

# Post-Keynesian theory of inflation

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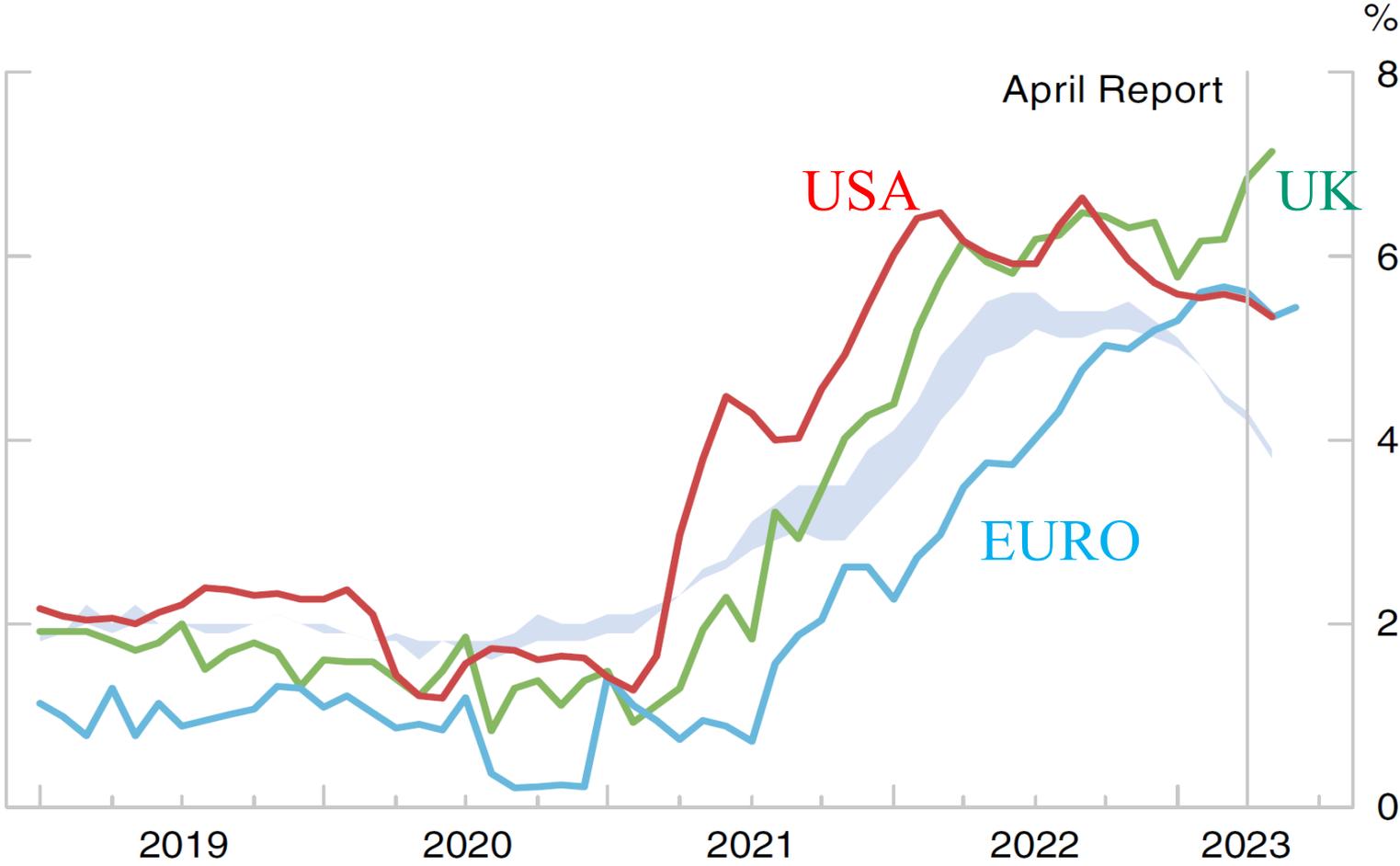


# Inflation back in the vanguard

- 1979.... PK inflation, the topic of my job interview for UofO
- 1985, a French article on inflation, recessions and Keynes
- .....
- This is my sixth presentation about inflation in 2022-2023

# CPI inflation: The same nearly everywhere

a. Core inflation, year-over-year percentage change



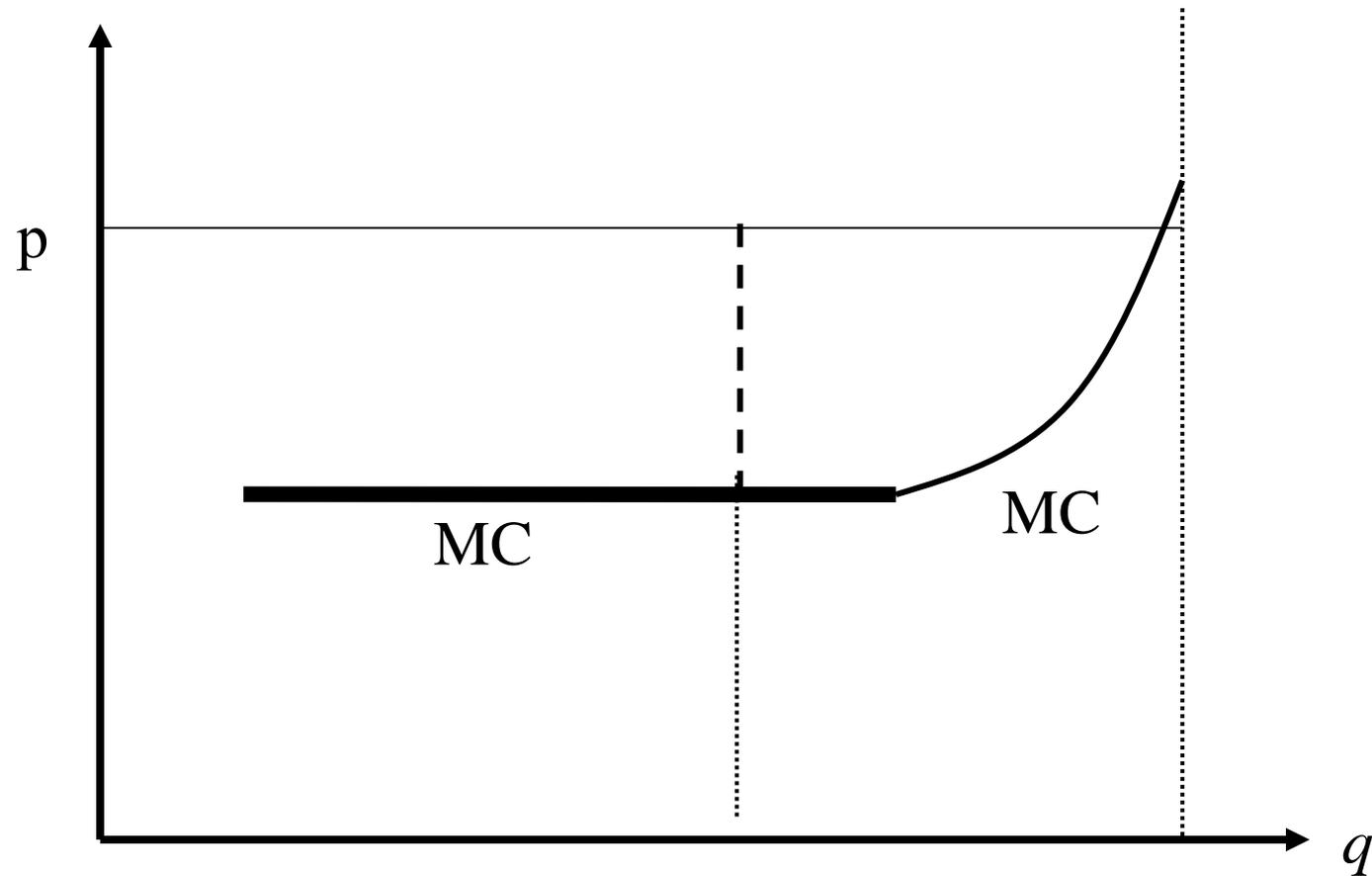
# PK inflation theory in a nutshell

- Three main possible causes of inflation
  - A) **Conflictual inflation** (over relative income shares)
    - A conflict between workers and firms (fairness A1) or with rentiers
    - Wage-wage inflation – keeping up one's rank in the wage hierarchy (relative fairness A2)
  - B) **Imported inflation** – arising from the rise in the prices of raw materials, the prices of which are determined by supply/demand on world markets, or arising from depreciation of the exchange rate (international income share conflict): ***A trilateral conflict of interest exists between workers, industrialists, and raw materials producers*** (Sylos-Labini 1979)
  - C) **A mitigated role for aggregate demand** – as measured by the rate of growth, the share of investment, the rate of capacity utilization, the rate of unemployment, or the change in the rate of unemployment

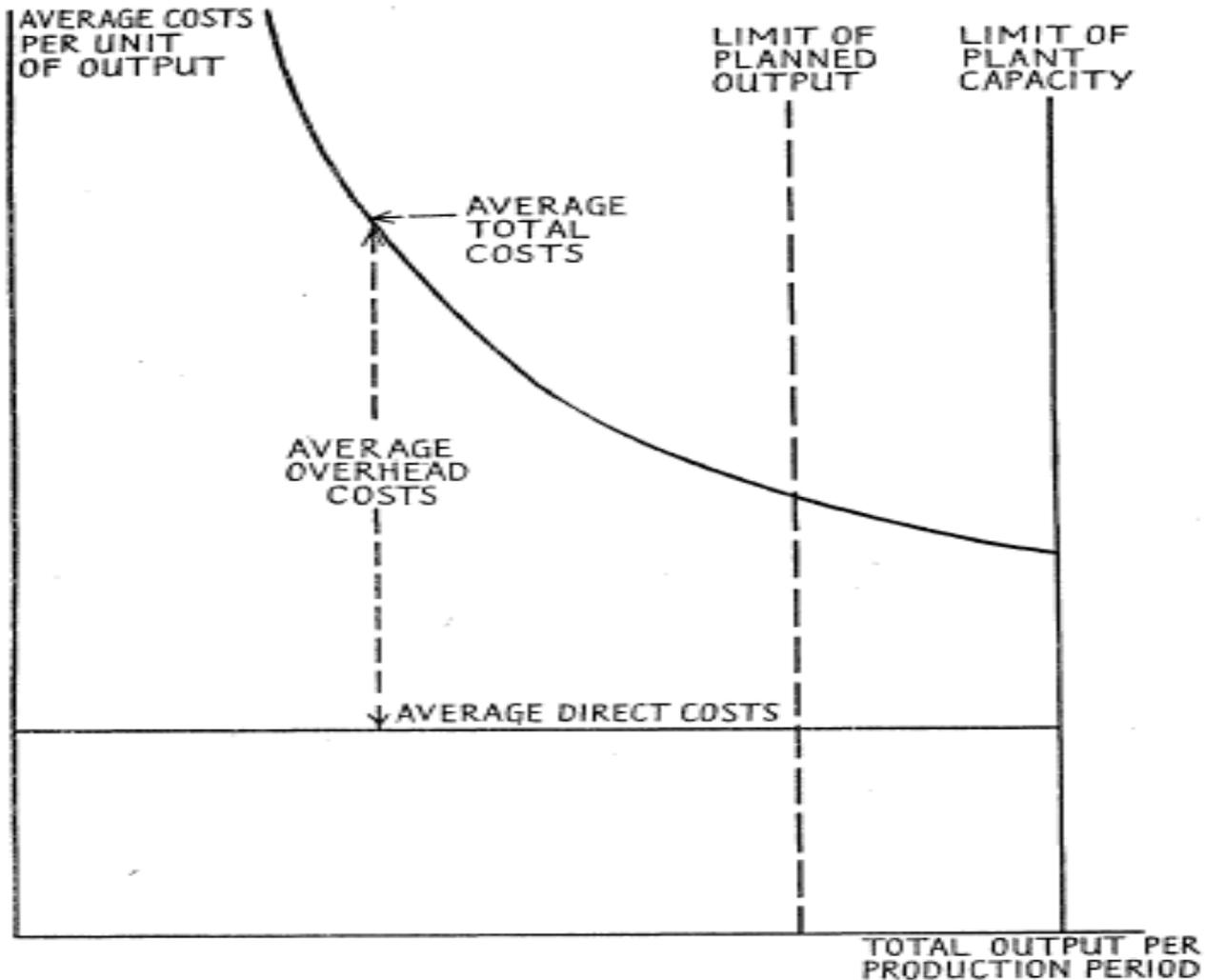
# PK inflation theory is Kaleckian

- *Generally speaking, changes in the prices of finished goods are ‘cost-determined’ while changes in the prices of raw materials inclusive of primary foodstuffs are ‘demand-determined’. The prices of finished goods are affected, of course, by any ‘demand-determined’ changes in the prices of raw materials but it is through the channel of costs that this influence is transmitted . . .*
- *The production of finished goods is elastic as a result of existing reserves of productive capacity. When demand increases it is met mainly by an increase in the volume of production while prices tend to remain stable . . .*
- *The situation with respect to raw materials is different . . . With supply inelastic in short periods, an increase in demand causes a diminution of stocks and a consequent increase in price. The initial price movement may be enhanced by the addition of a **speculative element**. The commodities in question are normally standardized and are subject to quotation at commodity exchanges. A primary rise in demand which causes an increase in prices is frequently accompanied by **secondary speculative demand**.*  
(Kalecki 1971, pp. 43–4)

# Cost curves of finished goods: Kalecki 1939 (1969)



# Andrews' depiction in 1949



# Domestic demand vs world demand

- ‘Primary commodity prices reflect conditions in world markets’ (Bloch et al., 2004, p. 525).
- Monetary authorities have no or little control over one of the main sources of price inflation in a country – the rising cost of raw materials, since the inflation rate of commodity prices depends on world demand for commodities and not on domestic demand, as argued already by Kaldor (1976).
- Perry and Cline (2016) show that falling commodity prices have been a major cause of the ‘great moderation’ in inflation in the USA since the early 1990s, while monetary policy played virtually no role.
- Stable inflation (until recently) was not really the result of improvements in orthodox macroeconomic and monetary theories and policies!

# Inductive causes of inflation

- **Fairness** (pay norms, equity, justice) vs Market forces (anomic world) Wood 1978
  - Real-wage resistance (Hicks 1975), real-wage targets (Godley and Cripps 1976, CEPG)
    - Profit share too high (Kaldor 1959, 1982, Hicks 1975, Kalecki 1971)
  - Relative wage (Keynes 1936, p. 14), Robinson (1962, p. 70), Kahn 1958 (1972, p. 142)
- **Information**
  - Davidson, 1972, p. 344: *The increasingly readily information on the earnings of others ... has created pressures which make wage-price inflation the most dangerous of current economic problems.*
  - Cf Adrian Wood, *A Theory of Pay*, (1978)
  - Examples: salaries of top executives; ice hockey players

# Contrast with the mainstream view

- A) the wage setting-price setting WS/PS model (Blanchard, Layard-Nickell, OECD, Carlin-Soskice)
- B) supply shocks
- C) demand shocks
  - Excess money supply  $PQ = MV$
  - Excess government expenditure
  - Excess government deficits
  - Rising inflation expectations
  - The vertical Phillips curve and its NAIRU

# WS/PS: Blanchard in Brancaccio, ROPE 2019

- *I have always seen the level of unemployment as reflecting in part a distributive struggle between workers and companies. Workers want wages to match what they need to spend and firms want to set prices based on the wages they have to pay. Everyone wants more. How can this conflict be resolved? My thesis is that, unfortunately, it is partly resolved through unemployment, which increases to the point where workers' wage demands match what companies are willing to pay.*

# Rejection of the Monetarist view

- There is indeed a correlation between the level of prices and the stock of money (or between the rate of price inflation and the growth rate of money. BUT:
- There is **reversed** causality:
  - The rise in prices causes the increase in the stock of money
  - The money supply is endogenous
- The key however is credit creation, which may generate increases in economic activity, prices of goods, financial asset and real estate prices, futures prices

# Outline

- Background
- Modeling within a closed economy
  - The Dutt approach to conflictual inflation
  - Wage-wage inflation with productivity increases
  - The Phillips curve
    - Dutt approach with unemployment
    - The Hein-Stockhammer NAIRU approach
- Modeling within an open economy
  - Imported materials
  - High and hyper inflation

# **SOME BACKGROUND**

# Conflictual inflation everywhere

- All important earlier PK works emphasized conflictual inflation
  - Joan Robinson (the inflation barrier), 1956
  - Eichner and Kregel, *JEL* 1975
  - Paul Davidson, *Money in the Real World*, 1972
  - Adrian Wood, *A Theory of Pay*, 1978
  - John Cornwall, *Conditions for Economic Recovery*, 1983
  - Malcolm Sawyer, *Macroeconomics in Question*, 1985
  - Amit Bhaduri, *Macroeconomics*, 1986
  - Peter Reynolds, *Political Economy, A Synthesis of Kaleckian and Post Keynesian Economics*, 1989
  - Lance Taylor, *Income Distribution, Inflation and Growth*, 1991
  - Fernando de Carvalho, *Mr Keynes and the Post Keynesians*, 1992
  - Philip Arestis, *The Post-Keynesian Approach to Economics*, 1992
  - Marc Lavoie, *Foundations of Post-Keynesian Economic Analysis*, 1992
  - Richard Burdekin + Paul Burkett, *Distributional Conflict and Inflation*, 1996
  - Thomas Palley, *Post Keynesian Economics*, 1996

# Joan Robinson, *The Accumulation of Capital*, 1956

- *There is then a head-on conflict between the desire of entrepreneurs to invest and the refusal of the system to accept the level of real wages which the investment entails; something must give way....A rise in money-wage rates increases money expenditure, so that the vicious spiral of money wages chasing prices sets in. (p. 48)*
- Bhaduri 1986, p. 188: *This generates conflict rather than co-operation among the classes which expresses itself through the inflationary process....This pushes the capitalist economy towards inflation not only through the operation of an inflationary barrier....*

# Conflict inflation in the 1970s

- *The distribution of income is both a cause and a consequences of inflationary processes.... Inflation may be the result of some economic groups attempting to increase their share in the total real income of the economy. The aim of these groups may be to obtain a larger share of the current claims on resources. (P. Davidson 1972, p. 347-8)*
- Alfred Eichner and Jan Kregel (1975, p. 1308) argue in their survey of post-Keynesian economics that ***'at the heart of the inflationary process is the question of relative income distribution'***.
- *The working class can shift distribution in its favour by fighting more vigourously for higher wages, although the cost of such militancy is a faster rate of inflation, as capitalists try, with only partial success, to protect themselves by raising prices. (Rowthorn 1977, p. 179)*

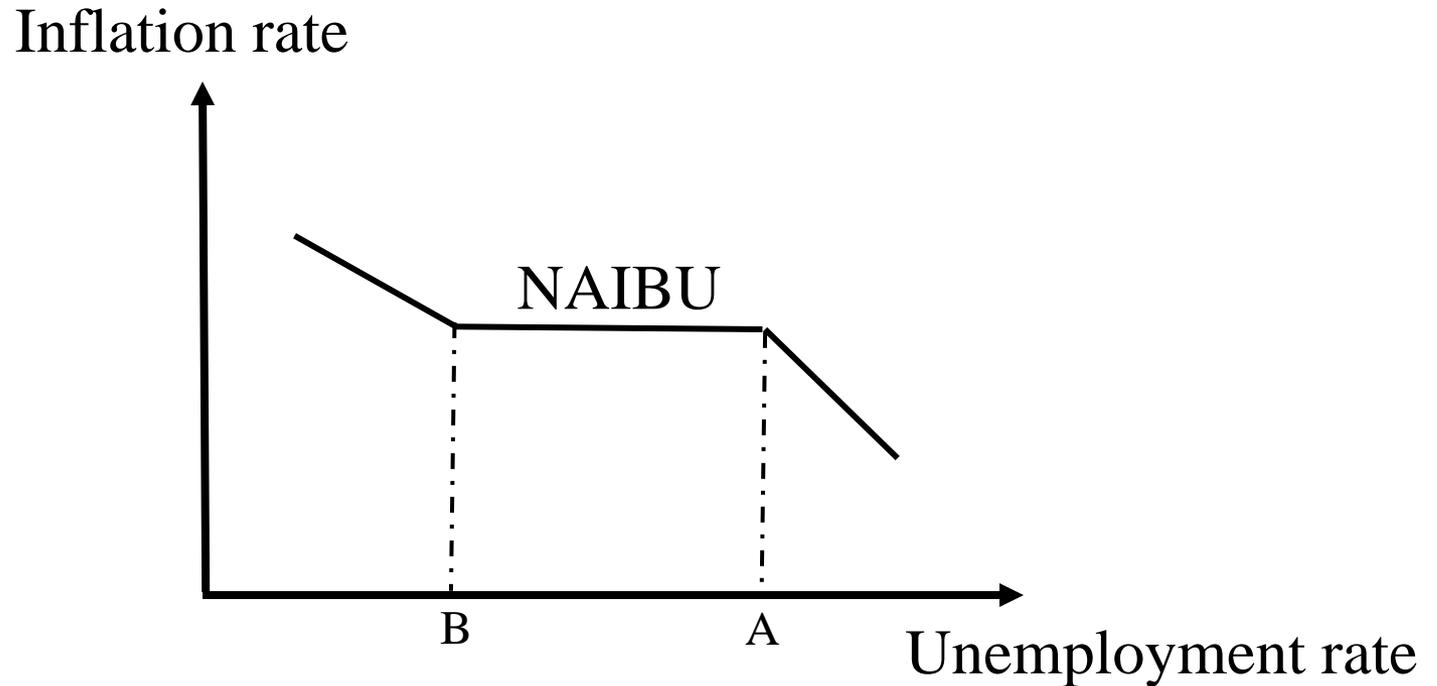
# Conflict inflation in the 1980s-1990s

- *The view of inflation often described as a ‘**conflict theory of inflation**’ could be seen as a development of Kalecki’s ideas.* (Sawyer, 1985, p. 285)
- *In an almost tautological sense, **inflation should be seen as a process of conflict over income shares.*** (Cardim de Carvalho, 1992, p. 193)
- ***Inflation is the symptom of deep-rooted social and economic contradiction and conflict.** There is no real equilibrium path. The major economic groups are claiming pieces of pie that together exceed the whole pie. Inflation is the way that their claims, so far as they are expressed in nominal terms, are temporarily reconciled. But it will continue and indeed accelerate so long as the basic conflicts of real claims and real power continue.* (Burdekin and Burkett, 1996, p. 1)

# A flat Phillips curve

- Cripps 1977, p. 110: *Excess demand provides at most only a minor component of a comprehensive explanation.*
- Cornwall 1983, p. 78: *There are markets which never clear in the sense that situations of excess demand and supply do not generate wage and price changes of any kind.... This theory gives rise to horizontal short- and long-run Phillips curve.*
- *I do not accept that it is a foregone conclusion that inflation rates will be higher if unemployment is lower (Godley 1983, p. 170)*
- There is a middle segment of the Phillips curve which is flat: Hein 2002, Freedman/Harcourt/Kriesler 2004, Fontana and Palacio-Vera 2007, Kriesler and Lavoie 2007, Herr, 2009
- Lipsey 2016: non-inflationary band of unemployment (NAIBU)
- Many empirical studies (mainstream and PK) now show this.
- Structural feature of the economy or ability of central bank to fix the inflation expectations of agents?

# Flat segment of the Phillips curve



# The elementary post-Keynesian view of inflation (Weintraub 1978, Moore 1979)

- $p = (1 + m)w/\lambda$  (1)
- where  $w$  is the nominal wage rate,  $\lambda$  is the constant labour productivity and  $m$  is the percentage markup over unit costs. In growth terms, and with the carret signifying the growth rate of a variable, we can determine that the rate of price inflation is equal to the sum of three terms, denoting in order to simplify the computations that
- $\kappa = (1 + m)$
- The rate of price inflation is thus equal to :
- $\hat{p} = \hat{\kappa} + (\hat{w} - \hat{\lambda})$  (2)

# Two possible sources of inflation

- We can thus identify two possible sources of inflation:
  - (i) **an increase in the profit margins of firms**, either tied to the monopoly position of some firms or as a response to the strong aggregate demand;
  - (ii) **a rate of increase in nominal wages** which is faster than that of labour productivity;
- But what if  $\kappa$  turns out to be a constant (as in Weintraub 1978, the magic 2)? Does it mean that only wages are responsible for inflation?
- *The mutual feedback between prices and money wages clearly makes it meaningless to single out either as the causal factor* (Bhaduri 1986, p. 187)

# The irony

- Left-wing post-Keynesians tend or tended to blame unions for generating wage increases that exceed productivity growth, thus leading to price inflation.
  - *The long run stability or instability of prices will depend on the strength of the upward trend of the wage-unit (or, more precisely, of the cost-unit) compared with the rate of increase in the efficiency of the productive system (Keynes 1936, p. 309).*
- Mainstream authors by contrast tend to blame the central bank for creating an excess supply of money or tend to blame governments for excessive deficits, both of which are said to result in excess aggregate demand and hence in inflation or rising inflation,

# MMT responsible for inflation (May 2019)?

IN THE SENATE OF THE UNITED STATES

Mr. PERDUE (for himself, Mr. BRAUN, Ms. ERNST, Mr. MORAN, and Mr. TILLIS) submitted the following resolution; which was referred to the Committee on \_\_\_\_\_

## RESOLUTION

Recognizing the duty of the Senate to condemn Modern Monetary Theory and recognizing that the implementation of Modern Monetary Theory would lead to higher deficits and higher inflation.

Whereas noted economists from across the political spectrum have warned that the implementation of Modern Monetary Theory (referred to in this preamble as “MMT”) would pose a clear danger to the economy of the United States;

# Profit inflation

- Compatible with the earlier 'neo-Keynesian' or Cambridge models of growth or distribution (Robinson, Kaldor, Pasinetti) or with the pricing model of Eichner/Wood when capital accumulation increases ( $r = g/s_p = \pi u_n/v$ )
- A number of PK economists also claimed that if investment activity rose faster than consumption activity, this would lead to profit inflation in the consumption sector (Weintraub, Minsky, Wray, Graziani, and also Keynes's *Treatise on Money*). Also a rise in the public deficit to GDP ratio would raise the price of consumption goods.
- Sraffians (Pivetti 1985) and others (L. Taylor 1991, Dutt and Amadeo 1993, Smithin 1996-2009, Hein 2012) have argued that increases in interest rates or more precisely in real interest rates are likely to generate profit inflation by raising the markup (also the cost of lodging goes up in the CPI)
- Profit inflation in the news today: discussed and assessed by govts, central banks, IMF, and heterodox economists (Weber and Wasner 2023).

# **MODELING CONFLICTUAL INFLATION (DUTT APPROACH)**

# Two PK traditions in modelling conflictual inflation

- There exists a NAIRU with the acceleration hypothesis: there is a relationship between unexpected inflation and the rate of unemployment
  - **Rowthorn 1977**, Stockhammer 2008, Hein and Stockhammer 2010, Hein 2023
- There is no NAIRU: there might be a relationship between the rate of inflation and the rate of unemployment:
  - **Dutt 1987**, Taylor 1985, Dalziel 1990, Sarantis 1990-91, Lavoie 1992-2014-2022, Cassetti 2003, Setterfield 2006, Blecker and Setterfield 2019, Brochier 2020

## Dutt 1987 plus (partial) indexation

$$\hat{w} = \Omega_1 (\omega_w - \omega_{-1}) + \Omega_2 \hat{p}_{-1}$$

$$\hat{p} = \Psi_1 (\omega_{-1} - \omega_f) + \Psi_2 \hat{w}$$

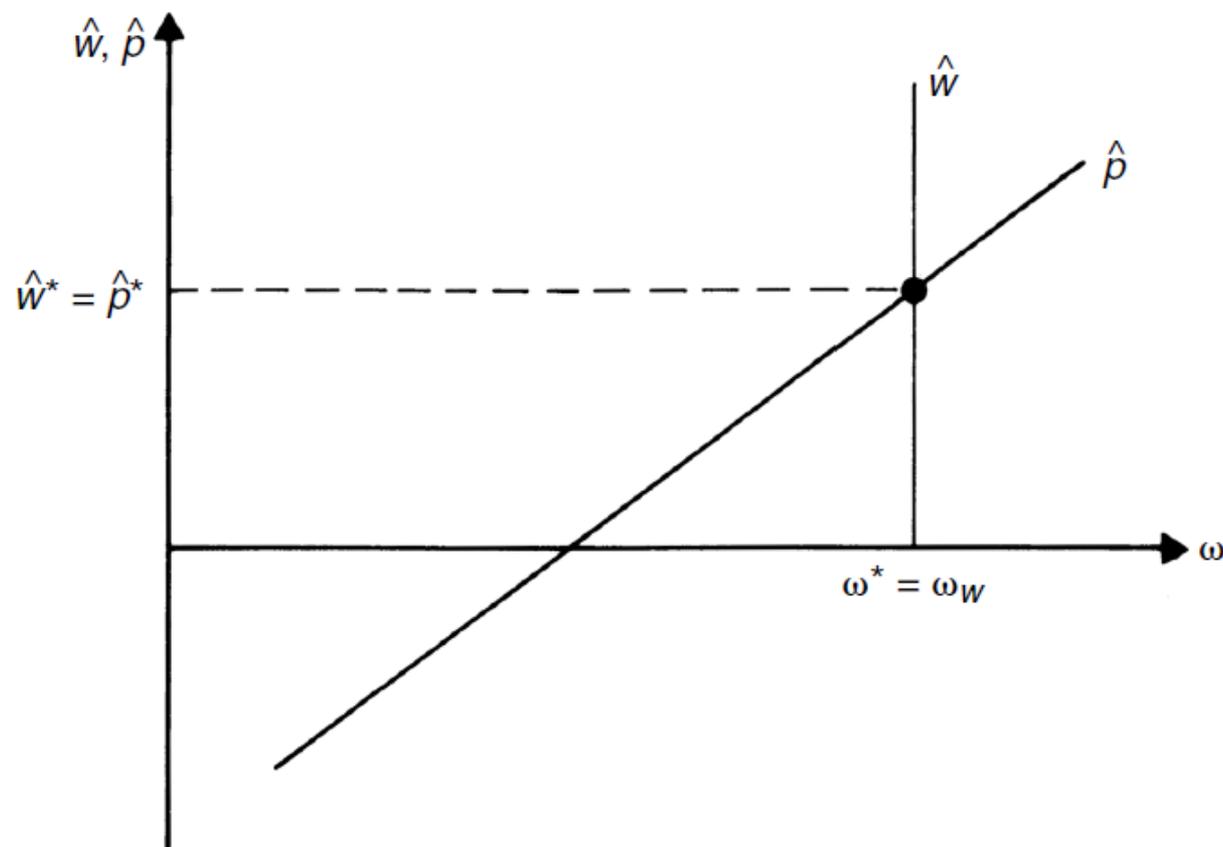
$$\omega^* = (\Omega \omega_w + \Psi \omega_f) / (\Omega + \Psi)$$

where  $\Omega = \Omega_1 / (1 - \Omega_2)$  and where  $\Psi = \Psi_1 / (1 - \Psi_2)$ .

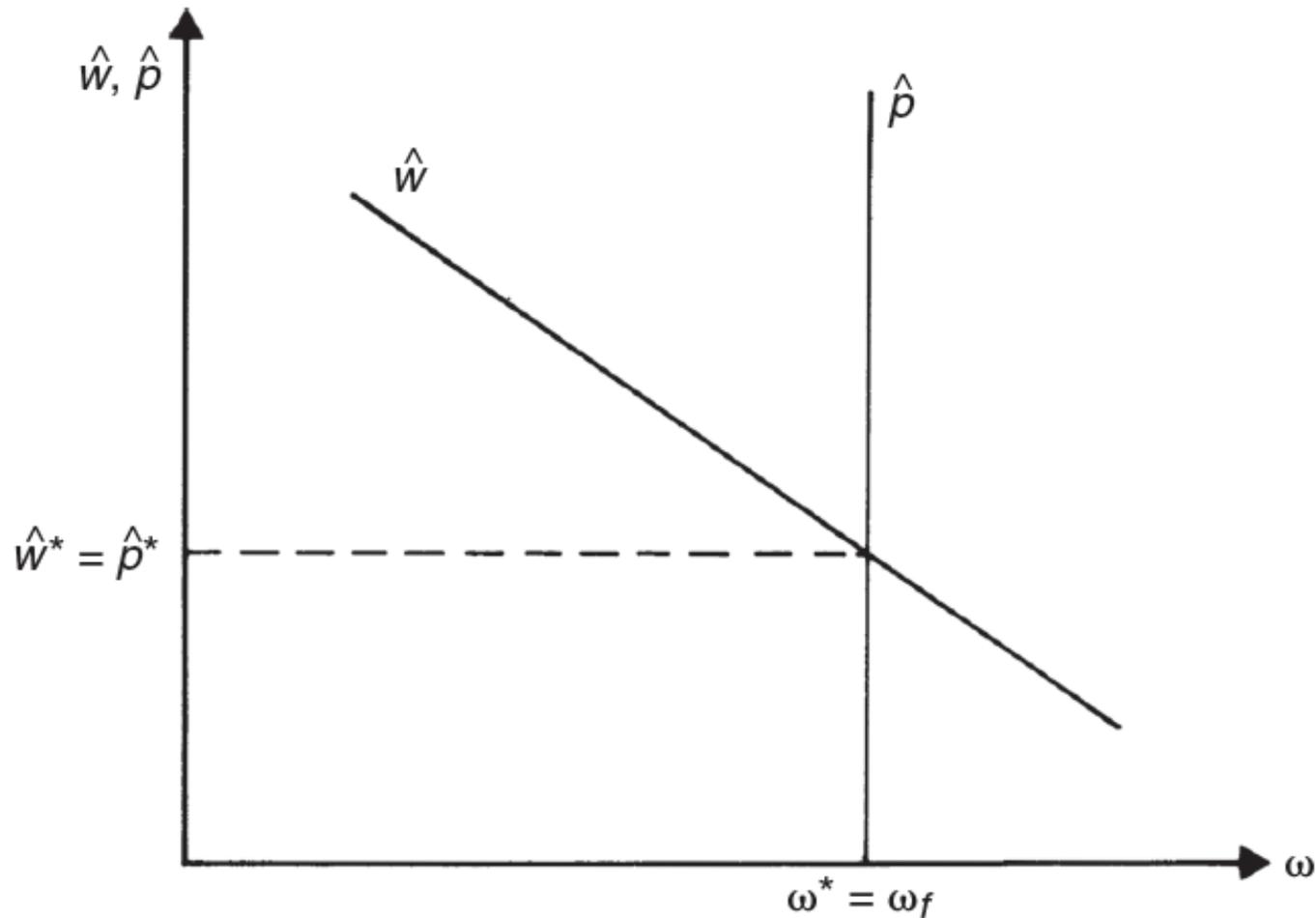
$$\hat{w} = \hat{p} = \frac{\Omega \Psi (\omega_w - \omega_f)}{\Omega + \Psi} = \frac{\Omega_1 \Psi_1 (\omega_w - \omega_f)}{\Omega_1 (1 - \Psi_2) + \Psi_1 (1 - \Omega_2)}$$

Here expressed in real wages or wage shares; alternatively could be expressed in terms of profit shares

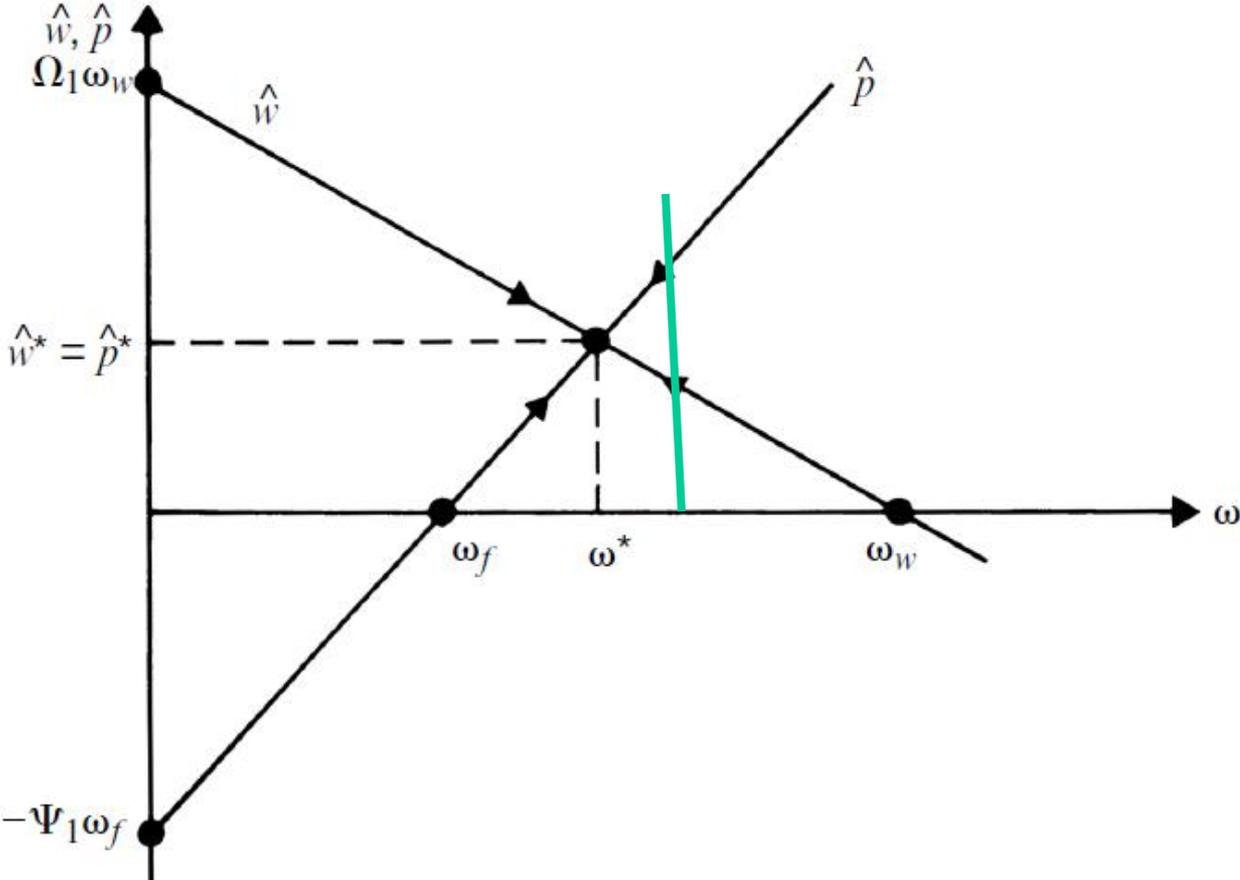
**The inflation barrier**, where ‘organised labour has the power to oppose any fall in the real-wage rate’ (Robinson, 1962, p. 58).



# Firms have absolute bargaining power



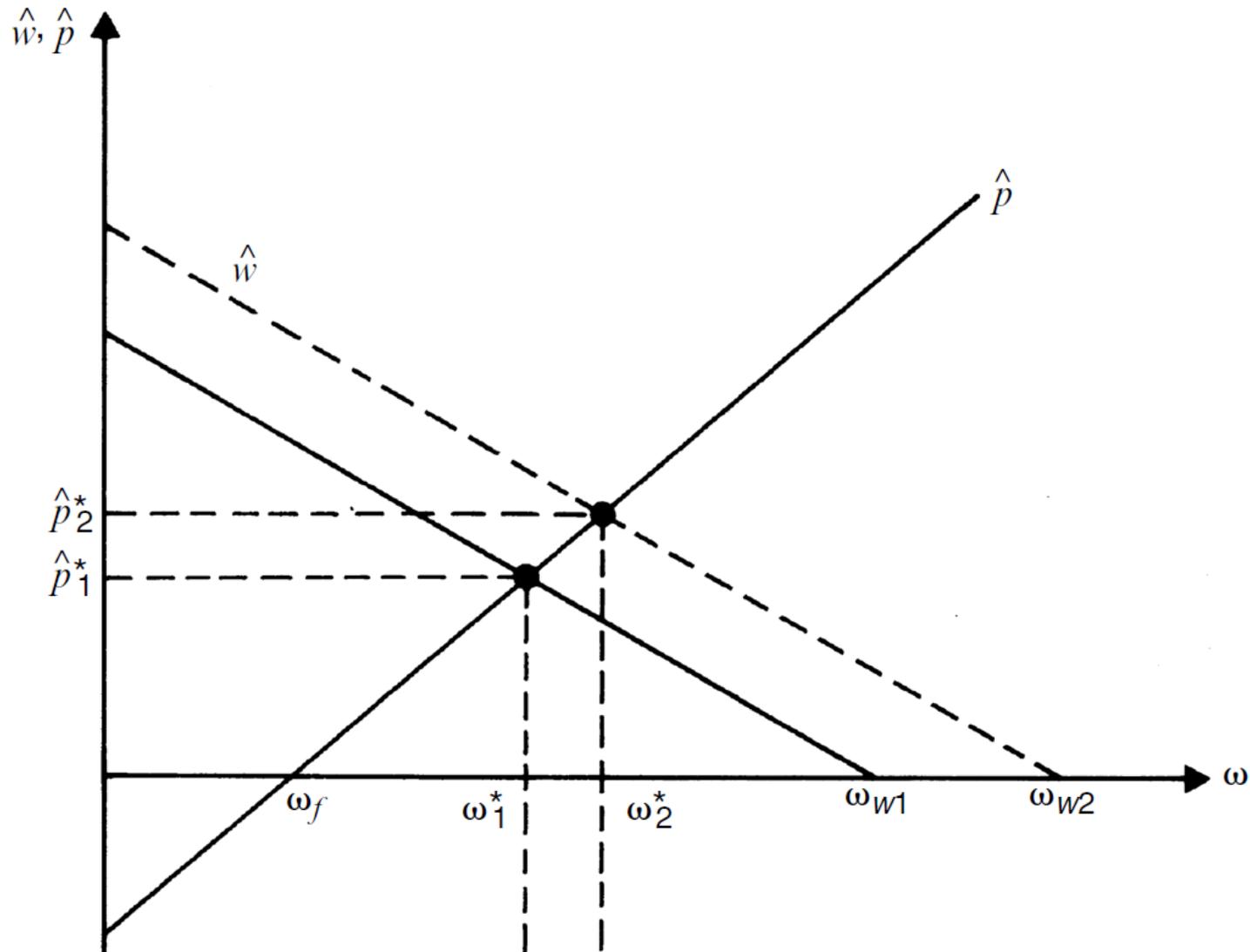
# The general case



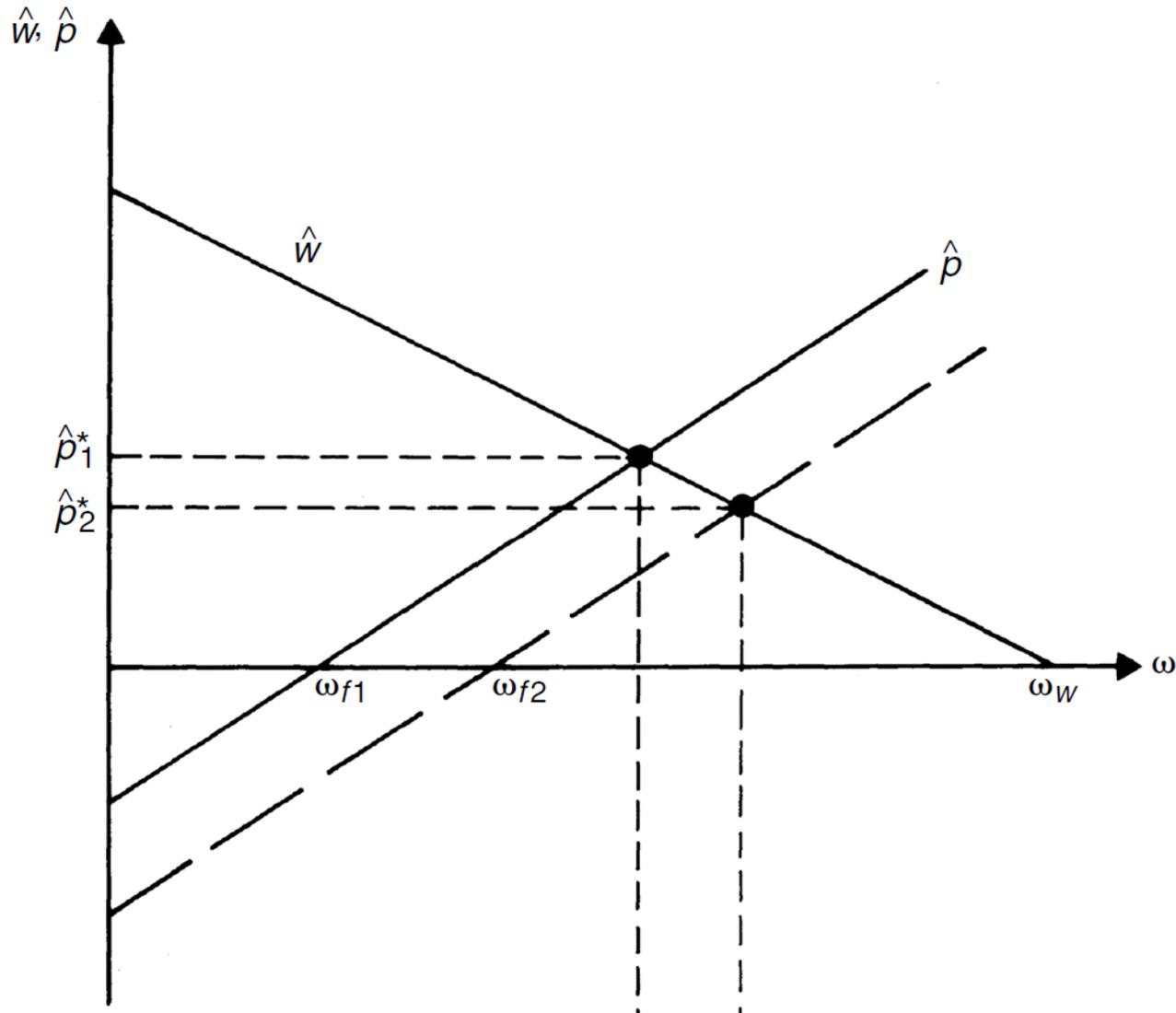
# Limits to price-fixing by firms

- In a world dominated by large corporations, it would seem that firms can exact price increases of their liking. How is it possible for firms not to achieve their targeted mark-up or real-wage rate if they have ultimate control on prices? As Tarling and Wilkinson (1985, p. 179) put it, *why should distributional shares change in a system where wages are determined unilaterally by capitalists and where in the time sequence prices follow wages?*.
- One must conclude that, in historical time, prices do not always follow wages, or that firms face constraints on the prices that they set.
  - Foreign competition would be a good example of the latter case.
  - Not all firms are homogeneous; workers in highly productive firms may target higher nominal and real wages, which less productive firms must match, thus lowering their percentage markups.
  - Firms may have to publish price lists in advance.
  - There could be a lag period between the increase in costs and the increase in prices (historical cost pricing, Godley and Cripps 1983. Godley and Lavoie 2007, Serrano 2020)

# Workers set themselves a higher real wage target



# What governments would like to achieve by pressuring companies today



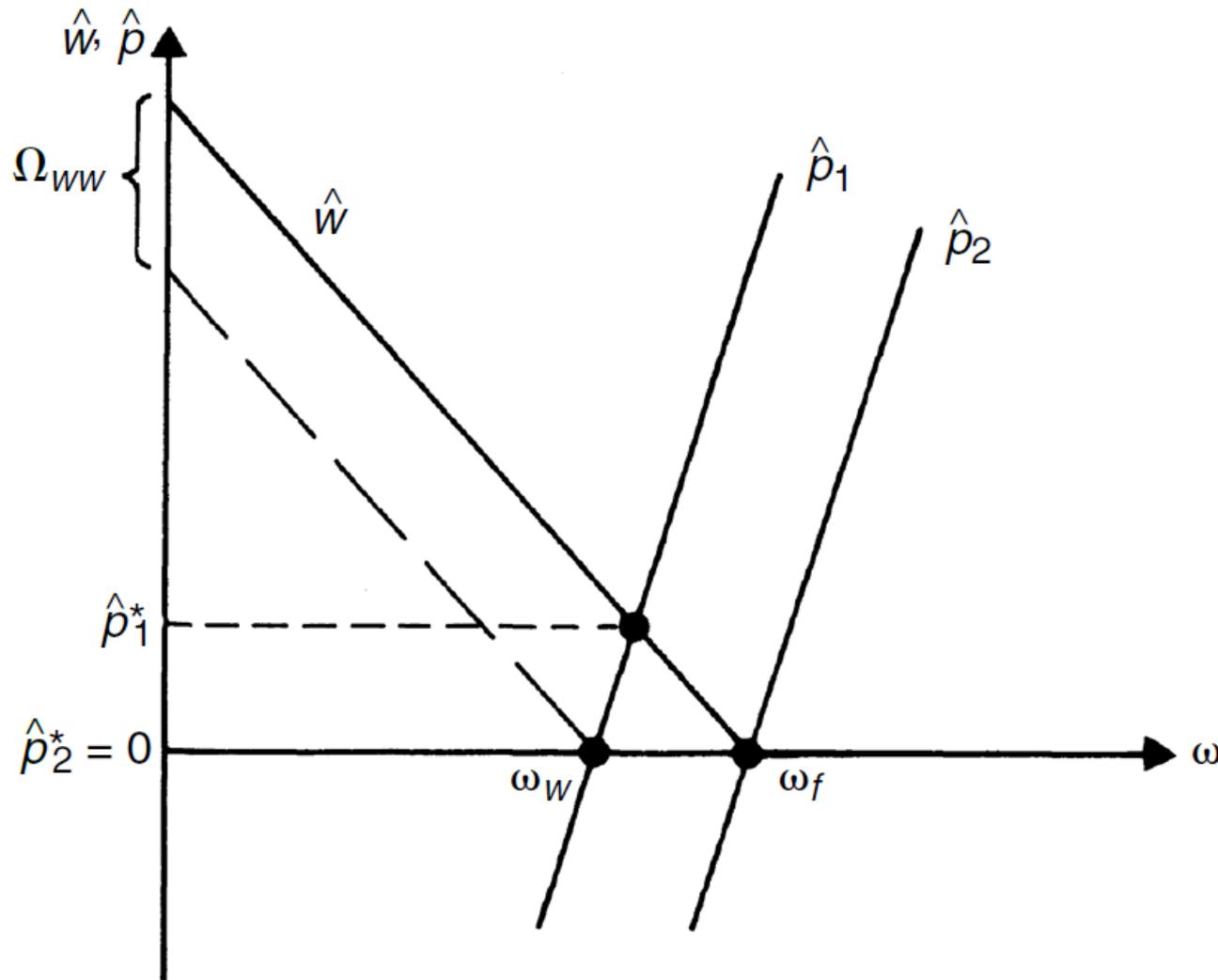
# **WAGE-WAGE INFLATION AND PRODUCTIVITY GROWTH**

# Wage-wage inflation

- “In other words, the struggle about money-wages primarily affects the *distribution* of the aggregate real wage between different labour-groups . . . The effect of combination on the part of a group of workers is to protect their *relative* real wage.” (Keynes, 1936, p. 14)
- *The causes of movements in money-wages are bound up with the competition of different groups of workers to maintain or improve their relative positions.* (Robinson 1962, p. 70).
- **The main cause of inflation** *is the competitive struggle between trade unions and different sections of labour, exacerbated by the absence of an agreement about relative wages* (Kahn 1958/1972, p. 143).
- Trevithick 1976; Wood 1978; Cornwall 1983; Reynolds 1989
- Industrial relations: Dunlop, Thurow, Doeringer,

$$\hat{w} = \Omega_1 (\omega_w - \omega) + \Omega_{ww}$$

# Wage-wage inflation even if workers and firms agree on a real wage $\omega_w$



# Productivity-led inflation

- *Considerable empirical evidence now exists to suggest that higher money wage settlement may first take in those industries which are placed in particularly favourable economic circumstances. Thus in industries with an exceptionally high growth in labour productivity ... higher money wage settlements may take place first. Then comes into the 'propagation effect' of a wage-wage spiral which tries to restore the relative money wage structure. (Bhaduri 1986, p. 199)*
- Cf Hicks (1955)

# Adding productivity growth $\lambda$

## $\omega$ is now the wage share

Productivity-led wage inflation:

$$\hat{w} = \Omega_1(\omega_w - \omega) + \Omega_{ww0} + \Omega_\lambda \hat{\lambda}$$

Firms pass on to consumers only part of the productivity gain

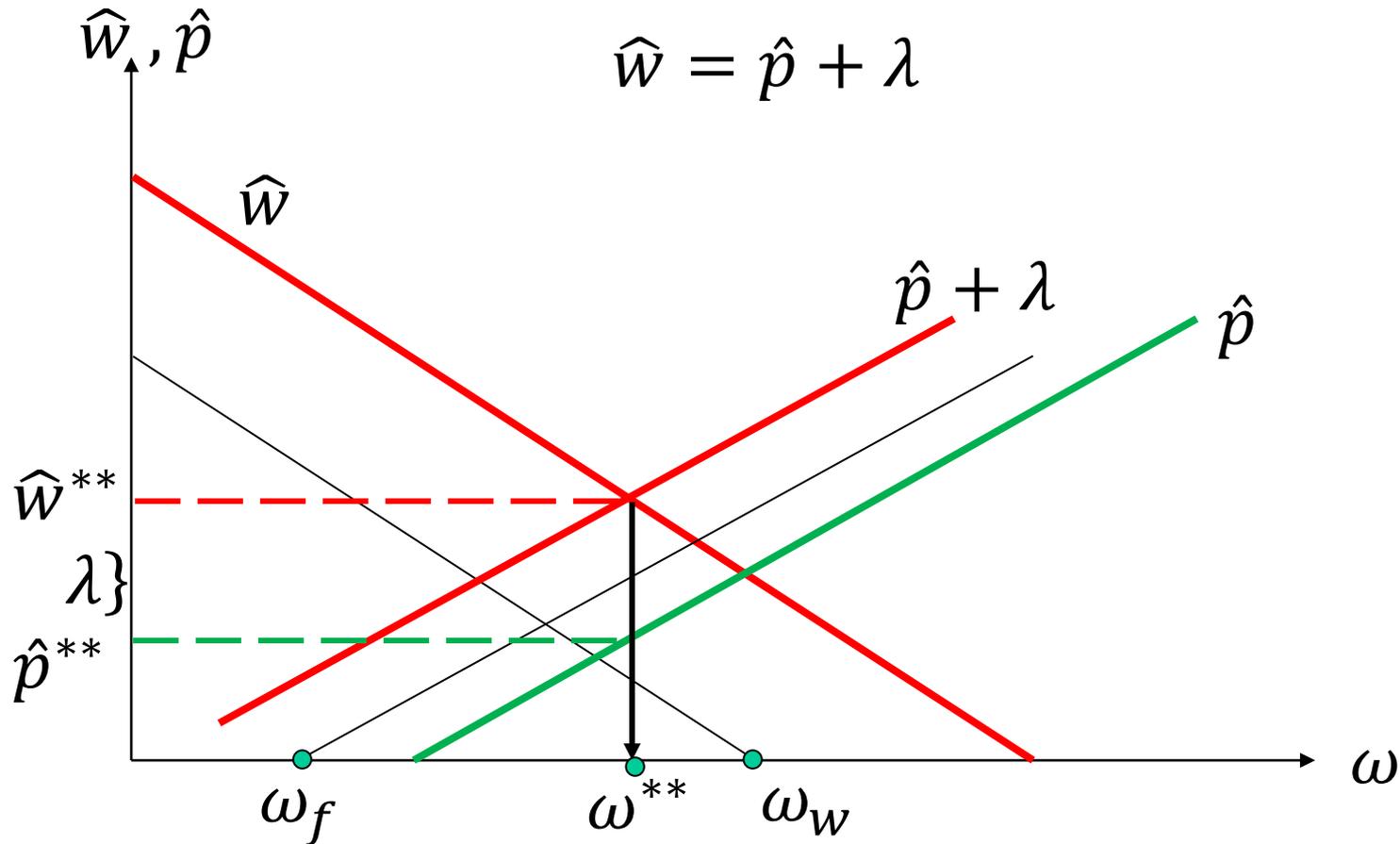
$$\hat{p} = \Psi_1(\omega - \omega_f) - \Psi_\lambda \hat{\lambda}$$

With technical progress, a constant  $\omega$  requires that  $\hat{w} = \hat{p} + \hat{\lambda}$ . Solving for  $\omega$ , the above two equations yield

$$\omega^* = \frac{\Omega_1 \omega_w + \Psi_1 \omega_f + \Omega_{ww0} + [\Omega_\lambda - (1 - \Psi_\lambda)] \hat{\lambda}}{\Omega_1 + \Psi_1} \quad (8.17)$$

There is a Fordist regime (positive relation between productivity growth and the wage share) when workers grab a higher proportion of productivity gains than firms decline to pass on to consumers. Anti-Fordist otherwise (Boyer)

# Productivity and inflation



# THE PHILLIPS CURVE

# Dutt approach to the Phillips curve

$$\hat{w} = \Omega_1(\omega_w - \omega) + \Omega_2\hat{p}_{-1}$$

$$\omega_w = \alpha_0 - \alpha_1 U$$

$$\hat{w} = \Omega_1[(\alpha_0 - \alpha_1 U) - \omega] + \Omega_2\hat{p}_{-1}$$

$$\hat{p} = \psi_1(\omega - \omega_f) + \psi_2\hat{w}$$

$$\text{Long-run solution: } \hat{w} = \hat{p} = \hat{p}_{-1} = \frac{\Omega_1\psi_1(\omega_w - \omega_f)}{\Omega_1(1 - \psi_2) + \psi_1(1 - \Omega_2)}$$

**A long-run downward-sloping Phillips curve even if firms have the upper hand** ( $\psi_2 = 1$ ):

$$\hat{w} = \hat{p} = \hat{p}_{-1} = \frac{\Omega_1(\omega_w - \omega_f)}{(1 - \Omega_2)} = \frac{\Omega_1(\alpha_0 - \alpha_1 U - \omega_f)}{(1 - \Omega_2)}$$

# Hein-Stockhammer NAIRU approach

- The clearest presentation can be found in Hein (2006, *EJEEP*)

$$\hat{w} = \Omega_1([\omega_{w0} - \alpha_1 U] - \omega) + \hat{p}_{-1} + \hat{\lambda} \quad (1)$$

$$\hat{p} = \psi_1(\omega - \omega_f) + \hat{w} - \hat{\lambda} \quad (2)$$

**That is,  $\psi_2 = \Omega_2 = 1$ .** In the long run,  $\hat{w} - \hat{\lambda} = \hat{p} = \hat{p}_{-1}$

From (2), this implies  $\omega = \omega_f$

From (1), this implies that  $[\omega_{w0} - \alpha_1 U] - \omega_f = 0$

The NAIRU equals:  $U^N = \frac{\omega_{w0} - \omega_f}{\alpha_1}$

# Hein-Stockhammer NAIRU approach

- In the Dutt approach, the LR equilibrium inflation rate can be identified and does not solve the distribution conflict (the real-wage targets are still different).
- **In the Hein-Stockhammer (HS) approach**, the LR equilibrium is reached only when the two real-wage targets are equated.
- Out of equilibrium, the two income-share targets are incompatible. **Unexpected** inflation (the **change** in the inflation rate) makes them temporarily compatible.
- **Unexpected inflation** and unemployment have an inverse relationship.
- The unemployment rate  $U$  is the variable that adjusts the real-wage (or wage share) target of workers to the real-wage (or profit share) target of firms, until the NAIRU is reached.
- The NAIRU is said to be endogenous and possibly unstable.

# **MODELLING WITHIN AN OPEN ECONOMY**

# Fully-integrated versus open economy

- In a fully-integrated closed economy, everything can be brought back to wages and profits
- At the level of the firm, labour costs are not the only direct costs faced by firms. Firms also face material costs, in particular the cost of intermediate goods. So unit direct costs  $UDC$  include unit direct labour costs and unit material costs (Sylos-Labini 1979)
- We thus have  $UDC = UDLC + UMC$
- At the level of the economy, to the wage costs we must add the cost of **imported** materials. At the macroeconomic level, in this open economy,  $UMC$  thus represents the unit imported material cost. The markup pricing equation is then:
- $$p = (1 + m)(UDLC + UMC) = (1 + m)\left(\frac{w}{\lambda_d} + ep_f v_m\right)$$

$$p = (1 + m) \left( \frac{w}{\lambda_d} + ep_f v_m \right)$$

- Following the arguments of Reynolds (1989, ch. 9) and the algebra of Hein and Vogel (2008) and Hein (2023):
- The increase in the cost of imported materials may thus depend on three factors:
  - A depreciation of the exchange rate of the domestic currency (an increase in the value of the exchange rate variable  $e$ );
  - A rise in the prices of commodities, as measured in the currency  $p_f$  of the foreign producers;
  - An increase an increase in the real amount of imported raw material  $v_m$  which is required per unit of production.

# The pass-through from imported materials

- Surveys show that the most frequent reason for price increases is changes in material costs, followed by changes in labour costs.
- *The implicit understanding among rivals is that all have similar cost conditions and little risk is attached to moving prices when costs move .... Cost movements always lead to price adjustments in the same direction* (Coutts and Norman 2013, p. 446).
- A pass-through of 100% is likely in the case of cost increases in intermediary goods, the prices of which are determined in world markets (firms try to keep a constant percentage markup).
- According to Bloch et al. (2004), even in the US economy, there is a *'complete pass-through of inflation in input prices to inflation in finished goods'*.
-

# The PK view of inflation, with (imported) raw materials and intermediate goods

- With  $j = UMC/UDLC$ , that is the unit material cost relative to the unit direct labour cost, the pricing equation then becomes:
- $p = (1 + m)(UDLC + UMC) = (1 + m)(1 + j)UDLC =$
- $p = (1 + m)(1 + j)\left(\frac{w}{\lambda_d}\right)$
- Simplifying by writing again  $\kappa = (1 + m)$  and adding that  $J = (1 + j)$ , price inflation may now be written as:
- $\hat{p} = \hat{\kappa} + \hat{J} + (\hat{w} - \hat{\lambda}_d)$
- $\hat{p} = \hat{m}\left(\frac{m}{1+m}\right) + \hat{j}\left(\frac{j}{1+j}\right) + (\hat{w} - \hat{\lambda}_d)$

## What if *UMC* rises faster than *UDLC* ...

- Omitting overhead labour, the profit share in value added rises with  $j$ :

$$ps = \frac{m(1 + j)}{1 + m(1 + j)}$$

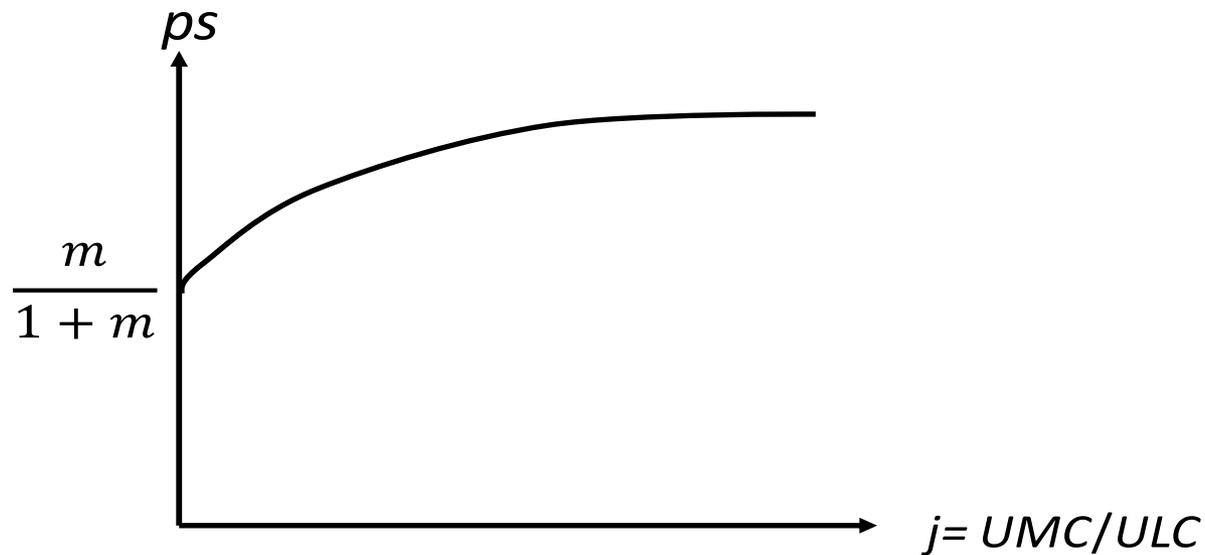
$$\frac{dps}{dj} = \frac{m}{D^2} > 0$$

*A rise in the degree of monopoly or in raw material prices in relation to unit wage costs causes a fall in the relative share of wages in value added.*

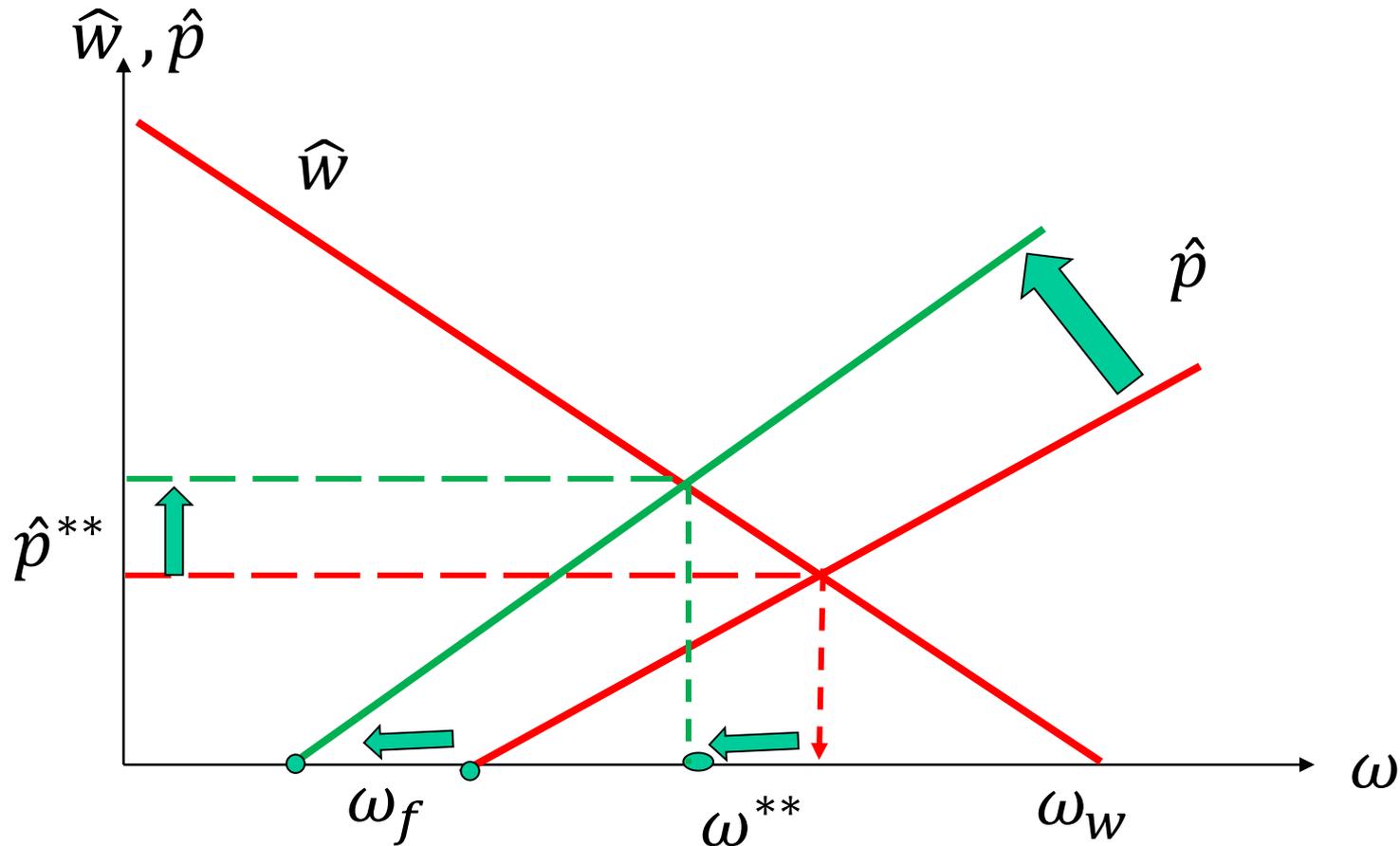
*(Kalecki 1971, p. 63)*

$$\frac{w}{p} = \frac{\lambda_d}{(1 + m)(1 + j)}$$

# The relative price of materials correlates with the profit share (Castro-Vincenzi/Kleinman 2022)



# The impact of a rise in $j = UMC / UDLC$



# A Sraffian conflictual (simplified) alternative (Morlin 2021)

- $p_i = (a_1 p_i)(1 + r_i) + w/\lambda_i$  (1) Investment material good, tradable
- $p_c = (a_2 p_i)(1 + r_c) + w/\lambda_c$  (2) Consumption good, non-tradable
- $p_i = e p_i^f$  (3) World price: the law of one price applies to tradables.
- $r_i = r_c = r$  (4) Uniform rates of profit

$$r_i^{**} = \frac{1 - a_1}{a_1} - \frac{w/\lambda_i}{a_1 e p_i^f}$$

- Currency depreciation (a rise in  $e$ ) leads to a rise in  $p_i$  and hence in  $r_i$ , and therefore in a rise in  $p_c$  and  $r_c$ , and thus to a fall in the real wage  $w/p_c$
- This is equivalent to a fall in the real wage target of firms  $\omega_f$
- As in the Kaleckian model, currency depreciation generates a rise in the inflation rate (and a fall in the realized real wage).

# High and Hyper Inflation

- For mainstream economists, regimes of high inflation or of hyperinflation are obvious instances of too much money chasing too few goods.
- There is long-held tradition in post-Keynesian economics that argues otherwise.
- **High and Hyperinflation are said to be the consequence of a distributive conflict associated** with a brisk fall in real wages, with money wages trying to catch up, **usually following a strong (external) negative shock.**
- **Robinson (1938)**, Burdekin and Burkett (1992), Cardim de Carvalho (1992), Câmara/Vernengo (2001), Charles/Marie (2016), Bastian/Setterfield (2020), Charles/Bastian/Marie (2021)

## **Wage/foreign exchange spirals and distributive conflict (Câmara/Vernengo 2001)**

*Neither exchange depreciation nor a budget deficit can account for inflation by itself. But if the rise in money wages is brought into the story, the part which each plays can be clearly seen. With the collapse of the mark in 1921, import prices rose abruptly, dragging home prices after them. The sudden rise in cost of living led to urgent demands for higher wages....Rising wages, increasing home costs and home money incomes, countered the effect of exchange depreciation in stimulating exports and restricting imports. Each rise in wages, therefore, precipitated a further fall in the exchange rate, and each fall in the exchange rate called forth a further rise in wages. The process became automatic when wages began to be paid on a cost-of-living basis. (Robinson, 1938, p. 510)*

# Automatic indexation leading to high inflation rates

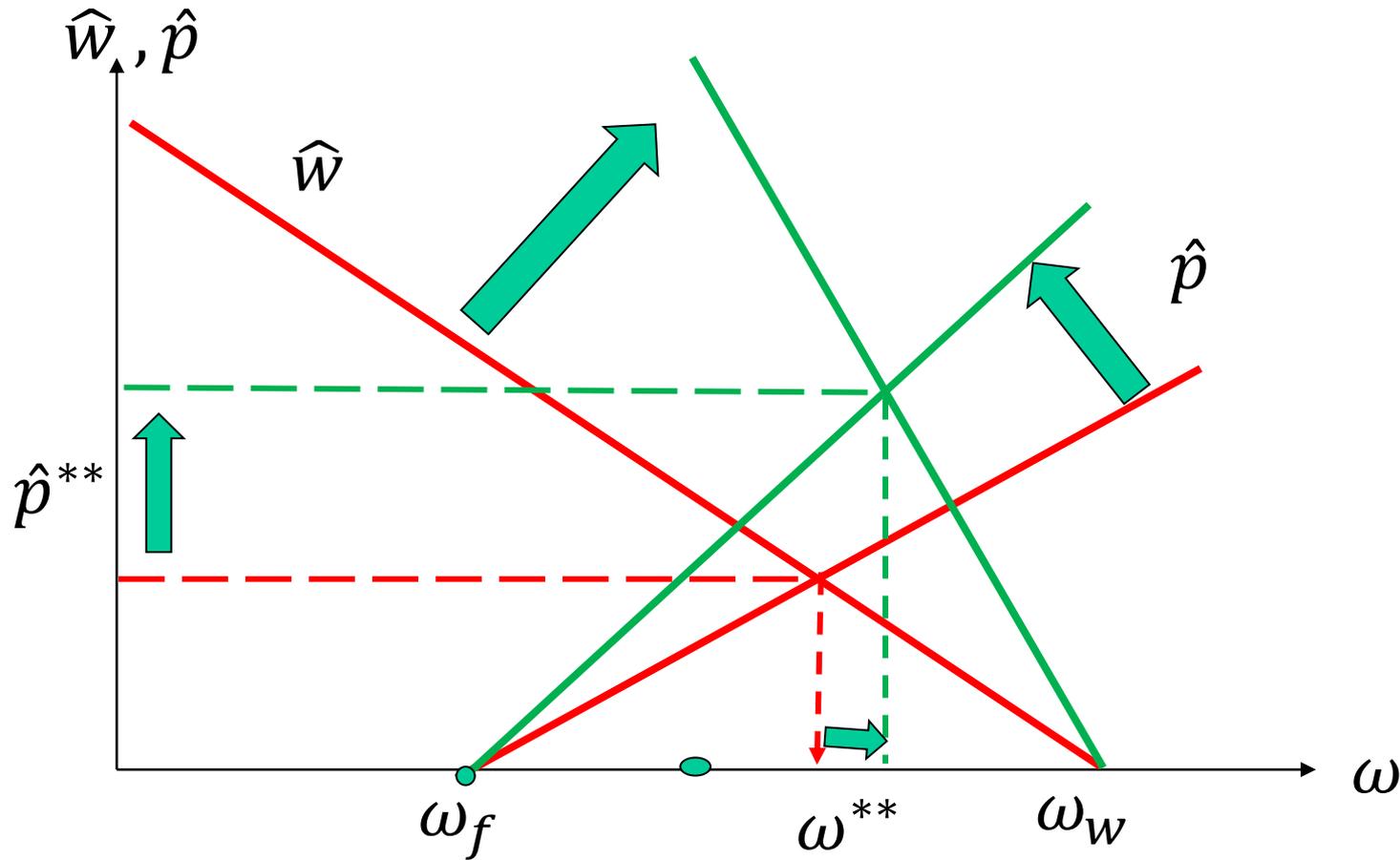
- As warned by several authors (Carvalho 1992, Godley and Cripps 1983, Taylor 1991), faster rates of inflation with only partial indexation quickly erode the bargained real wage, so that realized real wages fall. **Labour unions ask for more systemic indexation rules, and shortened indexation intervals.**
- $\hat{w} = \Omega_1(\omega_w - \omega) + \Omega_2\hat{p}_{-1}$
- $\hat{p} = \Psi_1(\omega - \omega_f) + \Psi_2\hat{w}$
- Then, Bastian/Setterfield 2020:
- $\dot{\Omega}_2 = f_\Omega[\omega_w - (\omega^* + \epsilon)]$

Then, however, firms may decide to retaliate, and react more strongly to change in wage inflation, in which case we would have:

$$\dot{\Psi}_2 = f_\Psi \dot{\Omega}_2$$

Inflation will accelerate.

# Faster wage indexation or more frequent changes in wages+prices feed inflation



# Moving towards hyperinflation

- Firms stop from setting prices on the basis of historical costs, and **start setting them based on expected future costs.**
- How can these be assessed?
- Since (indexed) wage costs end up rising as fast as imported material costs, with ever shorter adjustment periods, ***the new adjustment index has been the exchange rate to the dollar*** (Carvalho 1992, p. 200).
- $\hat{w} = \Omega_1(\omega_w - \omega) + \Omega_2\hat{p}_{-1} + \Omega_3\hat{e}$
- $\hat{p} = \Psi_1(\omega - \omega_f) + \Psi_2\hat{w} + \Psi_3\hat{e}$
- There is a dissolving trust vis-à-vis the domestic currency: a spontaneous move towards dollarization which makes matters worse.

# Thank you!

