Resurgence of Inflation – Drivers of Inflation and Economic Policy Conclusion

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Explanation of Inflationary Processes

Keynes' Treatise on Money as theoretical basis

- John Maynard Keynes presents in his book "Treatise on Money" from 1930 an alternative to the quantity of money

- He distinguishes between cost inflation (deflation) and inflation (deflation) caused by a disequilibrium between demand and supply

- For this purpose he developed the "Fundamental Equations for Value of Money"

- Money supply becomes endogenous

- We follow this approach in a modern and more comprehensive way

All factors influencing the price level

$$P_{TP} = \frac{W}{TP_r} + \frac{q \cdot P_K \cdot K_r}{TP_r} + \frac{P_{Int} \cdot Int_r}{TP_r} + \frac{a \cdot P_K \cdot K_r}{TP_r} + \frac{t \cdot P_{NDP} \cdot NDP_r}{TP_r} + \frac{P_n \cdot N_r}{TP_r} + \frac{e \cdot P_{Im} \cdot Im_r}{TP_r} + \frac{I - S_H + BB + CAB}{TP_r}$$

(unit-labour costs, $\frac{w}{\pi}$)

(profit pu)

(intermediate goods pu)

(depreication pu))

(taxes pu)

(natural resources pu)

(imports pu)

inequality between demand and supply leading to price reactions

pu: per unit, P_{TP}: Price index for gross (or total) output, TP_r: real gross output, W: total wage sum, w: wage per hour, π: labour productivity, q: profit rate, K_r: real capital stock, P_K: price index of capital stock, Int_r: intermediate goods, P_{Int}: price index intermediate goods, a: depreciation rate, t: indirect tax rate, $\cdot$ NDP_r: real net domestic product, price index net domestic product, P_{NDP}: price index net domestic product, N_r: real quantitiy of natural resources, P_n: price level of natural resources, e: exchange rate, P_{Im}: price imports, Im_r: real imports, I: net investment, S_H: household savings, BB: budget balance, CAB: current accout balance

Discussing the different factors influencing the price level

Unit labour costs $\frac{W}{TP_r} = \frac{\frac{W}{H}}{\frac{TP_r}{H}} = \frac{w}{\Pi}$

Direct unit labour costs make up around 60% of GDP (the US are taken as an example, data from FRED (2024): data, https://fred.stlouisfed.org/)

Important are not only direct unit labour costs, but embodied unit labour costs in production inputs

We can expect that wage for these reasons play a big role for cost inflation

Profit per unit in equilibrium $\frac{q \cdot P_K \cdot K_r}{TP_r}$

The profit rate very much depends on the type of markets, the power of trade unions and the market constellation

Types of markets

Pure competition and monopolistic competition: no rent seeking

Monopoly, oligopoly, monopsony, oligopsony: rent seeking

Power of trade unions

In case of rent seeking firm based wage negotiations can bite into profits

Also the governance system plays a role: stakeholder or shareholder value

Market constellation plays a role for profit rate in disequilibrium

With excess demand, firms can easily raise their prices and the profit rate rises above the long-run equilibrium; with a shortage of demand, the opposite is true

Intermediate goods per unit $\frac{P_{Int} \cdot Int_r}{TP_r}$

Intermediate goods play a central role in the spread of inflationary processes in the economy. In the US intermediate goods are 75% of GDP

Depreciations per unit $\frac{a \cdot P_K \cdot K_r}{TP_r}$

It has to be taken into account that depreciations adjust to actual prices of capital goods

They make up around 17% of GDP

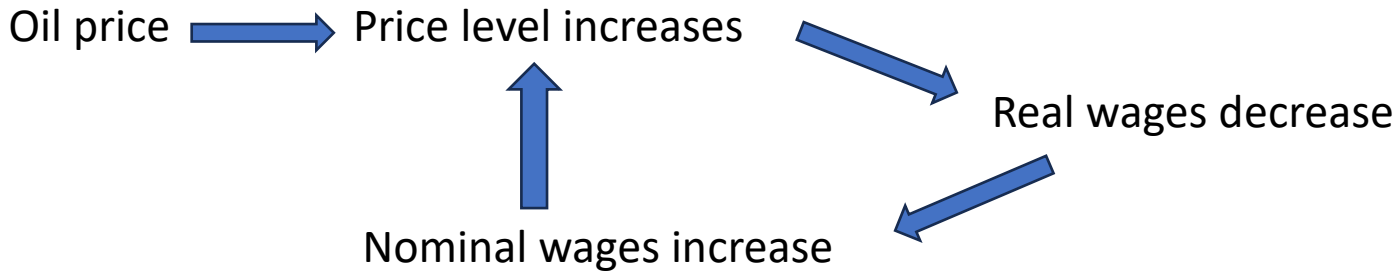
Indirect taxes per unit $\frac{t \cdot P_{NDP} \cdot NDP_r}{TP_r}$

Value added taxes, consumption taxes or ecological taxes can play an important role for the price level

Natural resources per unit $\frac{P_n \cdot N_r}{TP_r}$

"There is a back lash of prices on wages – a Real Wage Resistance, it may be called." (J.R. Hicks, What is wrong with Monetarism?', Lloyds Bank Review, 1975, *5)*

Natural resources prices can change quickly and substantially and have big effects on real income. In 1973 the oil prices increased from $25 to $68 and 1970 to $150; oil price increase by 25% increases the price level by around 1%.



Exchange rates – import prices per unit $\frac{e \cdot P_{Im} \cdot Im_r}{TP_r}$

Nominal exchange rates can change quickly and substantially and have big effects on real income via import prices.

Typical are depreciations-wage-price-spirals

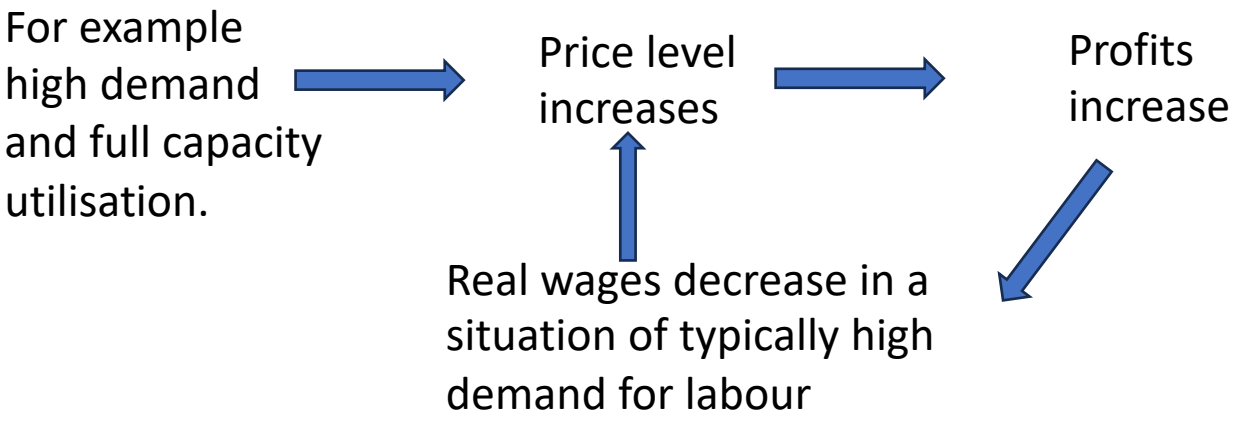
Hyperinflations are typically driven by strong depreciations

Disequilibrium between aggregate demand and aggregate supply which does lead to price effects and no quantity effects

$$\frac{I - S_H + BB + CAB}{TP_r}$$

For example high demand and full capacity utilisation.

Typical inflationary scenario:



Conclusion so far

- Unit labour cost play an important role as direct and indirect costs

- There are several dynamic inflationary processes
  - Natural resources price-wage-price spiral
  - Depreciation price-wage-price spiral
  - Booming economy with demand inflation and price-wage-price spiral

- Nominal wage development plays a big role, the stronger wages react to price level changes the bigger is the role of wages for inflation

- Radical trade unions can trigger a wage-price spiral, but more important are price-wage-price spirals

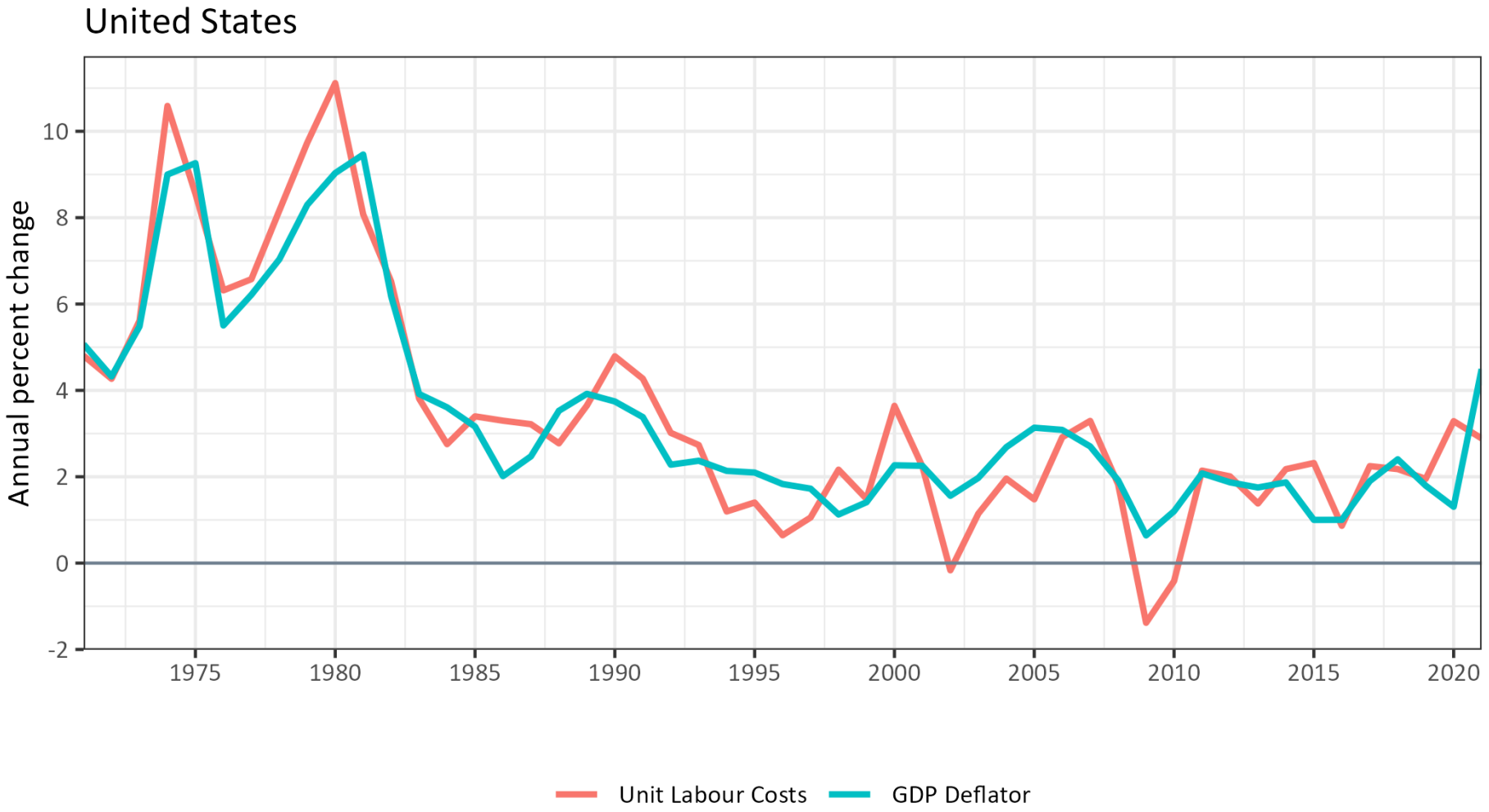
Empirical Analysis

Correlation coefficient between unit labour costs (ULC) and the GDP Deflator and consumer price index (CPI) for various OECD countries, specific years in parentheses

Country	ULC & GDP Deflator	ULC & CPI
Australia (1971 - 2017)	0.81	0.82
Austria (1971 - 2022)	0.78	0.64
Belgium (1971 - 2021)	0.91	0.85
Canada (1971 - 2022)	0.88	0.9
Czechia (1993 - 2022)	0.92	0.79
Denmark (1967 - 2022)	0.87	0.82
Estonia (1996 - 2022)	0.81	0.72
Finland (1971 - 2022)	0.86	0.86
France (1961 - 2022)	0.95	0.92
Germany (1971 - 2022)	0.81	0.61
Greece (1971 - 2022)	0.9	0.87
Hungary (1993 - 2022)	0.94	0.92
Ireland (1971 - 2022)	0.79	0.84
Israel (1996 - 2021)	0.8	0.76
Italy (1971 - 2022)	0.96	0.93
Japan (1971 - 2011)	0.96	0.95
Korea (1971 - 2022)	0.94	0.87
Latvia (1996 - 2021)	0.89	0.69
Lithuania (1996 - 2022)	0.82	0.79
Luxembourg (1971 - 2022)	0.39	0.72
Netherlands (1970 - 2022)	0.79	0.73
Norway (1971 - 2022)	0.32	0.68
Poland (1993 - 2022)	0.96	0.93
Portugal (1971 - 2021)	0.85	0.82
Slovak Republic (1994 - 2022)	0.74	0.64
Slovenia (1996 - 2022)	0.75	0.67
Spain (1971 - 2022)	0.94	0.9
Sweden (1971 - 2022)	0.86	0.76
Switzerland (1991 - 2021)	0.65	0.61
United Kingdom (1971 - 2022)	0.9	0.87
United States (1971 - 2021)	0.94	0.93

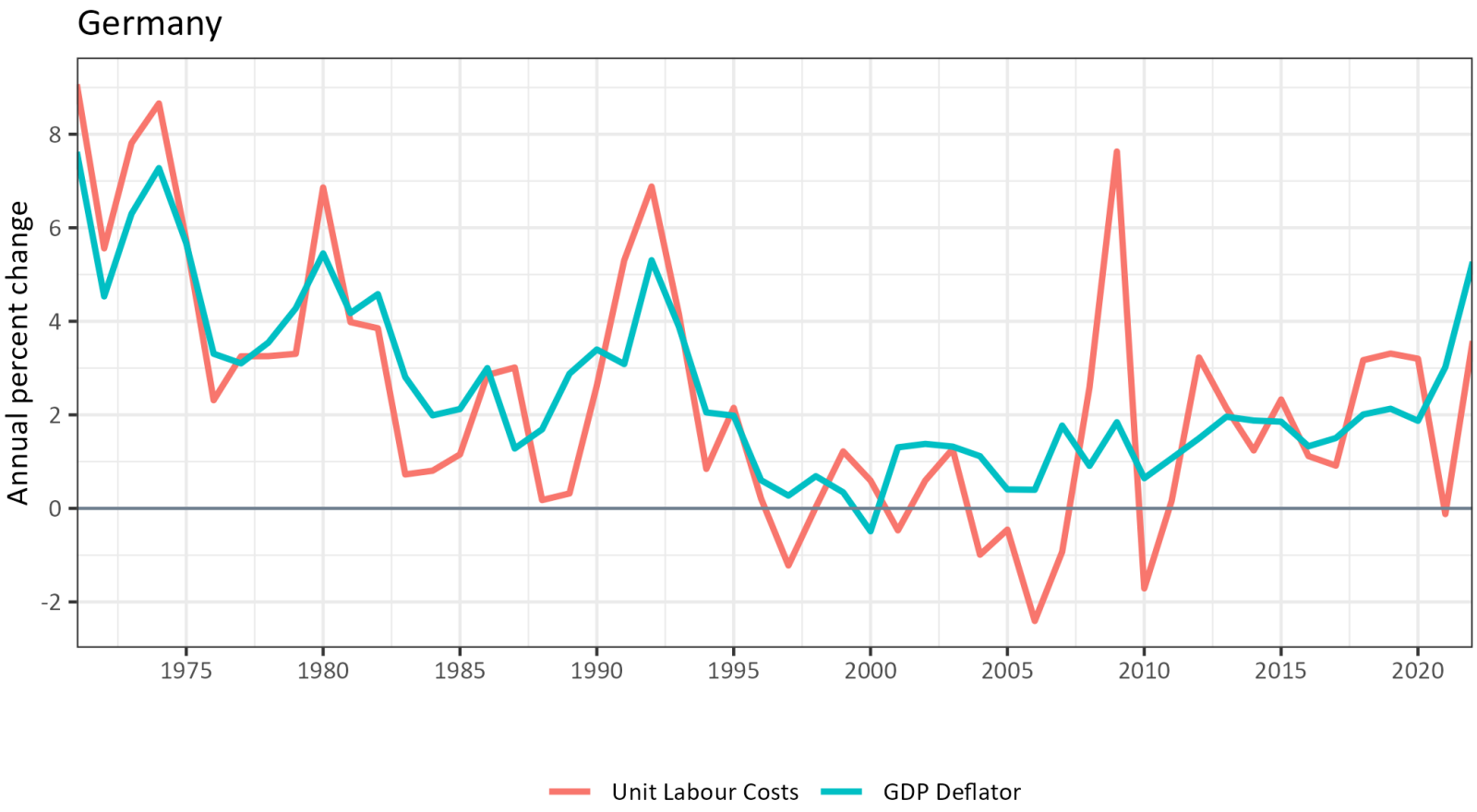
Source: OECD (2024), World Bank (2024)

USA – Annual percent change for ULC and GDP Deflator, 1971-2021, r = .94



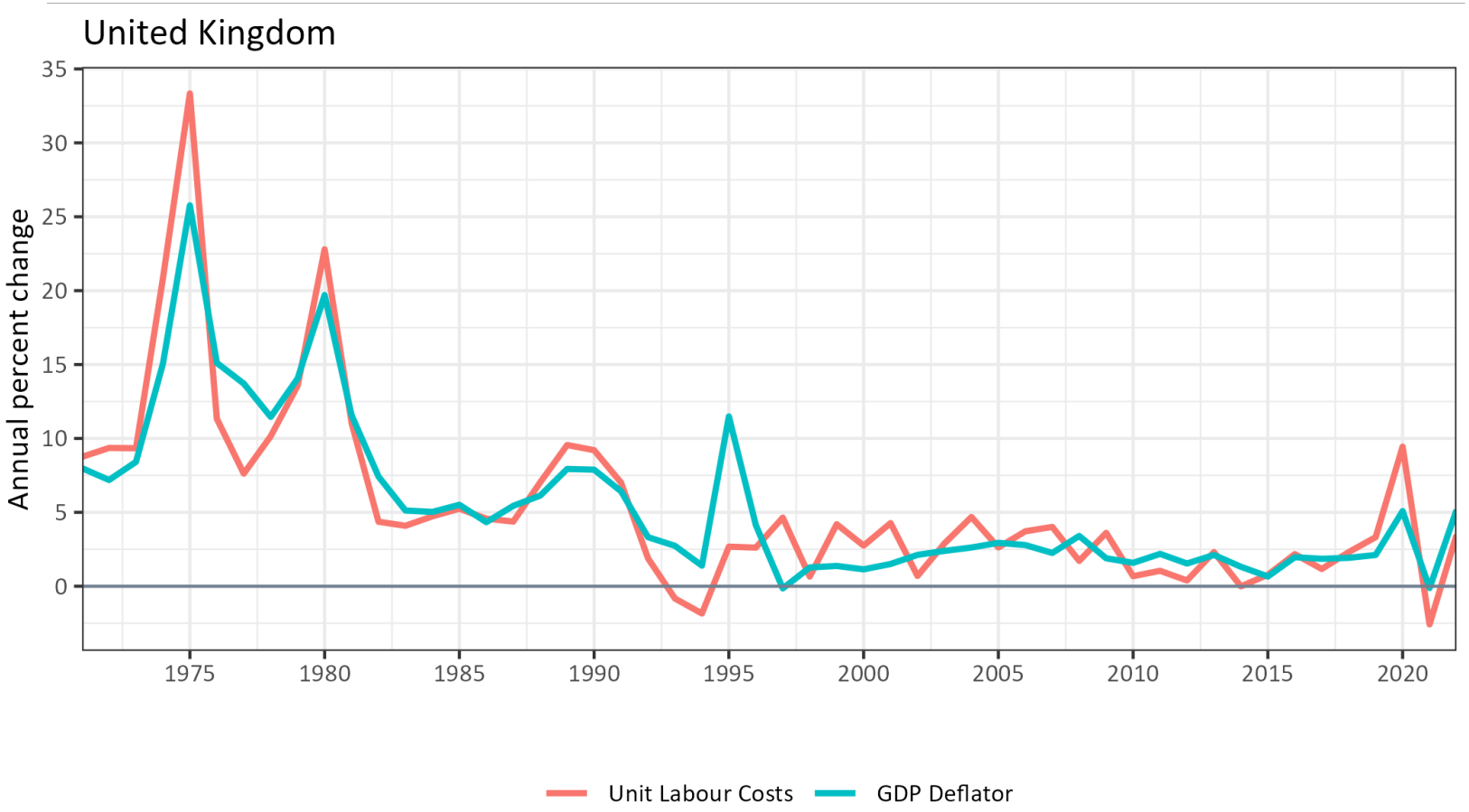
Source: OECD (2024), World Bank (2024)

Germany – Annual percent change for ULC and GDP Deflator, 1971-2022, r = .81



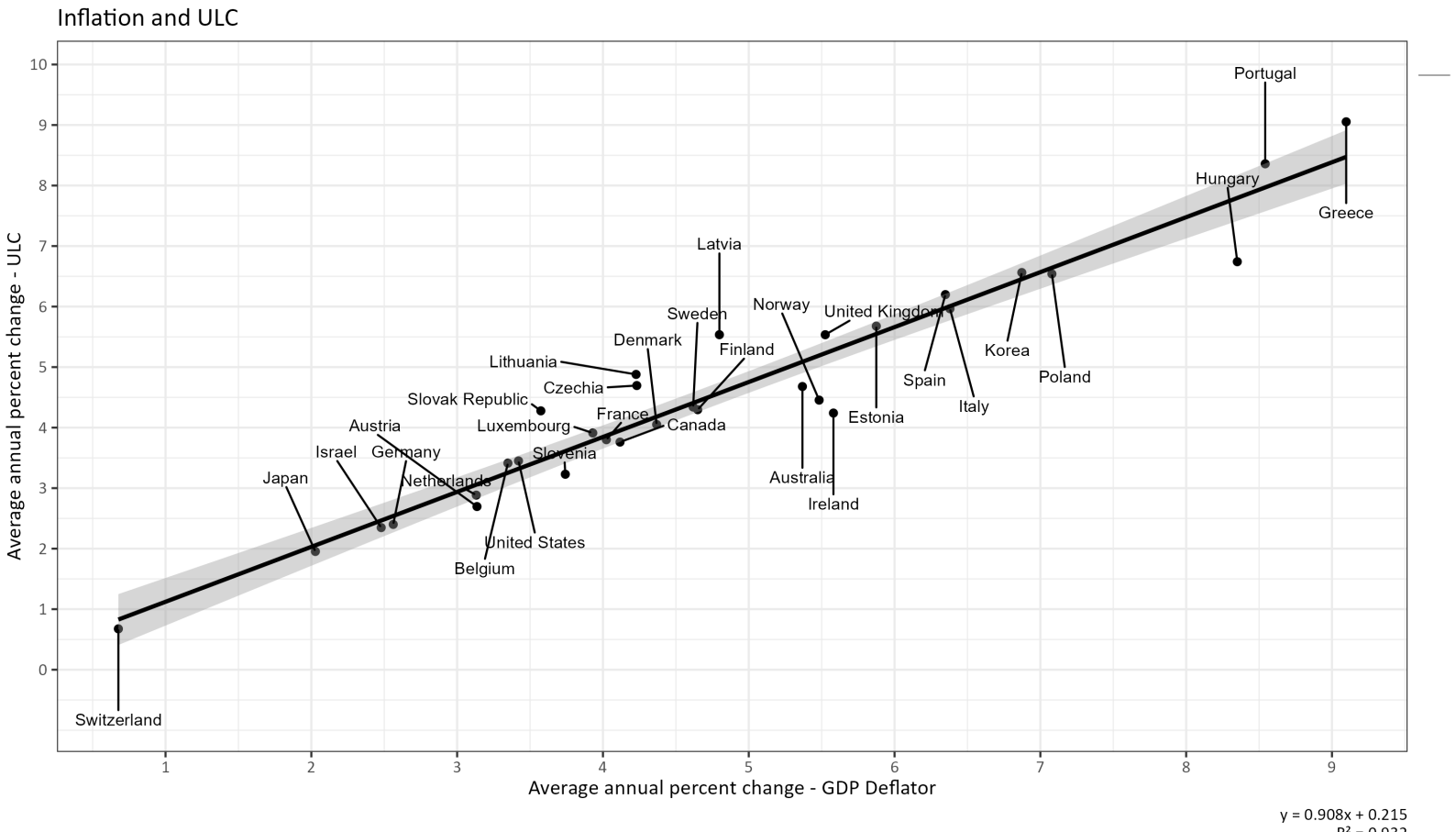
Source: OECD (2024), World Bank (2024)

UK – Annual percent change for ULC and GDP Deflator, 1971-2022, r = .90



Source: OECD (2024), World Bank (2024)

Average Inflation and ULC Growth in various OECD Countries



* Years vary based on availability of data, most Western European countries include years 1971-2022, most CEE countries include 1990s-2022. Years for each country can be found on slide 13.

Source: OECD (2024), World Bank (2024)

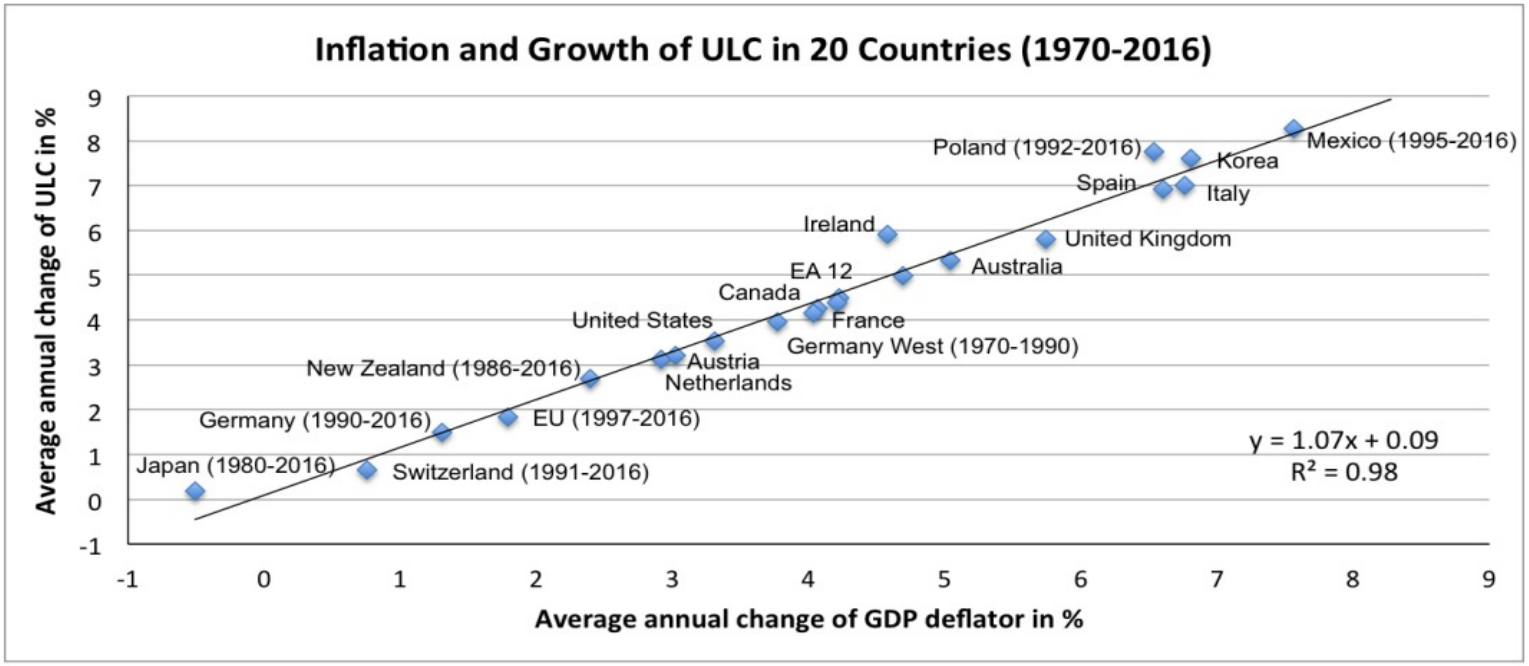


Fig. 3: Average annual change of Unit Labour cost (y-axis) as a function of the average annual change of the GDP deflator (x-axis) for 20 countries from 1970 to 2016. Source: Ameco, own calculations.

Senner, R., Sornette, D. (2018): The Holy Grail of Crypto Currencies: Ready to replace fiat money?, Discussion Paper April, Department of Management, Technology and Economics, ETH Zurich

Policy conclusions

In our recommendations we follow John Maynard Keynes

"In the light of these considerations I am now of the opinion that the maintenance of a stable general level of money-wages is, on a balance of considerations, the most advisable policy …. the money-wage level as a whole should be maintained as stable as possible, at any rate in the short period."

John Maynard Keynes, General Theory of Employment, Interest and Money, London, page 270

This implies a flexibility of real wages

Wage development as nominal anchor for the inflation rate

Given the target inflation rate of the central bank and medium term development of labour productivity wages should develop according to the following norm:

Wage norm: Wage increases = target inflation rate + trend productivity development

$$\dot{w}_{norm} = \dot{P}_{target} + \dot{\pi}_{trend}$$

If there are no other factors influencing the price level

- Real wages increase according to productivity
- The inflation rate is equal to the target inflation rate

If wage norm is not followed

- In case of too high wages stabilisation crisis is triggered by central bank (hundred of historical cases)
- In case to too low wages deflationary development follows (for example Japan after the 1990s)

Wage policy in case of natural resource price shocks

- Follow the wage norm – wage increases according to long-term productivity trend plus target inflation rate

- Accept real wage cuts – are not avoidable for a country and also for the working class

- Protect poorer part of working class and population – minimum wages, public transfers

- Fiscal simulation to compensate decreasing real demand which follows a price shock of natural resources

- Keep interest rates low, central bank should accept the wave of inflation

(-In case of real depreciations higher exports and lower imports stimulate aggregate demand)

Other nominal anchors

Exchange rate anchor

For countries with unstable exchange rates the nominal exchange rate should be established as anchor for the price level.

Stabilise natural resource prices

Temporary price cap for gas, electricity etc.

(Weber, I.M., Jauregui, J.L., Teixeira, L., and Nassif, L.N. 2024. Inflation in times of overlapping emergencies: systemically significant prices from an input-output perspective, Industrial and Corporate Change, vol. 33, 297–334)

Wages, distribution and conflict inflation

Conflict inflation

- It is possible to speak about conflict inflation
  - first of all real wage cuts caused by natural resource price changes, depreciation, demand inflation, etc. lead to conflict
  - attempt to increase real wages more than productivity via higher nominal wages

- But we should keep in mind Keynes' argument: Conflict within the working class- 1970s a good example

"In other words the struggle about money-wages primarily affects the *distribution* of the aggregate real wage between different labour groups, and not its average amount per unit of employment, which depends, as we shall see, on the a different set of forces. The effect of combination on the part of a group of workers is to protect their *relative* real wage. The *general* level of real wages depends on the other forces of the economic system." (Keynes, General Theory, p. 14)

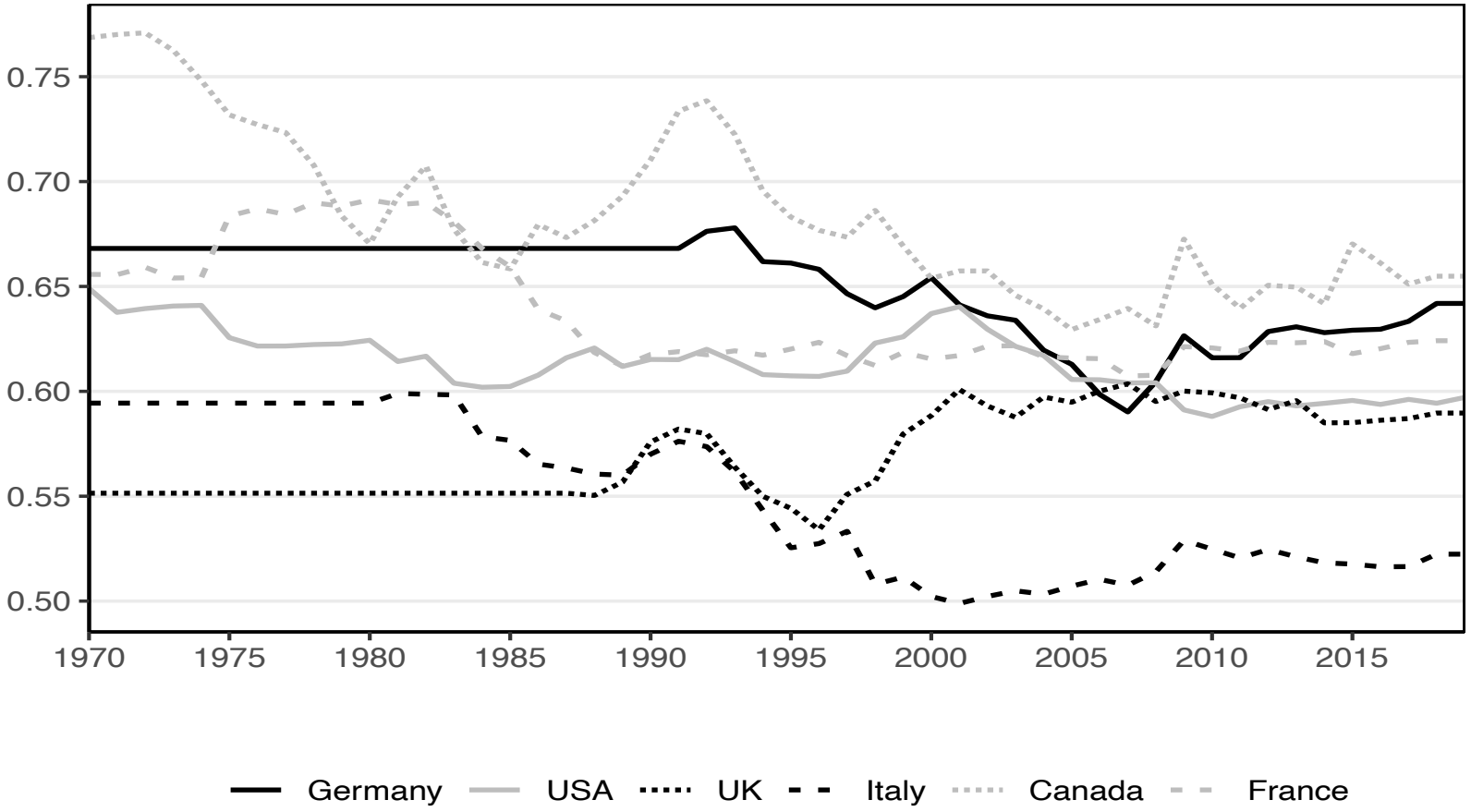
Role of wages for functional income distribution

- Wages can change functional income distribution

- This takes place in a medium-term or even long-term period and depends to a large extent on the type of capitalism
  - Stakeholder capitalism sharing rents, shareholder value capitalism and weak trade unions
  - Strength of trade union case firms earn rents

- For explaining the role of wages in inflationary processes changes in functional distribution caused by wage development play a secondary role

Share of labour compensation in GDP at current national prices in Germany, the US, the UK, Italy, Canada and France, 1960 - 2019

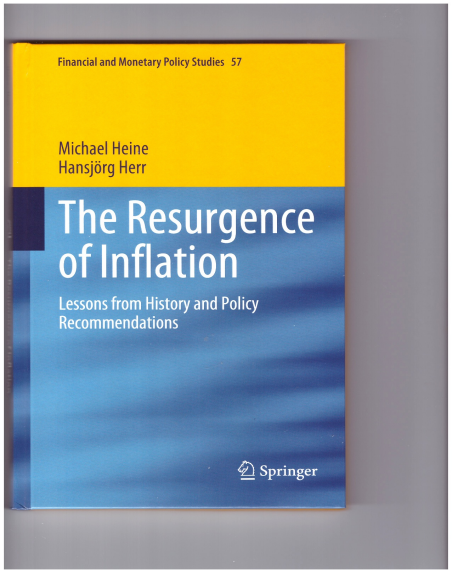


FRED (2024)

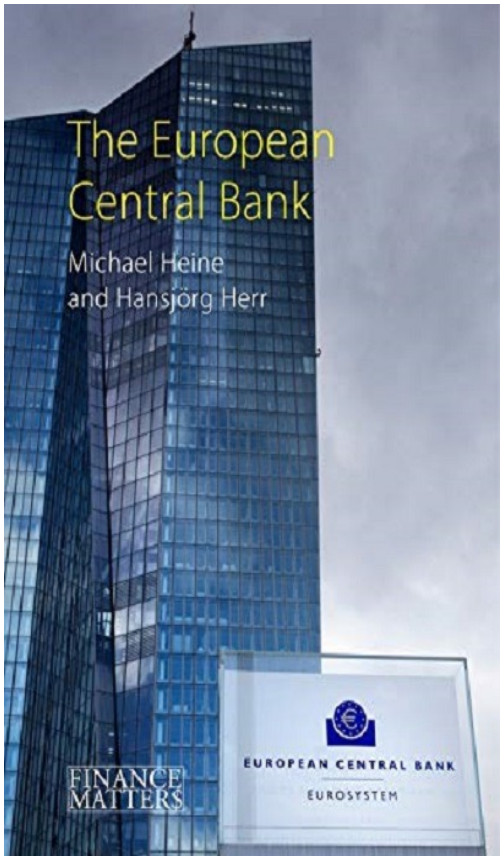
Literature

Heine, M., Herr, H., The Resurgence of Inflation: Lessons from History and Policy Recommendations, Berlin, Springer, 2024

Heine, M., Herr, H., Martin, A. 2024. Price Level Dynamics, Wages and Distribution, IPE, Working Paper, No.234/2024




Michael Heine, Hansjörg Herr
INFLATION
Lehren für heute aus Krisen von gestern
metropolis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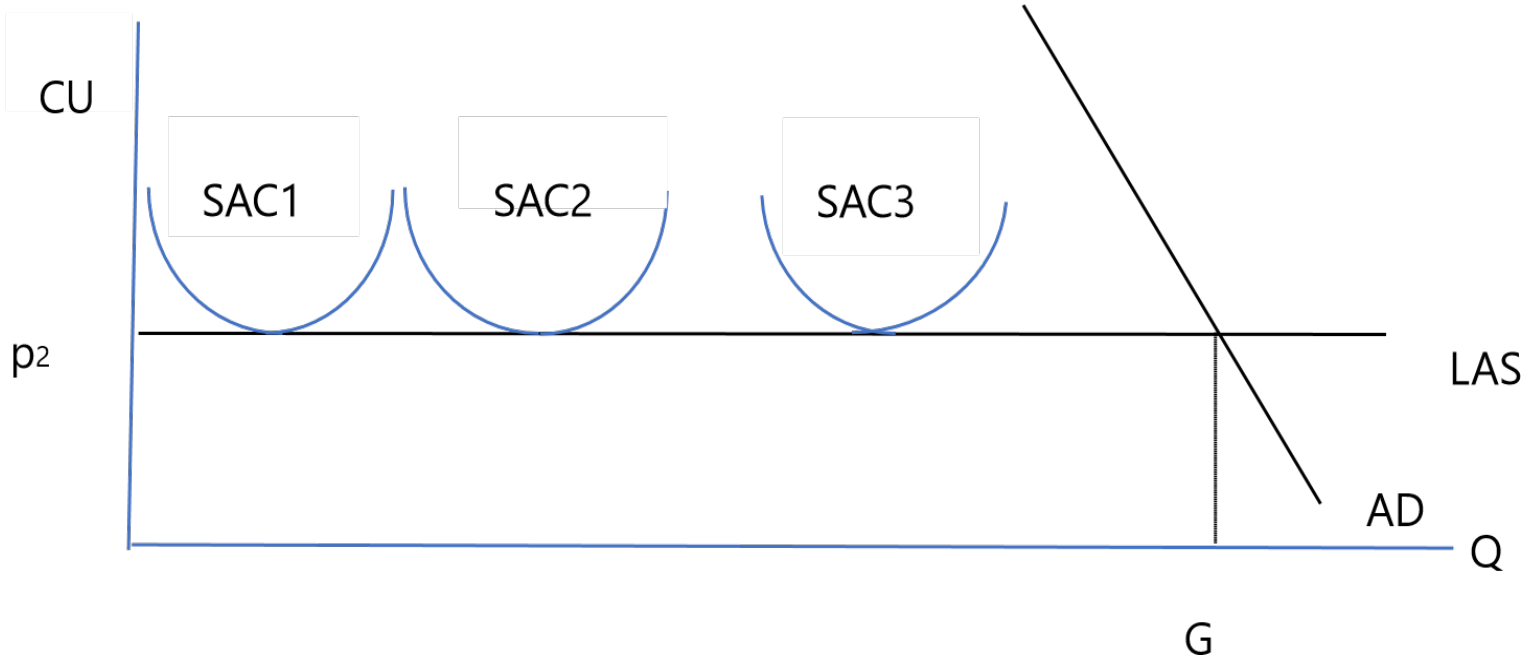
Michael Heine und Hansjörg Herr
Die Europäische Zentralbank
metropolis

Thanks

Perfect competition

homogenous good, all firms the same technology, constant or falling economies of scale

Wage increases do not change functional distribution

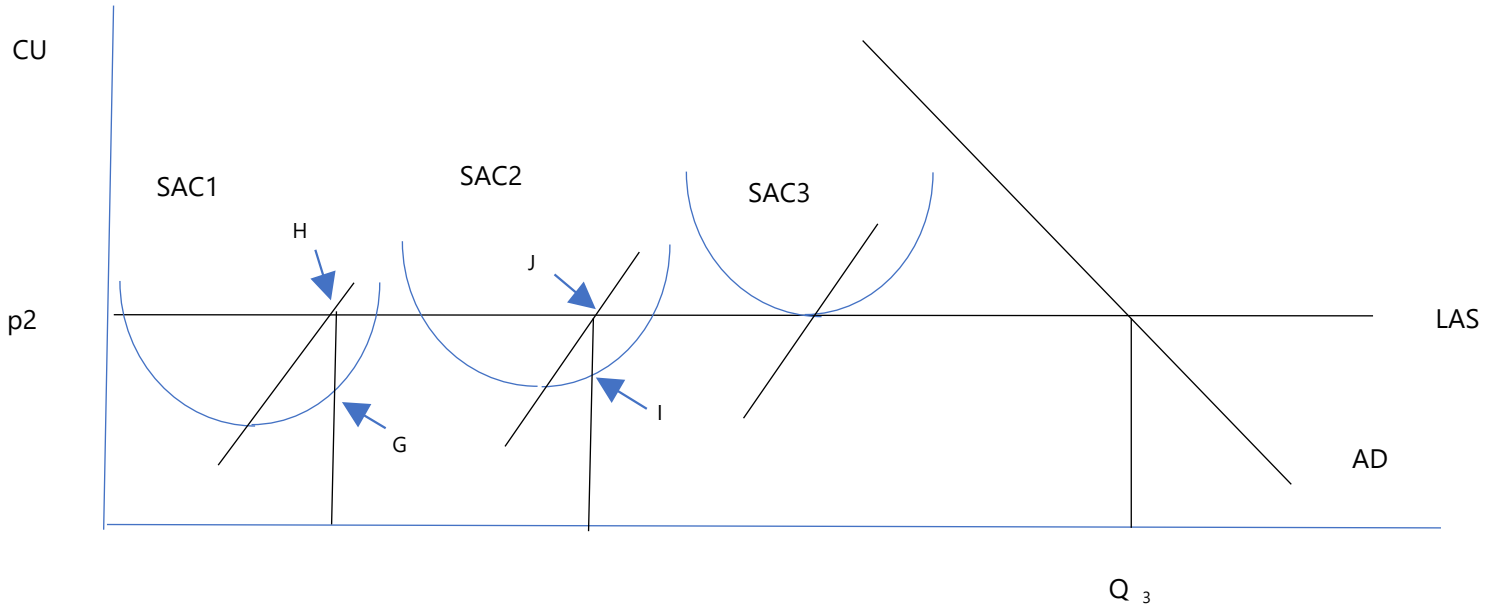


LAS: long-run aggregate supply, AD: aggregate demand, SAC: short-run average cost curves

Perfect competition

homogenous good, firms have different technologies, constant or falling economies of scale

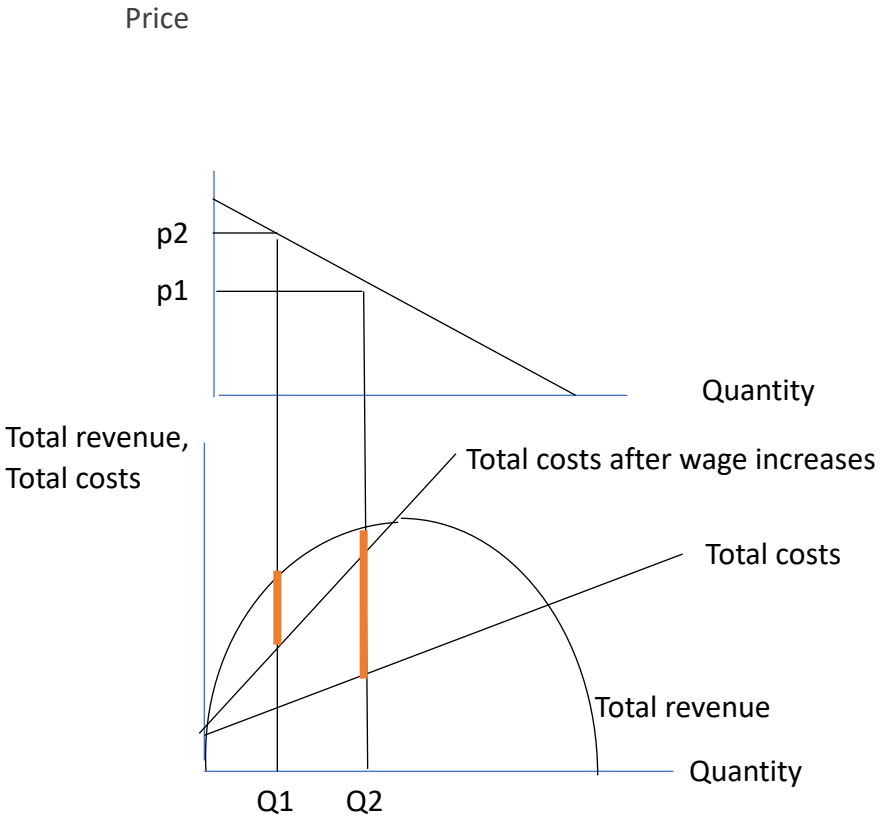
Wage increases can reduce extra profits



LAS: long-run aggregate supply, AD: aggregate demand, SAC: short-run average cost curves

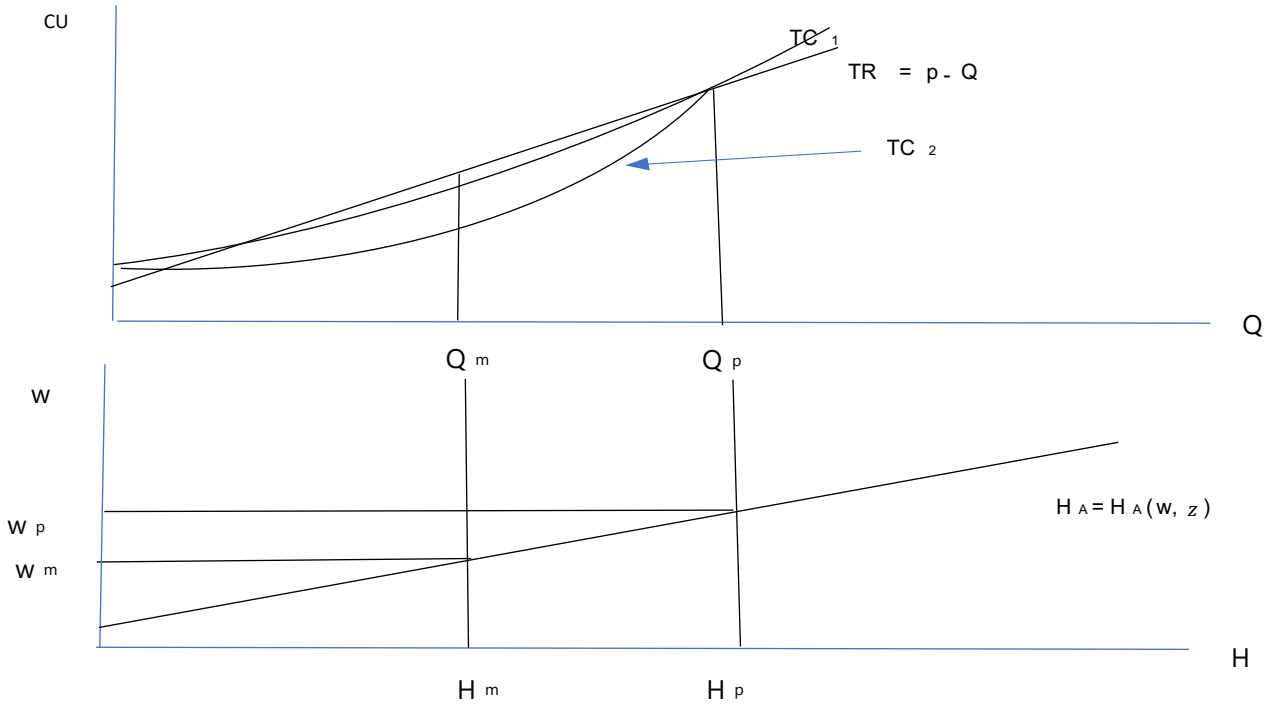
Monopoly and oligopoly

Wage increases can reduce profits



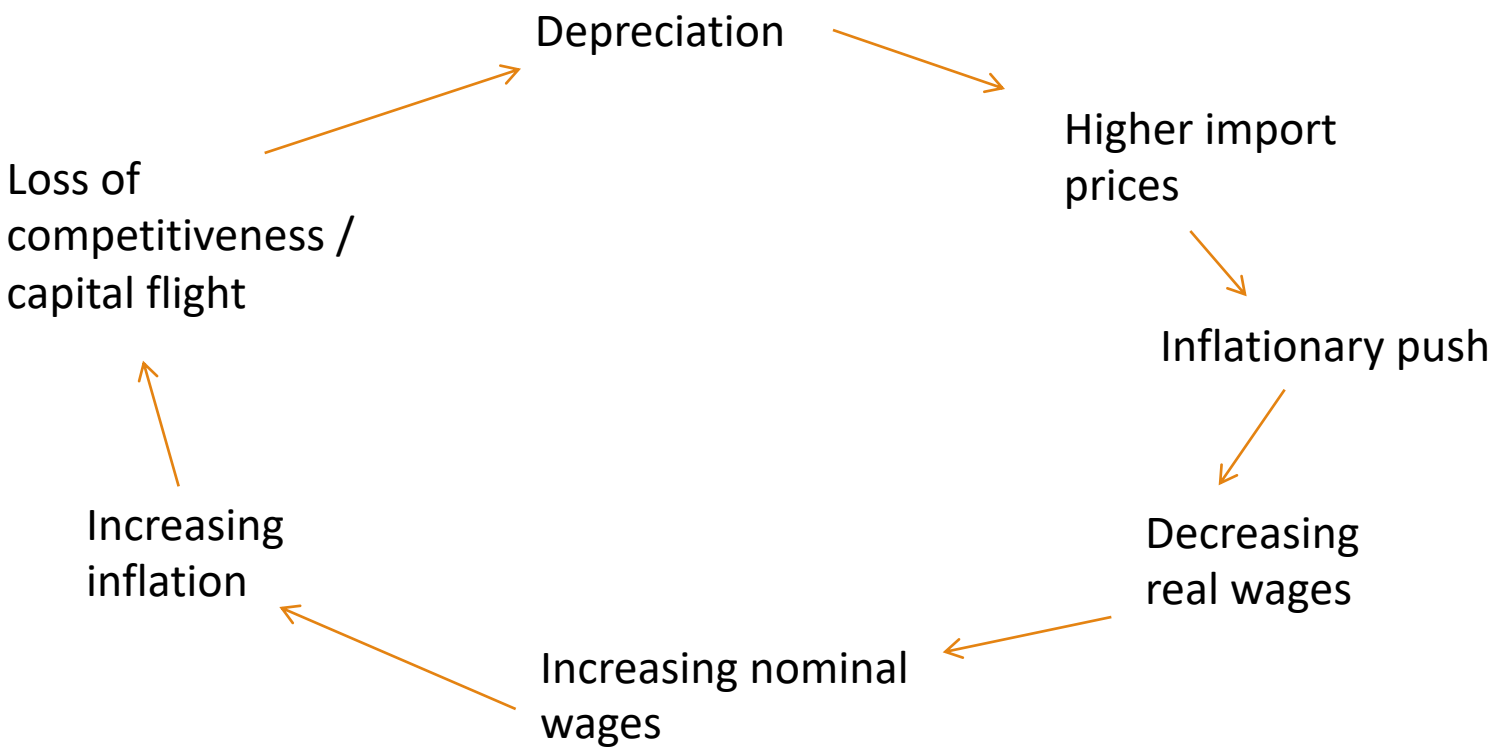
Monopsony in the labour market

Wage increase can reduce profits



TC: total costs, H: labour, H_A: labour supply, w: wages, z: other factors, TR: total revenue

Depreciation wage price spiral



The mechanism of hyperinflation