘fix’ and ‘flex’ price markets. Intended inflation is associated with wage and price dynamics emanating from Hicksian ‘fix’ price markets, in which firms practice administered pricing by (for example) setting prices as a mark up over unit labour costs prior to engaging in market exchange (and hence independently of the actual product demand conditions encountered when they do engage

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<sup>9</sup>Note that as a result, statements about the wage share are equivalent to statements about the value of the real wage and *vice versa*, since  $\hat{q} = 0$  implies that variations in  $\omega$  are reflected in equal proportional variations in  $v$ , and *vice versa*.

<sup>10</sup>Note that as a result – and contrary to the attention they receive within and beyond academia – changes in inflation expectations are not emphasized as an important explanation of post-COVID inflation outcomes in what follows. For recent restatements of the conventional wisdom regarding inflation and inflation expectations, see Binder and Kamdar (2022); Weber et al. (2022). See, however, Rudd (2022) for a sceptical view of the role of expectations as a ‘driver’ of actual inflation outcomes.

<sup>11</sup>The wage share pursued by firms,  $v_F$ , can be associated with a target value of the mark up ( $\tau_F$ ) in a simple mark-up pricing equation of the form  $p = (1 + \tau)w/q$ , given that it follows from this equation that  $\tau = \frac{1-v}{v}$  and hence  $\tau_F = \frac{1-v_F}{v_F}$ .

in exchange).<sup>12</sup> As will become clear below, the steady-state rate of inflation – and hence what may be regarded as ‘core’ inflation – is determined by intended inflation emanating from Hicksian fix price markets. In the short-term, however, Hicksian flex price markets associated with trade in commodities and energy, for example, and in which prices vary in accordance with the contemporaneous interaction of supply and demand, may produce price variations that are not equi-proportional to the intended rate of inflation emanating from Hicksian fix price markets. These disproportional price movements will affect the realized rate of inflation in the short run, augmenting the intended rate of inflation in the form of the (persistent) shocks modelled in equation (4).

Steady state conditions prevail in the model outlined above when  $\eta = 0$  and  $\varepsilon = \lim_{t \rightarrow \infty} \varepsilon = 0$  so that  $\hat{p} = \hat{p}_F$  in (3), and  $\hat{w} = \hat{p}_F = \hat{p}$  as a result of which  $\dot{\omega} = \omega(\hat{w} - \hat{p}) = 0$ , giving rise to constancy of the wage share of income ( $\dot{v} = 0$ , given that  $v = \frac{\omega}{q} \Rightarrow \dot{v} = \frac{v}{\omega} \dot{\omega}$  when  $\hat{q} = 0$  by hypothesis). Under these conditions, equations (1) – (4) combine to yield equilibrium values for the rate of inflation ( $\hat{p}^*$ ) and the wage share ( $v^*$ ), that can be expressed as:

$$\hat{p}^* = \frac{\mu\phi(v_W - v_F)}{\mu + \phi} \quad (5)$$

$$v^* = \frac{\mu v_W + \phi v_F}{\mu + \phi} \quad (6)$$

Equation (6) indicates that the equilibrium wage share is a weighted average of the distributional targets  $v_W$  and  $v_F$ : as long as  $\mu, \phi \neq 0$ , neither workers nor capitalists are able to set  $v$  equal to their preferred, target values. Instead, equilibrium price inflation  $\hat{p}^*$  emerges as the residual outcome of the ‘balance of conflicting forces’ that keeps the functional distribution of income constant in equilibrium.

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<sup>12</sup>There may, of course, be subsequent feedback effects from the demand conditions that firms encounter to the administered prices they establish prior to subsequent engagement in market exchange.

Comparative statics associated with this steady state solution are useful for contrasting the post-1990 neoliberal era with previous macroeconomic outcomes in the US economy (see also Setterfield, 2006, 2007; Setterfield and Blecker, 2022). First, note that if we assume that worker bargaining power in the labour market and hence  $\mu$  varies directly with the rate of employment,<sup>13</sup> the model produces a conventional (i.e., downward-sloping) long-run Phillips curve in unemployment-inflation space – referred to hereafter as the standard Phillips curve (SPC). This is illustrated in figure 3, where an increase in unemployment from  $U_1$  to  $U_2$  reduces worker bargaining power and hence  $\mu$  (from  $\mu_1$  to  $\mu_2$ ), which causes the wage-bargaining curve to rotate from  $WB$  to  $WB'$ , lowering inflation from  $\hat{p}_1$  to  $\hat{p}_2$ . These developments trace out, in the movement from  $A'$  to  $B'$ , the SPC depicted in the north-west quadrant of the figure. The same series of events simultaneously lowers the wage share from  $v_1$  to  $v_2$ , thus tracing out (in the movement from  $A$  to  $B$ ) the *wage-share Phillips curve* (WSPC) in the south-east quadrant.

Neoliberalism has been based on an ‘incomes policy based on fear’ (Cornwall, 1990) associated with a structural reduction in worker bargaining power at any *given* rate of unemployment. The constituent elements of this incomes policy based on fear include institutional change, such as changes to labour law that make it harder for workers to form trade unions, that have contributed to a marked decline in unionization rates. They also include forms of ‘institutionalized labour market slack’ resulting from changes in employment-relationship norms that create an increased threat of job loss (and hence a ‘synthetically’ slacker labour market) for any given (measured) rate of unemployment. Examples of institutionalized slack include: involuntary part-time and contingent employment, which has created a new form of *under*-employment resulting from changes to what constitutes ‘a job’ associated with movement away from the norm of full-time, year-round employment; downsizing exercises,

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<sup>13</sup>Note that, for the sake of simplicity,  $v_W$  is treated as exogenously given. See, however, Setterfield and Lovejoy (2006) for discussion of the endogeneity of workers’ aspirations.



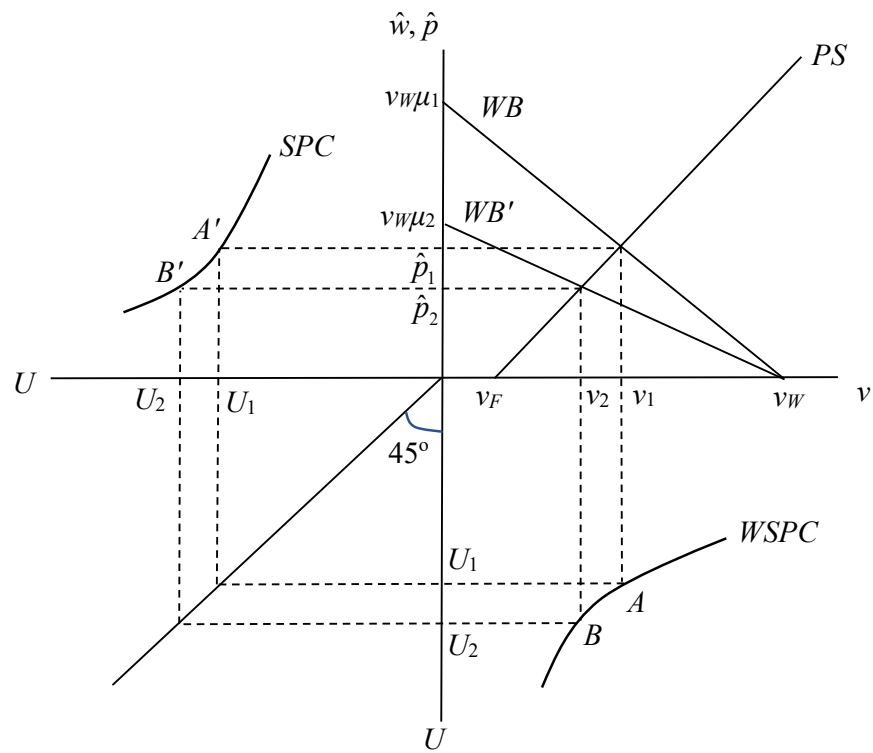


Figure 3: Conflict inflation and the Phillips curve

which create the omnipresent threat of job loss even in the absence of downturns in trade so that regardless of the unemployment rate, the ‘threat of the sack’ hovers over workers thus making for (effective) slack even in a (notionally) tight labour market; and the threat of plant relocation, which effectively imports the unemployment of other regions and in so doing, once again maintains the ‘threat of the sack’ and hence (effective) labour market slack even in a (notionally) tight labour market.<sup>14</sup>

The workings of the incomes policy based on fear are illustrated in figure 4, where once again worker bargaining power falls, resulting in a decline in  $\mu$  (from  $\mu_1$  to  $\mu_2$ ), rotation of the wage-bargaining curve from  $WB$  to  $WB'$ , and so a reduction in inflation (from  $\hat{p}_1$  to  $\hat{p}_2$ ) and the wage share (from  $v_1$  to  $v_2$ ). This time, however, the initiating change comes from the creation and consolidation of the incomes policy based on fear rather an increase in unemployment. As a result, the SPC and WSPC shift (from  $SPC_1$  and  $WSPC_1$  to  $SPC_2$  and  $WSPC_2$ , respectively) and the economy moves from points  $A'$  and  $A$  to points  $B'$  and  $B$ , realizing lower inflation and a lower wage share without any increase in unemployment. Recently, even neoclassical orthodoxy has (belatedly) acknowledged the importance of declining worker power as source of the low inflation and increased inequality characteristic of the neoliberal era (Stansbury and Summers, 2020; Card, 2022; Yeh et al., 2022; Azar et al., 2022).<sup>15</sup> At least some of this neoclassical literature adopts substantively different (marginalist) value-theoretic and price-theoretic foundations from those that advise the conflicting-claims inflation model developed in this paper, but the results derived are similar in substance to the analysis summarized in figure 4: the increased power of firms *vis a vis* workers in the wage bargain is essential for understanding macroeconomic outcomes over the

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<sup>14</sup>In the limit, institutionalized slack spells the ‘end’ of auction market conditions in the labour market, if employers are able to insist on trade at their offer price by successfully exploiting political mechanisms (such as increases in the number of H1B visas or ending extensions to unemployment benefits) to adjust labour supply, instead of their excess demand bidding up wages and so adjusting the quantity of labour supplied (Setterfield, 2021, p.13).

<sup>15</sup>Ratner and Sim (2022) go so far to as to claim to have developed a ‘Kaleckian’ Phillips curve based on their observation of the declining bargaining power of trade unions.



during the post-COVID recovery can be interpreted in terms of the Kaleckian conflicting-claims model developed in the previous section, and understood as emanating from three distinct sources.

First, rapid recovery from the pandemic-induced recession gave rise to tightening of the labour market that was exceptional (for the phase of the business cycle) by recent comparative standards. These conditions, coupled with ‘spontaneous collective action’ in the form of the ‘great resignation’ (Setterfield, 2022, pp.13), increased worker bargaining power and so put upward pressure on nominal wage growth and the wage share of income. This is most clearly evident during the first phase (May 2020 – March 2021) of the recovery, as described in the third row of table 2.<sup>16</sup> Although there is no evidence in the third row of table 2 of these events having an immediate impact on inflation, it is reasonable to suppose that the increased growth in wage costs has contributed to elevated inflation during the post-COVID recovery period as a whole. This sequence of events – emanating from demand pressure in the labour market – is illustrated in figure 5, where reduction in the rate of unemployment from  $U_1$  to  $U_2$  is associated with an increase in worker bargaining power that elevates  $\mu$  from  $\mu_1$  to  $\mu_2$ , increasing the steady-state rate of inflation and wage share from  $\hat{p}_1$  and  $v_1$  to  $\hat{p}_2$  and  $v_2$ , respectively. These events are summarized by movement along the standard Phillips curve  $SPC_2$  from  $B'$  to  $C'$ , and simultaneous movement along the wage-share Phillips curve  $WSPC_2$  from point  $B$  to  $C$ .

A critical feature of the analysis to this point, which focuses on events in the labour market causing the onset of higher inflation, is that other things remained equal. But this would not be an appropriate characterization of the post-COVID recovery, during which, other factors have emerged that have affected – indeed, come to dominate – the determination

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<sup>16</sup>Recall that inflationary wage pressure is less evident during the second phase of the post-COVID recovery, from April 2021 – May 2022. As noted by Setterfield (2022, p.13), this is a reminder of the continued structural weakness of labour in the US economy, and concomitant absence of conditions conducive to the emergence of a robust and self-perpetuating wage-price inflationary spiral.

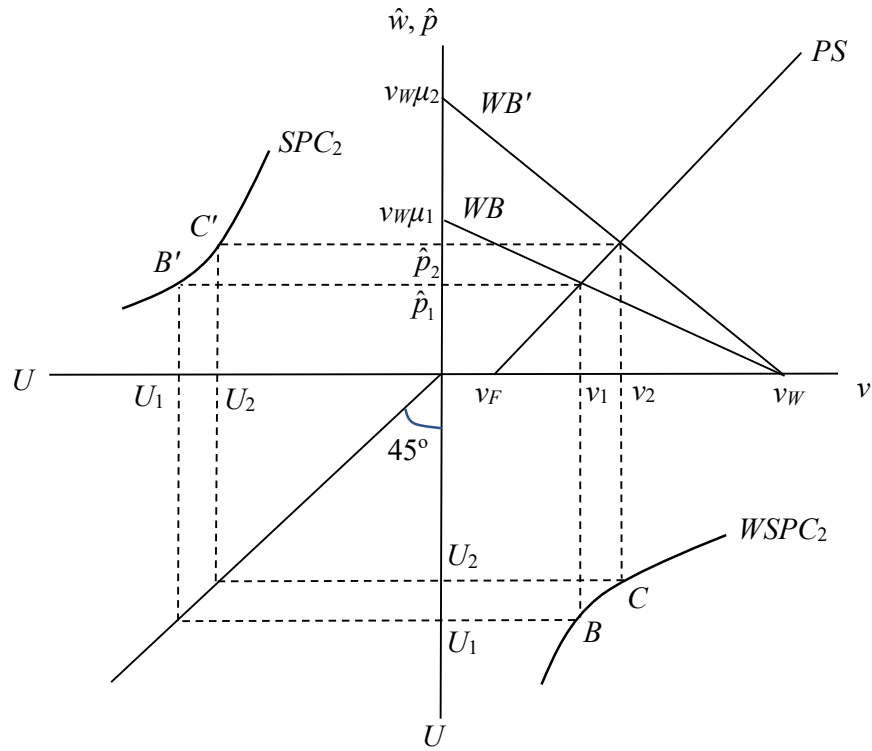


Figure 5: Labour market pressure and inflation during the early stages of the post-COVID recovery

of inflation. Hence a second source of inflationary pressure has arisen from recurrent supply shocks, associated with: global supply chain problems (repeated pandemic-related lockdowns in China, bottlenecks at major ports such as Long Beach, CA, and local interruptions to production and distribution caused by COVID-related illness among an inadequately vaccinated domestic population); and spikes in global food and energy prices caused by the Russian invasion of Ukraine and the response of the international community to this invasion (Storm 2022, pp.14-20; Nersisyan and Wray 2022, pp.30-32). In terms of the model developed in the previous section, any such supply shock will result in  $\eta > 0$  following which we will observe  $\varepsilon > 0$  for some discrete period. In this situation, we have  $\hat{w} = \hat{p}_F \Rightarrow v = v^*$ , but this last outcome is only a ‘conditional’ or ‘provisional’ equilibrium,<sup>17</sup> because:

$$\hat{p}_F < \hat{p} = \hat{p}_F + \varepsilon$$

and hence:

$$\dot{v} = \frac{v}{\omega} \dot{\omega} = v(\hat{w} - \hat{p}) = -v\varepsilon < 0$$

In other words, distributional outcomes captured at any given point in time now represent only a ‘snapshot’ of an ongoing redistributive process, as a result of which the wage share will continue to atrophy as long as the supply shock persists ( $\varepsilon > 0$ ).<sup>18</sup> The provisional equilibrium outcome so-described – together with its attendant elevation of the rate of inflation ( $\hat{p} > \hat{p}_F$ ) – is illustrated in figure 6, where in keeping with the notion of provisional equilibrium,  $v_2$  now represents a transitional value.<sup>19</sup> Meanwhile, the rate of inflation ‘inher-

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<sup>17</sup>Following Setterfield (1997, p.84), a provisional or conditional equilibrium refers to a “state of rest brought about by [...] temporary suspension of [some of the] forces of change endogenous to a system ... [and that] await[s] subsequent redefinition by forces endogenous to the sequential progression of the economy through historical time”. See also Chick and Caserta (1997, p.225) and, for more recent discussion of this concept in macrodynamics, Gallo and Setterfield (2022).

<sup>18</sup>The reader is referred to appendix A for analysis of steady state outcomes following the dissipation of the once over (but persistent) shock described here.

<sup>19</sup>The reader is again referred to appendix A for fuller analysis of the transition that  $v$  is undergoing and its associated steady-state outcome.

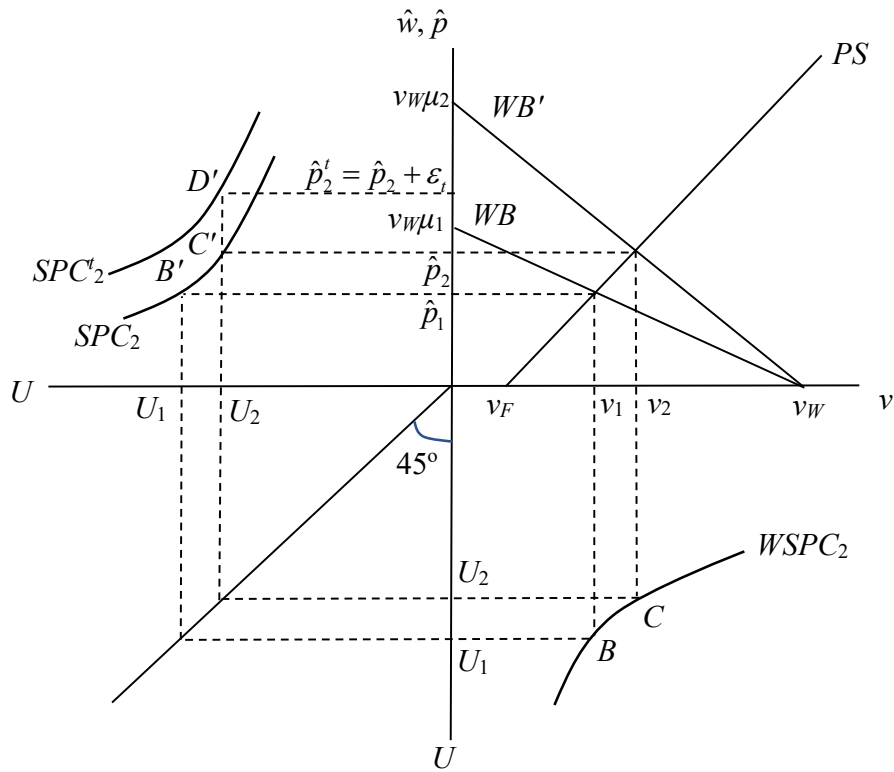


Figure 6: Post-COVID inflation: the contribution of supply shocks

ited' from the process described in figure 5 ( $\hat{p}_2$ ) is now augmented by the value of  $\varepsilon$  at any point in time, resulting in a higher rate of inflation at this same point in time ( $\hat{p}_2^t = \hat{p}_2 + \varepsilon_t$ ) associated with the unchanged rate of unemployment  $U_2$ . These developments are captured by movement from point  $C'$  to point  $D'$  as the SPC shifts from  $SPC_2$  to  $SPC_2^t$ .

Finally, a third source of inflationary pressure has been corporate price-setting behaviour in the wake of the cost-based inflation arising from the first two sources (see also Nersisyan and Wray, 2022, pp.25-30). Reference has already been made to the distinction between Hicksian fix and flex price markets that underlies the structure of the Kaleckian model developed in section 3. In order to properly develop and understand corporate price-setting behaviour as a third source of inflationary pressure during the post-COVID recovery, we need

to more thoroughly explore the theory of administered pricing that the model associates with intended inflation resulting from Hicksian fix price markets.<sup>20</sup> Since the introduction of the ‘full-cost rule’ by Hall and Hitch (1939), the establishment by firms of a suitable mark up over average costs (however defined) has been associated with ‘fairness’ (as perceived by customers) and industrial concentration (or what Kalecki referred to as the ‘degree of monopoly’).<sup>21</sup> Consistent with these price-theoretic foundations, the argument here is that in the course of the post-COVID recovery, firms have encountered a ‘permissive’ pricing environment in which they have been able to exploit increased corporate concentration by increasing mark ups, and so inflate prices independently of the pass-through effects associated with rising costs.

There are three elements to this argument. First, and as is well known, corporate concentration in the US economy has increased in recent decades (Baker, 2019; Philippon, 2019; Eeckhout, 2021). Second, this increased concentration has affected both pass-through (of cost increases into price increases) and markup-setting behaviour during the post-COVID recovery. As regards the former, Bräuning et al. (2022) show that pass-through rises with concentration, the increase in concentration since the turn of the millennium having created a 25 percentage point increase in the size of this pass-through effect. With regard to the latter, recall the findings of Konczal and Lusiani (2022) discussed in the previous section, which document a sudden and large increase in markups during 2021 among firms in the

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<sup>20</sup>As noted by Robinson (1979, p.41), inflation being (by definition) the steady growth of the general price level, any theory of inflation should be properly rooted in a theory of prices.

<sup>21</sup>See Lavoie (2014, chpt. 3) for further discussion. Kalecki extended concern with fairness considerations to the labour market given the connection between the mark up and the wage share of income – which extension is foundational to the conflicting-claims model of inflation that is central to this paper.

With respect to the continued prevalence of fairness considerations in the goods market, it is worth noting the recent advice to small businesses in *The Guardian* newspaper (‘US inflation isn’t going away. Small businesses must plan ahead,’ *The Guardian*, Sunday August 14th, 2022 ([www.theguardian.com/business/2022/aug/14/us-inflation-prices-small-business](http://www.theguardian.com/business/2022/aug/14/us-inflation-prices-small-business)): “So what to do if you’re a small business? ... You raise prices discriminately and carefully. You communicate frequently with your customers ...” This is consistent with the notion of the consumer as a ‘participant’ in pricing decisions due to the importance of fairness in pricing behaviour and hence (by extension) price *dynamics*.



upper tail of the markup distribution – which the authors interpret as evidence of a role for corporate product market power as a key driver of the surge in inflation after April 2021. Supportive of this interpretation is the finding of Bivens (2022), that increases in profit margins accounted for 53.9% of the increase in prices since the second quarter of 2020, as opposed to just 11.4% of the increase during the period 1979-2019.<sup>22</sup>

But given that concentration has been increasing in the US for several decades, why has it only become a source of increased inflationary pressure during the post-COVID recovery? This brings us to the third and final element of the argument developed here: the ‘permissive’ pricing environment created by the first two sources of inflationary pressure (emanating from the labour market and supply shocks) outlined earlier. In keeping with the theory of administered pricing, these have relaxed the ‘fairness constraint’ on corporate pricing behaviour, by creating sources of cost-based price increases that provide ‘camouflage’ for firms, allowing them to increase markups (and hence prices) under the guise that they are ‘merely’ passing through cost increases – which behaviour in and of itself (as originally noted by Hall and Hitch, 1939) is considered ‘fair’ by customers. In other words, many US corporations have long had sufficient monopoly power to raise markups, but their ability to act on this monopoly power has been constrained by fairness considerations – until this constraint was relaxed in the permissive pricing environment of the post-COVID recovery. Once cost increases emanating from the labour market and/or supply shocks put upward pressure on prices, the path became clear for further price increases (via markup growth) without the latter appearing to violate fairness considerations in price setting behaviour: to all outward appearances, firms were doing no more than passing through cost increases. At this point, then, the previously *latent* effect of increased corporate monopoly power on

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<sup>22</sup>Bivens (2022) also shows that unit labour costs have contributed less than 8% to the rise in prices since 2020 QII, as compared to 61.8% during the period 1979-2019. This provides insight into the relative importance of two of the three sources of inflationary pressure identified in the account of inflation during the post-COVID recovery in this paper.

pricing behaviour became *manifest*, in the form of aggressively-rising markups (again, see Konczal and Lusiani, 2022). This account is consistent with the stylized facts in the final row of table 2, which show prices rising faster than average nominal wages, to an extent that has not only lowered the real wage but also reduced the wage share of income, during the second phase of the post-COVID recovery from April 2021 – May 2020.

These events are illustrated in figure 7, where an increase in  $\phi$ , causing the  $PS$  schedule to rotate anti-clockwise to  $PS'$ , captures the manifestation of the previously-latent effect of firms' increased market power on pricing behaviour. The result is an increase in the steady-state rate of inflation to  $\hat{p}_3$  and a decline in the (provisional equilibrium) wage share to  $v_3$ . Both of these outcomes are coincident with an unchanged rate of unemployment,  $U_2$ . As a result – and bearing in mind that we are still evaluating outcomes in period  $t$  in accordance with the value of the persistent shock  $\varepsilon_t$  – the actual rate of inflation rises to  $\hat{p}_3^t$  and the economy arrives at point  $E'$ , consistent with a shift in the standard Phillips curve to  $SPC_3^t$ . Meanwhile, the reduction in the wage share to  $v_3$  at the (unchanged) unemployment rate  $U_2$  shifts the wage share Phillips curve to  $WSPC_3$ , although the WSPC will continue to shift left in subsequent periods for the reasons discussed earlier:  $v_3$  is a provisional equilibrium, and the wage share will continue to atrophy as long as  $\varepsilon > 0$ . This last observation draws attention to an important characteristic of the second and third sources of inflationary pressure outlined above: both serve to redistribute income away from wage earners, imposing a further adverse redistribution on precisely the same group that, per figure 4 and the workings of the neoliberal incomes policy based on fear, consistently lost out to real income stagnation and rising inequality during the 3-4 decades prior to the COVID-19 pandemic.

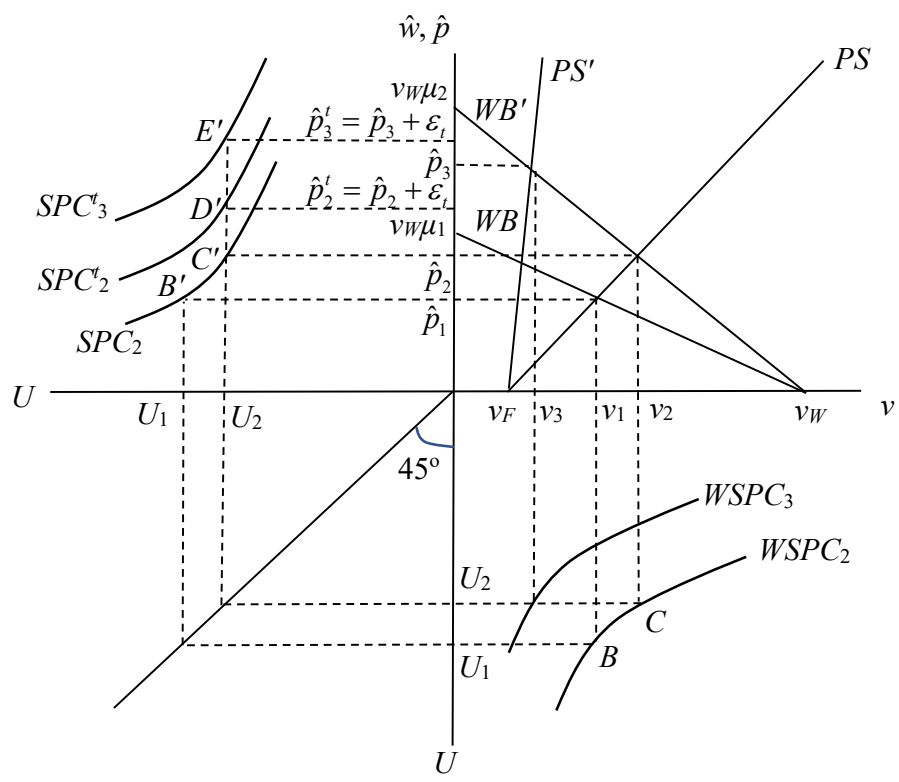


Figure 7: Concentration, rising mark-ups, and post-COVID inflation

## 5. Conclusions

Advised by the stylised facts of the period since 1990 and, in particular, the first two years of the post-COVID recovery, this paper provides a Kaleckian account of the ‘surge’ in inflation in the US economy that began in spring 2021. Three sources of inflationary pressure are identified, arising from: (i) an unusually tight labour market; (ii) persistent supply shocks; and (iii) changes in corporate price setting behaviour facilitated by the ‘permissive’ pricing environment created by the first two sources of inflationary pressure, but caused by increased concentration (and hence corporate power in the goods market) in recent decades. The result is an inflationary episode that is, in general, marked by distributional outcomes that are disadvantageous to workers, as reflected in the decline in real wages and the wage share of income during the first two years of the post-COVID recovery. In this respect, the post-COVID recovery is very much of a piece with the general characteristics of the functioning of the US economy over the past 40 years, during which time real wage stagnation affecting the majority of working households has been an important contributor to burgeoning income inequality.

These observations invite reflections on the political economy and policy implications of inflation during the post-COVID recovery. As regards the former, Paul Krugman has opined that with inflation during the post-COVID recovery no worse than it was c.1984 (when Ronald Reagan was on the cusp of a landslide re-election victory resulting, in part, from popular approval of US economic performance), much of the public approbation of US economic performance during the post-COVID recovery can be associated with ‘media narrative’.<sup>23</sup> The analysis in this paper suggests a different view, according to which the approbation arises from the fact that US working households, already ravaged by forty years of increasing inequality, are now confronting yet another adverse redistribution. In the mid-

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<sup>23</sup>“Inflation and the power of narrative,” *The New York Times*, January 25, 2022.

1980s, an adverse redistribution of similar size may have been of little consequence – in much the same way that a person standing 300 yards from a cliff edge might raise little objection to being moved 6 inches closer to the edge. But in the current context, the same adverse redistribution will raise alarm – much as a person who has slowly been moved to within 3 feet of a cliff edge will likely react with alarm if they are then pushed another 6 inches closer to the edge. In other words, even as households blame inflation for hardships that are actually attributable to changes in the ‘internal terms of trade’ against labour (rather than inflation *per se*), it is the cumulative impact of increased inequality (more so than media narrative) that makes ‘this time different’.

On this interpretation, public furore over inflation during the post-COVID recovery is testament to the lack of *resilience* that has been ‘baked into’ the US economy by decades of increasing income inequality. As argued by Setterfield (2022), neoliberalism is ill-equipped to deal equitably or efficiently with exogenous shocks of the sort imposed on the economy by the COVID-19 pandemic and its aftermath. Many of the problems that have surfaced during the post-COVID recovery can be traced to structural flaws that are now endemic to the US economy: workers who are too weak to protect the real wage; enfeebled anti-trust law and/or enforcement thereof; and the pitiful failure of vision when it comes to the role of the state and policy intervention in the economy. With respect to the latter, it would be possible to use mid-twentieth century technology to do a better job of responding to various of the short-term trials and tribulations associated with the post-COVID recovery. For example, a net-surplus-creating (and therefore non-stimulatory) redistributive fiscal policy could be used to protect workers’ (after-tax) real incomes, while targeted use of price controls and quantity rationing might address supply chain problems. Instead, the role of the state is reduced to ‘monetary policy dominance’ and workers are confronted once again with the prospect of the ‘cold bath’ they experienced during the 1980s: higher interest rates designed to rein in nominal wage increases by ‘disciplining’ workers, who will encounter higher unemployment

to go along with their recent experience of real wage losses.<sup>24</sup> Meanwhile, the political class can only wonder at the rise of the far right and its concomitant threats to the very fabric of society.

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<sup>24</sup>Such policies are often justified by the necessity of eliminating inflation before it inevitably worsens. But as Marglin (2021, p.769) notes, “ I have never read a convincing defense of the argument that inflation is like pregnancy: there can be no such thing as a little bit, and initially modest rates of inflation, if not nipped in the bud, will escalate into hyperinflation”. Charles et al. (2021) provide an analysis of inflation, consistent with the Kaleckian approach in this paper, that describes discrete inflation ‘regimes’ and the absence of any inevitable movement between them.

## Appendix A Post-shock steady-state outcomes

Suppose  $\eta > 0$  in some initial period, following which we will observe  $\varepsilon > 0$  persistently. Hence as previously noted, the  $\hat{p}_2$  and  $v_2$  in figure 6 are provisional equilibria, because  $\hat{p}_F = \hat{p}_2 < \hat{p}_2 + \varepsilon = \hat{p}$ , so that  $\hat{w} = \hat{p}_F < \hat{p} \Rightarrow \dot{v} = \frac{v}{\omega} \dot{\omega} = v(\hat{w} - \hat{p}) = -v\varepsilon < 0$ .

But in the limit we will observe  $\varepsilon = 0$  since  $\lim_{t \rightarrow \infty} \varepsilon = 0$ . Hence in the limit, and with  $U = U_2$  unchanged, we have  $\hat{p} = \hat{p}_F = \hat{p}_2$  but  $v < v_2$ , since the wage share has been atrophied by the persistence of the supply shock. This outcome is illustrated in figure 8. As is evident from figure 8, in the steady state the economy is back at point  $C'$  on  $SPC_2$ , but is now at point  $D$  on  $WSPC_3$  consistent with  $v_3 < v_2$ . Note that we may or may not observe  $v_3 < v_1$  as depicted in figure 8, but will necessarily observe  $v_3 < v_2$  consistent with the fact that, since  $\dot{v} = -\omega\varepsilon$  when  $\varepsilon \neq 0$  during the transition to the steady state, we have:

$$v_3 = v_2 - \int_{t=1}^{\infty} v\varepsilon dt$$

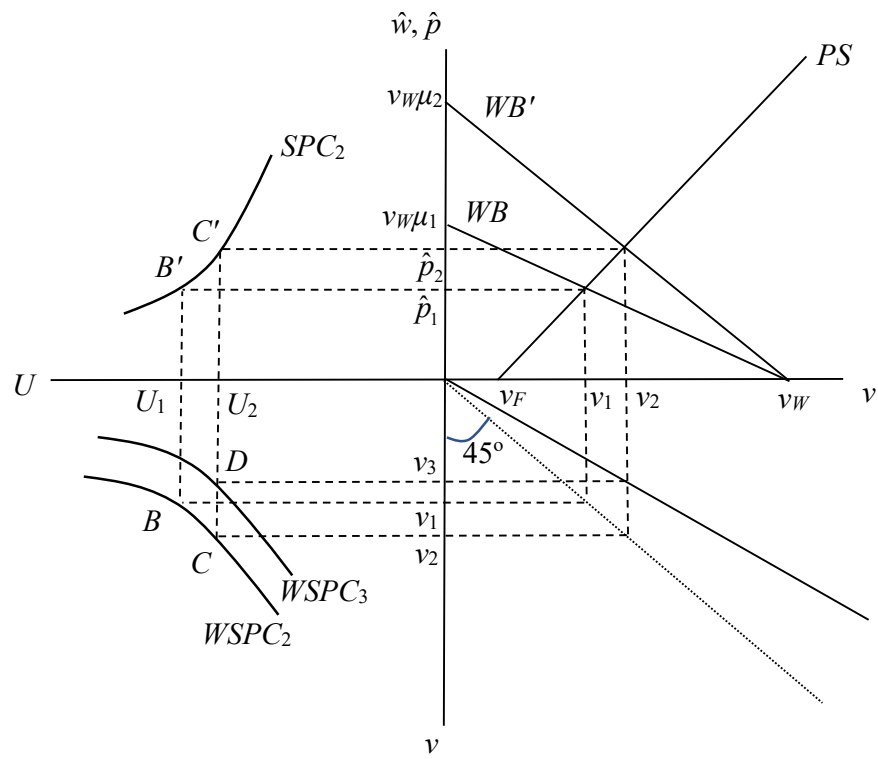


Figure 8: Post-shock steady state outcomes



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## Imprint

### Publisher

Macroeconomic Policy Institute (IMK) of Hans-Böckler-Foundation, Georg-Glock-Str. 18,  
40474 Düsseldorf, Contact: [fmf@boeckler.de](mailto:fmf@boeckler.de), <https://www.fmf-macro.net>

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ISSN 2512-8655



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