

# Productivity Growth and Class Struggle in a Growth Regime Framework

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IPE

IPE Workshop

“Demand and Growth Regimes: Expanding the Debate”

22-23 October 2024



# Outline

- 1 Motivation
- 2 A post-Keynesian model
- 3 Adding institutions
- 4 Empirical analysis
- 5 Discussion

# Motivation: Empirical puzzle

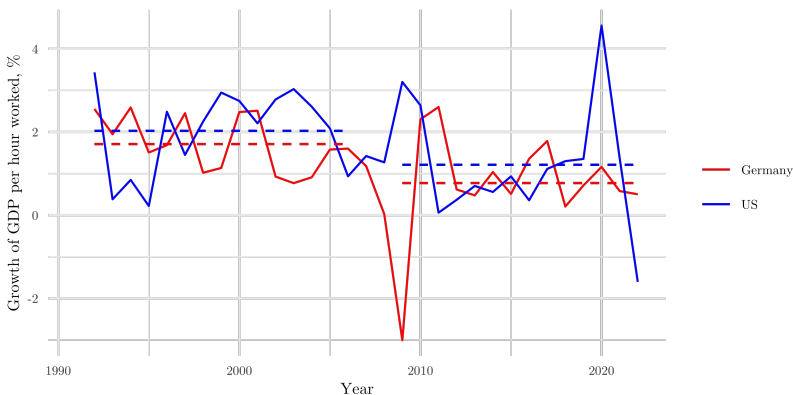


Figure 1: Productivity growth, Germany and the US, %, 1992–2022

Notes: Own calculation and depiction; data from OECD (2024c). Dashed lines depict averages pre- and post-GFC. Pre-GFC: 1992–2006; post-GFC: 2009–2022.

## Motivation: Theoretical interest

- High relevance of productivity growth in history of economic thought
- **Growth Regime approach** (Hein, 2023; Stockhammer, 2023) shows variety of possible regimes in political economy
  - Emphasis on **employment effects** of technological change (Hein, 2023) or **path dependency** (Stockhammer, 2023)
  - Productivity growth: underlying factor, not the focus itself
- Large presence in heterodox research with **endogenous technical progress**
  - Kaldorian theories e.g., technical progress function (Kaldor, 1957), Verdoorn's law (Kaldor, 1966), cumulative causation models (Setterfield & Cornwall, 2002)
  - Classical approaches e.g., cost-induced technical change (Kemp-Benedict, 2022)
  - Kaleckian approaches e.g., demand and wage channel (Hein & Tarassow, 2010)

# Model foundations

- Main arguments:
  - Rejection of production functions (Kaldor, 1957)
  - ‘Real’ endogeneity of technical progress (Kaldor, 1957, 1961, 1966)
  - Historical time (Robinson, 1962, ch. 2)
- Main assumption: **Harrod-neutral technical progress**
- Channels:
  - **Demand:** Verdoorn’s law with positive connection between output and productivity growth (Kaldor, 1966)
  - **Wages:** Marx-Hicks effect with induced technical change (Duménil & Lévy, 1992; Duménil & Lévy, 2010; Kemp-Benedict, 2022; Cassetti, 2003; Naastepad, 2006; Hein & Tarassow, 2010; Hartwig, 2014)

## Formal definition

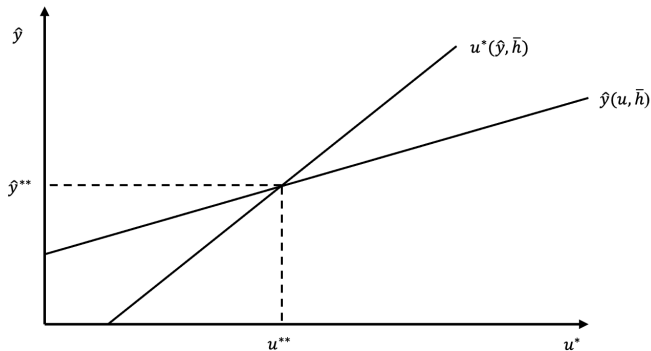
- **Bhaduri and Marglin (1990) model**
- Extension by Setterfield and Cornwall (2002) and Hein and Tarassow (2010)
- Demand regime in terms of capacity utilization:

$$u^* = \frac{\alpha + \tau h + \omega \hat{y} + \psi e^r(h)}{[s_W + (s_\Pi - s_W)h] \frac{1}{v} - \beta + \phi}$$

- Productivity regime in terms of capacity utilization:

$$\hat{y} = \eta + \rho u - \theta h, \quad \eta, \rho, \theta > 0$$

# Graphical illustration: Capacity utilization



**Figure 2:** Long-run equilibrium of the demand and the productivity regime, capacity utilization

*Source:* Own depiction based on Hein (2014, ch. 8).

## Adding institutions: Some topics

- Acknowledgment of **institutions as crucial factor** and their effect on productivity growth
- Various examples:
  - Contest of economic policy orientation (Vergeer & Kleinknecht, 2010, 2014; Kleinknecht et al., 2014; Kleinknecht, 2015, 2020; Storm & Naastepad, 2012; Storm, 2022)
  - Labor markets (Storm & Naastepad, 2012, ch. 4)
  - Bargaining system (Cassetti, 2003; Bhaduri, 2006)
  - Direct effect of industrial policy (Mazzucato, 2011, 2018; Deleidi & Mazzucato, 2019)
  - Financialization and intellectual property rights (Hein, 2012; Pagano, 2014; Durand, 2020; Rikap, 2021, 2023)
- No **common framework** yet



## Adding institutions: Régulation Theory

- Main argument: **Necessary regulation** of the social sphere to fit mode of production (Aglietta, 2015; Lipietz & Jenson, 1987)
- **Historical sequences**, not diversity of regimes
  - Contradictions, shifts and development of regimes in Althusserian sense (Lipietz & Jenson, 1987)
  - Extension to diversity of regimes possible (Amable, 2023)
- Institutional context with five institutional forms (Petit, 1999):
  - **Forms of competition**
  - **Wage-labor relations**
  - **State apparatus**
  - International relations
  - Money

# Adding institutions: My framework

**Table 1:** Theoretical effects of the institutional forms on the partial and overall regimes with a wage-led demand regime

Effect of	Wage-labor nexus		Forms of competition		Forms of the state	
	Labor market regulation	Bargaining power	Intellectual monopoly	Market power	Public investment	Social welfare
<b>Effect on</b>						
<b>Productivity regime</b>						
Profit share	+	+	-	-	/	+
Autonomous innovation	+	/	-	+	+	/
	+	+	-	+	+	+
<b>Demand regime</b>						
Profit share	+	+	-	-	/	+
Autonomous demand	/	/	/	/	+	+
Investment	-	-	+	+	+	/
Consumption	+	+	-	-	+	+
Net exports	-	-	+	/	+	-
	+	+	-	-	+	+
<b>Overall regime with wage-led demand regime</b>						
Capacity utilization	+	+	-	?	+	+
Capital accumulation	+	+	-	?	+	+
Productivity growth	+	+	-	?	+	+

*Notes:* Own depiction; a plus represents a positive effect on the respective regime through the respective variable, a minus a negative effect, a slash indicates no effect, a question mark an undetermined one.

# Analysis: Macroeconomic indicators

**Table 2:** Averages and changes of macroeconomic indicators; Germany and the US; overall, before and after the GFC

	Germany				US			
	Overall	Pre-GFC	Post-GFC	Change	Overall	Pre-GFC	Post-GFC	Change
Output growth (%)	1.28	1.39	1.08	-0.31	2.43	3.13	1.83	-1.30
Productivity growth (%)	1.22	1.71	0.77	-0.94	1.61	2.03	1.21	-0.82
Profit share (%)	42.20	41.64	42.39	0.75	41.62	39.98	43.50	3.52
Change in capacity utilization (%)								
– Conventional calculation	-0.10	-0.23	-0.06	0.17	0.08	0.23	0.05	-0.18
– Non-conventional calculation	0.06	0.01	0.10	0.09	0.10	0.05	0.55	0.50
Capital accumulation rate (%)	1.23	1.71	0.74	-0.98	2.39	2.86	1.83	-1.03
Net exports share (% of GDP)	3.83	1.80	5.78	3.98	-3.04	-2.73	-3.11	-0.38

*Notes:* Own calculations based on OECD (2024b, 2024c), European Commission (2023), and OECD (2024a), . Overall: 1991–2022; pre-GFC: 1991–2006; post-GFC: 2009–2022; change: difference between the pre- and post-GFC period. Rates of change calculated from 1992 onwards. Conventional data for capacity utilization refers to output gap estimations, while non-conventional data to survey data in manufacturing.

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# Analysis: Institutional indicators

**Table 4:** Averages and changes of institutional indicators; Germany and the US; overall, before and after the GFC

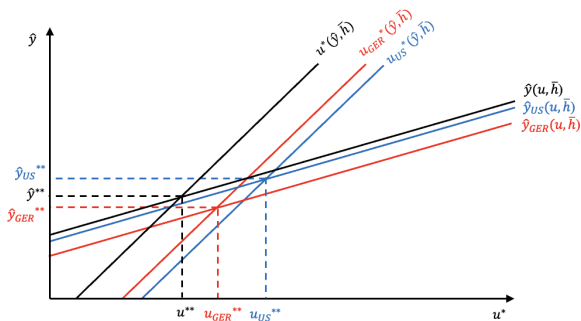
	Germany				US			
	Overall	Pre-GFC	Post-GFC	Change	Overall	Pre-GFC	Post-GFC	Change
EPL <sub>t</sub> (Index)	1.75	2.27	1.12	-1.14	0.25	0.25	0.25	0.00
Bargaining coverage (% of workers)	64.19	70.14	57.59	-12.55	14.15	15.57	12.38	-3.19
Change in patent applications (%)	1.11	4.87	0.25	-4.62	1.86	4.36	3.25	-1.11
Market concentration (%)	16.73	18.01	15.22	-2.78	39.62	36.00	42.33	6.33
Public investment (% of GDP)	2.38	2.47	2.34	-0.13	3.66	3.81	3.45	-0.37
Social welfare (% of GDP)	12.02	11.36	12.90	1.54	6.16	6.08	6.22	0.14

*Notes:* Own calculations based on OECD (2021), OECD and AIAS (2023), OECD (2023), Monopolkommission (2022), Fortune (2024), and European Commission (2023). Overall: 1991–2022; pre-GFC: 1991–2006; post-GFC: 2009–2022; change: difference between the pre- and post-GFC period. Rates of change calculated from 1992 onwards. For changes in patents, 2020 is excluded due to high distortion caused by Covid.

## Discussion: Empirical results

- Classification:
  - Germany: **Labor-led productivity regime** in search of a new mode of régulation
  - US: **State-led productivity regime** that dampened the general downward trend
- Crucial factors:
  - Common downward trend
  - Labor market reforms in Germany
  - Public investment in the US
  - Demand structure
  - Diverging growth paths
- Limitations:
  - Various problems with the data
  - Time series characteristics

# Discussion: Theoretical Integration I



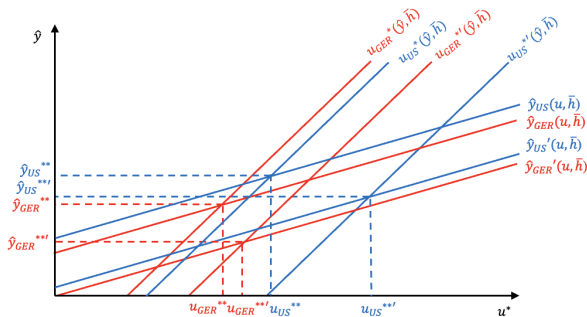
(a) Development during pre-GFC

**Figure 3:** Stylized long-run effects on capacity utilization, and productivity growth; Pre- and post-GFC; Germany and the US

*Notes:*  $\hat{y}$ : productivity growth,  $u$ : capacity utilization,  $h$ : profit share,  $x^*$ : goods market equilibrium of  $x$ ,  $x^{**}$ : equilibrium of demand and productivity regime of  $x$ ,  $\bar{x}$ : constant of  $x$ ;  $x^t$ : post-GFC period. Black elements represent the common starting point, red elements the German development, blue ones that of the US. Country-specific economic deviation from the stylized common starting point before the analyzed period.

*Source:* Own depiction based on Hein (2014, ch. 8).

# Discussion: Theoretical Integration II



(b) Development during post-GFC

**Figure 3:** Stylized long-run effects on capacity utilization, and productivity growth; Pre- and post-GFC; Germany and the US (continued)

*Notes:*  $\hat{y}$ : productivity growth,  $u$ : capacity utilization,  $h$ : profit share,  $x^*$ : goods market equilibrium of  $x$ ,  $x^{**}$ : equilibrium of demand and productivity regime of  $x$ ,  $\bar{x}$ : constant of  $x$ ;  $x'$ : post-GFC period. Black elements represent the common starting point, red elements the German development, blue ones that of the US. Country-specific economic deviation from the stylized common starting point before the analyzed period.


*Source:* Own depiction based on Hein (2014, ch. 8).



# Conclusion

- **Institutional extension** of the post-Keynesian model of endogenous technical change
  - Wage and demand channel
  - Classification of productivity regime regarding institutions
- Application to **Germany and the US**
- Integration in overall regime change possible
- Limitations:
  - Theory of sectoral change
  - Innovation through finance
  - Focus on developed countries





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