

Labour Market Institutions, Distribution Conflict and Productivity Growth

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Motivation: Productivity growth is declining...

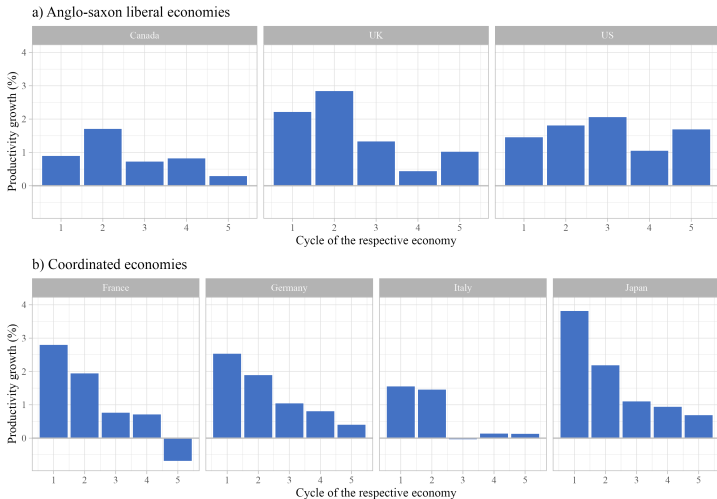


Figure 1: Average productivity growth, G7 economies, business cycles, 1981-2024

Notes: Own depiction and calculation; data from European Commission (2025).

Outline

- 1 Post-Keynesian Research on Productivity Growth
- 2 Labour Market Institutions and Productivity Growth
- 3 The Combined Framework and Possible Regimes
- 4 Labour Market Institutions, Distribution Conflict and Productivity Growth in the G7 Economies
- 5 Conclusion

The Verdoorn Relationship

- Kaldorian growth theory:
 - Technical progress function: Positive relationship between growth of **capital stock** and of productivity (Kaldor, 1957, 1961)
 - Verdoorn's law: Positive relationship between growth of **output** and of productivity (Kaldor, 1966, 1975)
 - Key argument: **Increasing returns to scale**
 - Numerous empirical tests (see, e.g., McCombie, 2002)

→ **Demand** affects productivity growth

Wage-push Effect

- Historical reference: Marx (1867[1975], ch. 15) and Hicks (1932[1963], ch. 6)
- Several applications in **classical-Marxian** growth models (Duménil & Lévy, 1995; Duménil & Lévy, 2010; Kurz, 2010; Tavani, 2012; Zamparelli, 2015; Kemp-Benedict, 2022, 2024; Stamegna, 2024)
- Cost-induced technical change: Pressure on firms' profit share by **increasing real wage and lower unemployment**
 - Introduction of labour-saving technology and improvement of productivity growth
 - Effects on market composition
 - Diffusion of innovation due to labour shortage (Dutt, 2006)

→ **Distribution** affects productivity growth

A Kaleckian Model with Endogenous Technical Change

- Model in tradition of **Kalecki (1954) and Steindl (1976)**
 - Main assumption: Harrod-neutral with constant capital-potential output ratio
 - Capital-embodied character of technical change
- Model with **demand and productivity component** (Setterfield & Cornwall, 2002; Casetti, 2003; Naastepad, 2006; Hein & Tarassow, 2010; Storm & Naastepad, 2013, 2017; Hartwig, 2013, 2014)
 - Separate analysis of both components
 - Interaction of both components creates an overall demand-led equilibrium

$$\hat{y} = \hat{y}(g^*, \Omega, z_i), \frac{\hat{y}}{g^*} > 0, \frac{\hat{y}}{\Omega} > 0, \frac{\hat{y}}{z_i} > 0 \quad (1)$$

$$g^* = g^*(\alpha, \Omega, s_{\Pi}, \hat{y}), \frac{g^*}{\alpha} > 0, \frac{g^*}{\Omega} = ?, \frac{g^*}{s_{\Pi}} < 0, \frac{g^*}{\hat{y}} > 0 \quad (2)$$

Illustration of the Model

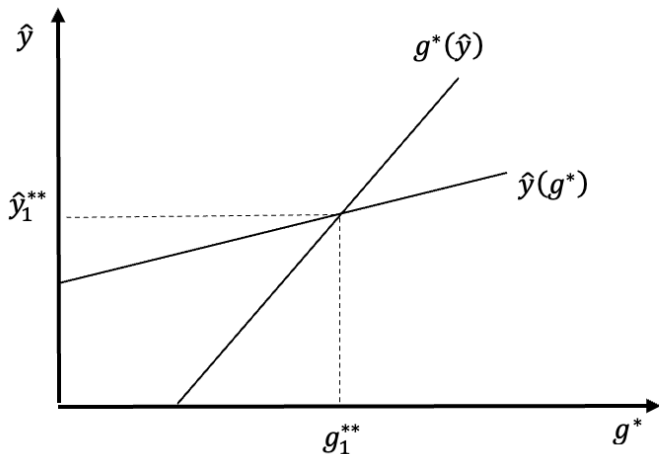


Figure 2: A Kalecki-Steindl-Kaldor-Marx endogenous growth model

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

Previous Incorporation of LMIs in pKe Models

- Institutions as **implicit** factor:
 - Institutional setting (Setterfield & Cornwall, 2002)
 - Income distribution determined exogenously by institutions (Hein & Tarassow, 2010; Nah & Lavoie, 2019; Petach & Tavani, 2020)
 - **Explicit** analysis of certain institutions or their effects:
 - ‘Catch-all’ institutional variable (Storm & Naastepad, 2012)
 - Labour market institutions’ influence on wage bargaining (Tavani, 2013; Cícero & Tavani, 2025; Tavani & Zamparelli, 2025)
- Co-evolution of institutions and technology: Institutions as condition for and depending on technical change (Nelson, 2008)

Connection to Schumpeter

- Effects of labour market institutions through a Schumpeterian lens:
 - Wage growth: Pressure on technological laggards and stimulation of ‘**creative destruction**’ (Vergeer & Kleinknecht, 2010, 2014)
 - Wage bargaining level:
 - Decentralisation of bargaining makes technological laggards **more competitive** (Kleinknecht, 2020)
 - Bargaining at the national level increases the incentive to innovate with equalised wage development (Kılıçaslan & Taymaz, 2008)
 - Knowledge management: **Knowledge accumulation** and protection at the firm level deteriorate with more flexible labour markets (Kleinknecht, 2020)

Introducing Variety: Schumpeter Models

- Creation of innovation depends on predominant technological regime (Malerba & Orsenigo, 1995, 1996)
 - Schumpeter Mark I: **Widening**
 - “(L)ow concentration, low stability, high birth-rate, low firm size” (Malerba & Orsenigo, 1995, p. 58)
 - Prominent role of the **entrepreneur** and **new firms** in innovation
 - Schumpeter Mark II: **Deepening**
 - “(H)igh concentration, high stability, low birth-rate, high firm size” (Malerba & Orsenigo, 1995, p. 58)
 - Innovation by **R&D labs of large firms** with accumulated knowledge
- Labour market regulation may have diverse effects in economies with different predominant Schumpeter models

Direct and Indirect Effects of Institutions

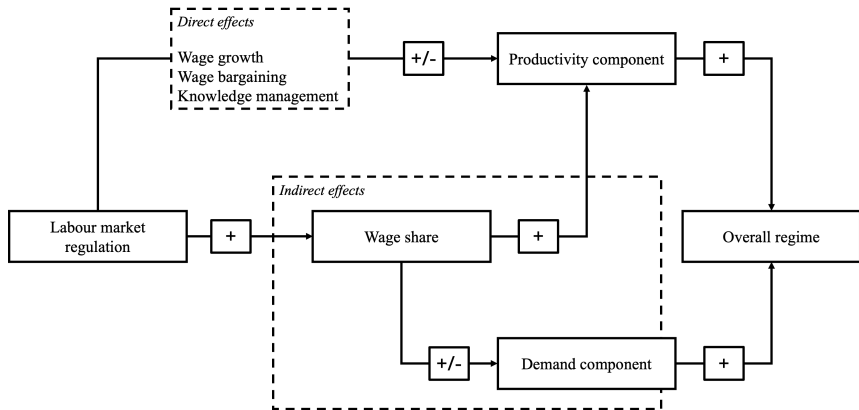


Figure 3: Direct and indirect effects of labour market regulation

Source: Own depiction; a plus depicts a positive effect, a minus a negative effect.

Possible Regimes: Different Layers

- Traditional distinction: Wage- vs. profit-led demand
 - Addition of a productivity component **driven by socio-economic conditions** (Blees, 2025)
 - Labour market institutions
 - Distribution
 - Focus on labour market institutions
 - Policy focus on **flexibility** may increase efficiency of allocation, but could be **harmful for productivity growth**
 - Differentiation necessary: Positive direct effects possible in Schumpeter Mark I
- Overall regime **undetermined**

Possible Regimes: Cases for Labour Market Regulation

- **Expansionary overall regime**, given that
 - Wage-led demand and positive direct regulation effect
 - Wage-led demand and negative direct regulation effect; wage-led demand dominates
 - Profit-led demand and positive direct regulation effect; regulation effect dominates
 - **Contractionary overall regime**, given that
 - Profit-led demand and negative direct regulation effect
 - Profit-led demand and positive direct regulation effect; profit-led demand dominates
 - Wage-led demand and negative direct regulation effect; regulation effect dominates
 - Probability of contractionary regime is lower due to the **unique wage-led nature** of the productivity component
- Empirical analysis necessary to determine the respective overall regime

Empirical Approach

- Data sample:
 - G7 economies as given entity of most advanced economies
 - Period: 1980–2024
 - Medium- to long-run: Averages for business cycles Years
- Identification of emerging patterns and their effect on the economic outcomes, especially productivity growth

Indicators for Labour Market Institutions

- Measures:
 - Employment protection index for regular and temporary workers by OECD (2024)
 - Bargaining level by OECD and AIAS (2025)
 - Union density by OECD and AIAS (2025)
 - Bargaining coverage by OECD and AIAS (2025)
- Specific characteristics of economies Data
 - Liberal market economies vs. coordinated or mixed market economies
 - Economies with a coordinated labour market differ among each other
- Calculation of a summary index: Weighted average Formula

Summary Index for Labour Market Institutions

Table 1: Summary index for labour market institutions, G7 economies, business cycles, 1981-2019

Country	Cycle 1	Cycle 2	Cycle 3	Cycle 4
Canada	0.257	0.242	0.227	0.222
France	0.509	0.518	0.532	0.528
Germany	0.584	0.515	0.445	0.423
Italy	0.710	0.658	0.598	0.605
Japan	0.262	0.234	0.199	0.190
UK	0.454	0.318	0.292	0.265
US	0.153	0.137	0.125	0.118

Notes: Own calculations based on OECD (2024) and OECD and AIAS (2025). The labour market institutions index is the weighted average of indicators normalised to a scale from 0 to 1; 0 indicates a fully deregulated labour market, 1 a fully regulated one.

Regulation and Endogenous Variables I

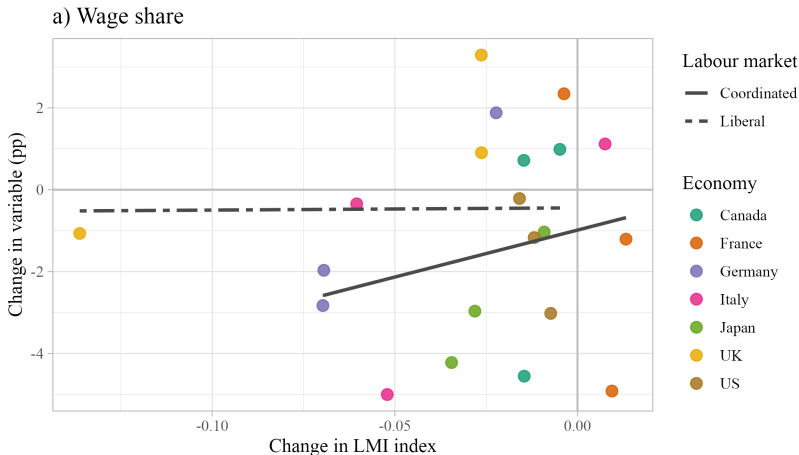


Figure 4: Changes in labour market institutions and in endogenous variables, G7 economies, business cycles, 1981-2019

Notes: Own depiction and calculation; data from OECD (2024), OECD and AIAS (2025), and European Commission (2025). Lines depict an lm regression for the respective group of economies.

Regulation and Endogenous Variables II

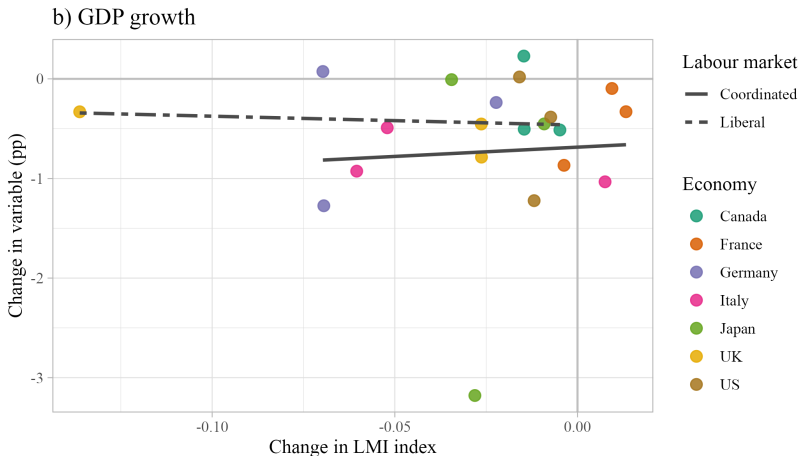


Figure 4: Changes in labour market institutions and in endogenous variables, G7 economies, business cycles, 1981-2019

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Regulation and Endogenous Variables III

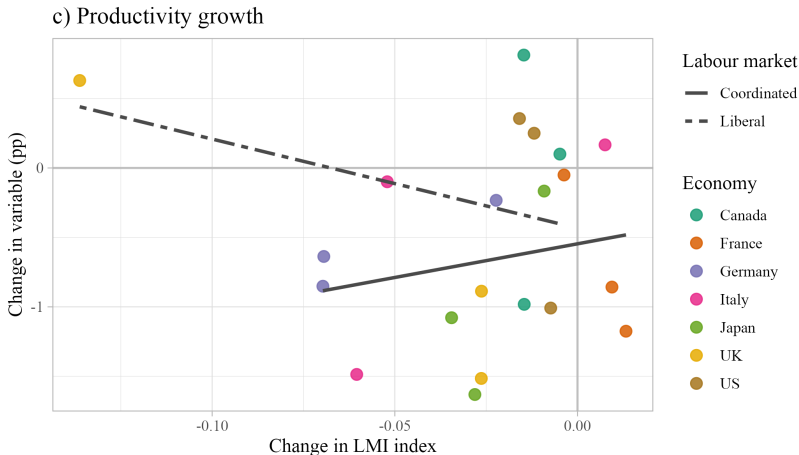


Figure 4: Changes in labour market institutions and in endogenous variables, G7 economies, business cycles, 1981-2019

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Regulation and Endogenous Variables IV

c) Productivity growth

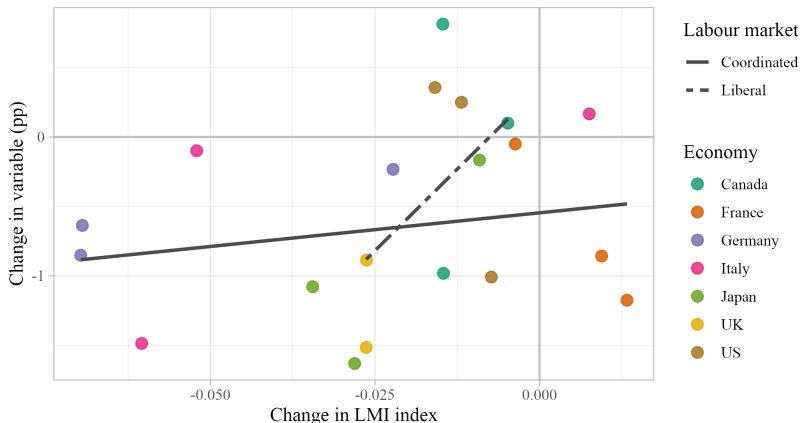


Figure 5: Changes in labour market institutions and in endogenous variables, G7 economies, business cycles, 1981-2019, outlier excluded

Notes: Own depiction and calculation; data from OECD (2024), OECD and AIAS (2025), and European Commission (2025). Lines depict an lm regression for the respective group of economies. Change in UK between cycle 1 and 2 excluded.

Different Development Paths

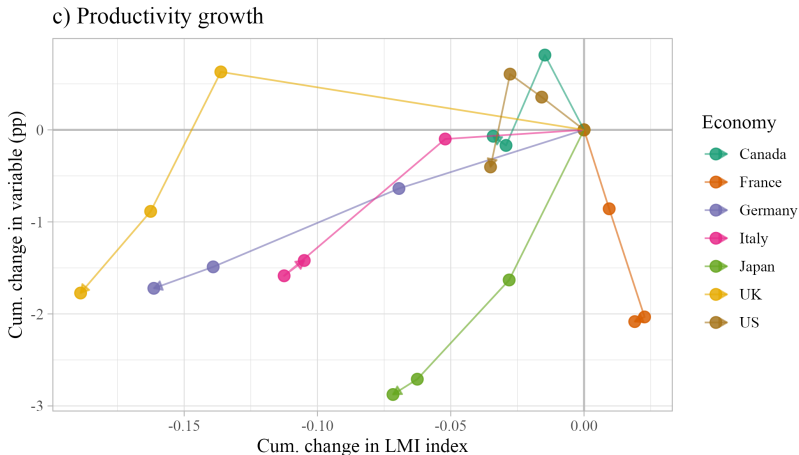


Figure 6: Cumulative changes in labour market institutions and in endogenous variables, G7 economies, business cycles, 1981-2019

Notes: Own depiction and calculation; data from OECD (2024), OECD and AIAS (2025), and European Commission (2025).

Overall Regime: Stagnation Tendencies in Productivity

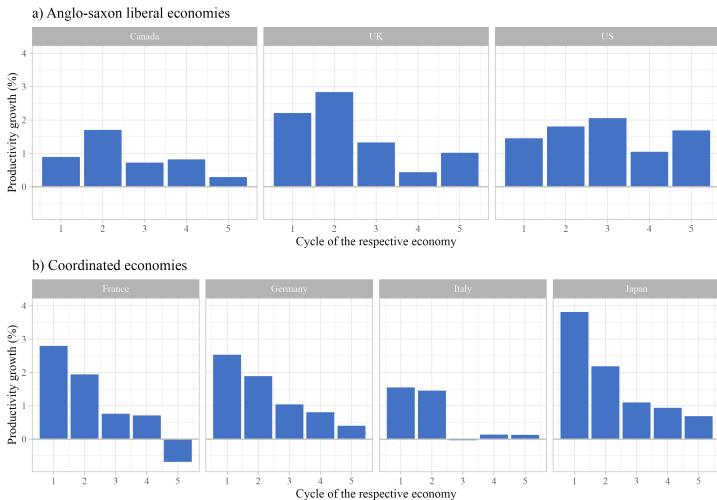


Figure 1: Average productivity growth, G7 economies, business cycles, 1981-2024

Notes: Own depiction and calculation; data from European Commission (2025).

Overall Regime: Stagnation Tendencies in GDP

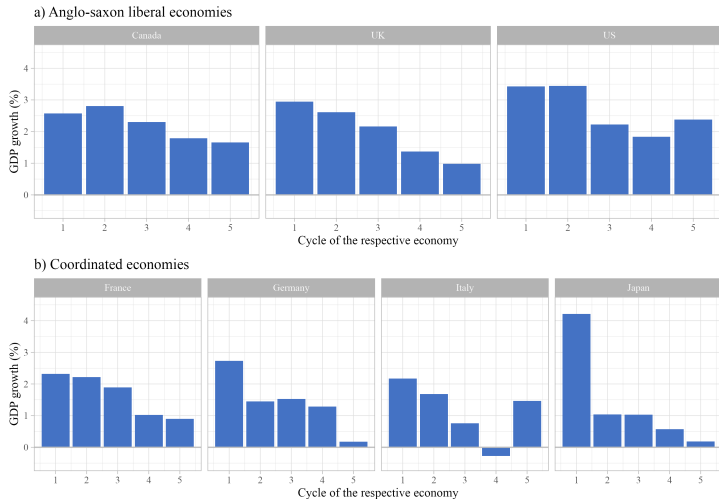


Figure 7: Average GDP growth, G7 economies, business cycles, 1981-2024

Notes: Own depiction and calculation; data from European Commission (2025).

Overall Regime: Further Macroeconomic Effects

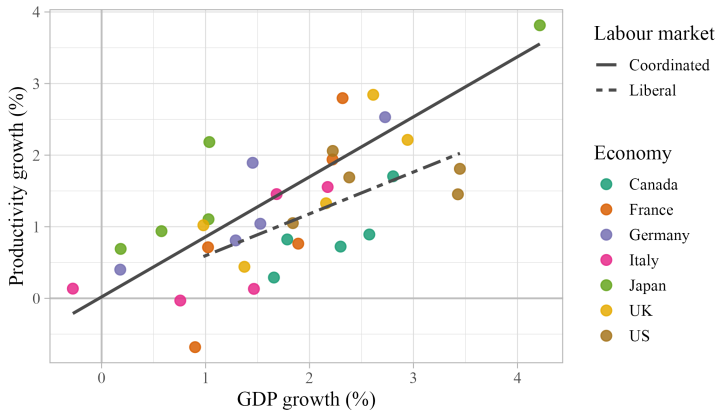







Figure 8: GDP growth and productivity growth, G7 economies, business cycles, 1981-2024

Notes: Own depiction and calculation; data from European Commission (2025). Lines depict an lm regression for the respective group of economies.

Conclusion

- Labour market institutions do have direct and indirect effects on productivity growth
 - Implementation in post-Keynesian growth model is possible
 - Differentiation according to Schumpeter model is necessary
- Varying effects visible in G7 economies
 - Economies with a liberal labour market exhibit short-run positive development of productivity growth under deregulation
 - Long-term deregulation and stagnation trends in all seven economies
- Focus on labour markets, no analysis of other macroeconomic factors
 - Strong Verdoorn effect (Hein & Tarassow, 2010)
 - Severe differences in demand between examined economies
- No inference statistics, but overall descriptive trends

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Cycles

Cycles for the G7 economies

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Country	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5
Canada	1982	1991	2003	2009	2020
	-1990	-2002	-2008	-2019	-2024
France	1981	1993	2003	2009	2020
	-1992	-2002	-2008	-2019	-2024
Germany	1982	1993	2003	2009	2020
	-1992	-2002	-2008	-2019	-2024
Italy	1982	1993	2003	2009	2020
	-1992	-2002	-2008	-2019	-2024
Japan	1981	1993	2003	2009	2020
	-1992	-2002	-2008	-2019	-2024
UK	1981	1991	2002	2009	2020
	-1990	-2001	-2008	-2019	-2024
US	1982	1991	2001	2009	2020
	-1990	-2000	-2008	-2019	-2024

Notes: Own classification based on recession years. A cycle starts with a recession year and ends the year before the next recession.

Tables Labour Market Institutions: Canada

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Indicators for labour market institutions, Canada, business cycles

Variable	Unit	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5
EPLr	Index	0.59	0.59	0.59	0.59	
EPLt	Index	0.25	0.25	0.25	0.25	
Level	Index	1.00	1.00	1.00	1.00	
UD	%	34.54	34.49	32.32	31.75	
UD (s)	%	36.48	31.84	29.47	28.45	28.65
Unadj. cov.	%	37.68	37.75			
Unadj. cov. (s)	%	39.77	32.63	31.63	30.50	30.65
Adj. cov.	%	37.68	37.75			
Adj. cov. (s)	%	39.77	32.63	31.63	30.50	30.65
Wage share	%	65.08	65.80	61.24	62.23	59.90

Notes: Own calculations based on OECD (2024) and OECD and AIAS (2025). EPL is the index for employment protection legislation; for regular workers the EPR version 1 is used, for temporary workers EPT version 1; data available from 1985. Adjusted bargaining coverage is adjusted for the number of employees with the right to bargain.

Tables Labour Market Institutions: France

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Indicators for labour market institutions, France, business cycles

Variable	Unit	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5
EPLr	Index	2.58	2.54	2.69	2.51	
EPLt	Index	2.70	3.13	3.13	3.08	
Level	Index	3.00	3.00	3.00	3.00	
UD	%	12.13	8.40	8.02	8.33	
UD (s)	%	14.43	10.80	10.63	10.68	
Unadj. cov.	%	65.90	68.50	72.80	73.65	74.75
Unadj. cov. (s)	%					
Adj. cov.	%	89.10	93.70	97.70	98.00	98.00
Adj. cov. (s)	%					
Wage share	%	70.38	65.46	64.26	66.60	66.77

Notes: Own calculations based on OECD (2024) and OECD and AIAS (2025). EPL is the index for employment protection legislation; for regular workers the EPR version 1 is used, for temporary workers EPT version 1; data available from 1985. Adjusted bargaining coverage is adjusted for the number of employees with the right to bargain.

Tables Labour Market Institutions: Germany

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Indicators for labour market institutions, Germany, business cycles

Variable	Unit	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5
EPLr	Index	2.50	2.59	2.60	2.60	
EPLt	Index	3.47	2.53	1.08	1.13	
Level	Index	3.00	3.00	3.00	3.00	
UD	%	31.78	24.83	19.23	16.35	14.65
UD (s)	%	26.30	23.40	18.20	15.93	
Unadj. cov.	%					
Unadj. cov. (s)	%		68.96	61.03	54.57	48.65
Adj. cov.	%	85.00				
Adj. cov. (s)	%		72.50	64.12	57.08	50.75
Wage share	%	66.73	64.77	61.94	63.81	63.78

Notes: Own calculations based on OECD (2024) and OECD and AIAS (2025). EPL is the index for employment protection legislation; for regular workers the EPR version 1 is used, for temporary workers EPT version 1; data available from 1985. Adjusted bargaining coverage is adjusted for the number of employees with the right to bargain.

Tables Labour Market Institutions: Italy

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Indicators for labour market institutions, Italy, business cycles

Variable	Unit	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5
EPLr	Index	3.02	3.02	3.02	2.80	
EPLt	Index	5.00	3.99	2.00	1.97	
Level	Index	3.18	3.00	3.00	3.27	
UD	%	39.65	33.51	31.47	32.36	30.48
UD (s)	%	40.87	32.87	26.32	25.47	
Unadj. cov.	%	100.00	100.00	100.00	100.00	100.00
Unadj. cov. (s)	%					
Adj. cov.	%	100.00	100.00	100.00	100.00	100.00
Adj. cov. (s)	%					
Wage share	%	65.18	60.17	59.83	60.95	58.71

Notes: Own calculations based on OECD (2024) and OECD and AIAS (2025). EPL is the index for employment protection legislation; for regular workers the EPR version 1 is used, for temporary workers EPT version 1; data available from 1985. Adjusted bargaining coverage is adjusted for the number of employees with the right to bargain.

Tables Labour Market Institutions: Japan

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Indicators for labour market institutions, Japan, business cycles

Variable	Unit	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5
EPLr	Index	1.70	1.70	1.61	1.37	
EPLt	Index	1.69	1.44	0.88	0.94	
Level	Index	1.00	1.00	1.00	1.00	
UD	%	27.74	22.88	18.96	17.58	16.63
UD (s)	%					
Unadj. cov.	%	22.07	18.41	15.34	14.82	14.35
Unadj. cov. (s)	%					
Adj. cov.	%	24.15	19.92	16.56	15.93	15.40
Adj. cov. (s)	%					
Wage share	%	69.91	66.94	62.72	61.68	63.88

Notes: Own calculations based on OECD (2024) and OECD and AIAS (2025). EPL is the index for employment protection legislation; for regular workers the EPR version 1 is used, for temporary workers EPT version 1; data available from 1985. Adjusted bargaining coverage is adjusted for the number of employees with the right to bargain.

Tables Labour Market Institutions: UK

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Indicators for labour market institutions, UK, business cycles

Variable	Unit	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5
EPLr	Index	1.35	1.38	1.51	1.41	
EPLt	Index	0.25	0.25	0.36	0.38	
Level	Index	2.60	1.27	1.00	1.00	
UD	%	45.56	33.17	27.43	24.62	21.93
UD (s)	%	38.20	32.34	28.47	25.02	22.95
Unadj. cov.	%					
Unadj. cov. (s)	%					
Adj. cov.	%	71.83	52.70			
Adj. cov. (s)	%			49.95	43.45	39.63
Wage share	%	61.69	60.62	63.91	64.82	62.95

Notes: Own calculations based on OECD (2024) and OECD and AIAS (2025). EPL is the index for employment protection legislation; for regular workers the EPR version 1 is used, for temporary workers EPT version 1; data available from 1985. Adjusted bargaining coverage is adjusted for the number of employees with the right to bargain.

Tables Labour Market Institutions: US

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Indicators for labour market institutions, US, business cycles

Variable	Unit	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5
EPLr	Index	0.09	0.09	0.09	0.09	
EPLt	Index	0.25	0.25	0.25	0.25	
Level	Index	1.00	1.00	1.00	1.00	
UD	%					
UD (s)	%	17.58	14.76	12.63	11.18	10.30
Unadj. cov.	%					
Unadj. cov. (s)	%	20.04	16.50	13.89	12.40	11.55
Adj. cov.	%					
Adj. cov. (s)	%	20.04	16.50	13.89	12.40	11.55
Wage share	%	64.90	64.68	63.51	60.49	59.29

Notes: Own calculations based on OECD (2024) and OECD and AIAS (2025). EPL is the index for employment protection legislation; for regular workers the EPR version 1 is used, for temporary workers EPT version 1; data available from 1985. Adjusted bargaining coverage is adjusted for the number of employees with the right to bargain.

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The index for labour market institutions (LMI_i) for economy e in cycle c is calculated as:

$$\begin{aligned} \text{LMI}_{e,c} = & \frac{1}{4} \left(\frac{\text{EPL}r_{e,c} + \text{EPL}t_{e,c}}{2} \right) + \\ & \frac{1}{4} \left(\frac{\text{Level}_{e,c}}{1} \right) + \\ & \frac{1}{4} \left(\frac{\text{UD}_{e,c} + \text{UD}s_{e,c}}{2} \right) + \\ & \frac{1}{4} \left(\frac{\text{AdjCov}_{e,c} + \text{AdjCov}s_{e,c} + \text{UnadjCov}_{e,c} + \text{UnadjCov}s_{e,c}}{4} \right) \end{aligned}$$

Full Figures for G7 Economies: Change

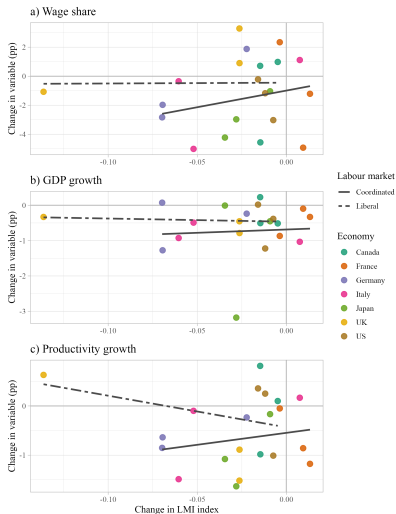
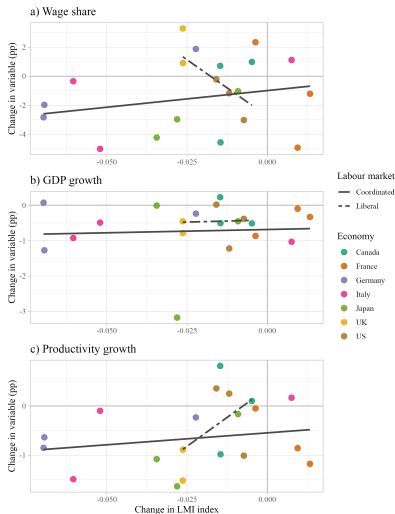

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Figure: Changes in labour market institutions and in endogenous variables, G7 economies, business cycles, 1981-2019

Full Figures for G7 Economies: Outlier Excluded



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Figure: Changes in labour market institutions and in endogenous variables, G7 economies, business cycles, 1981-2019, outlier excluded

Full Figures for G7 Economies: Cumulative Changes

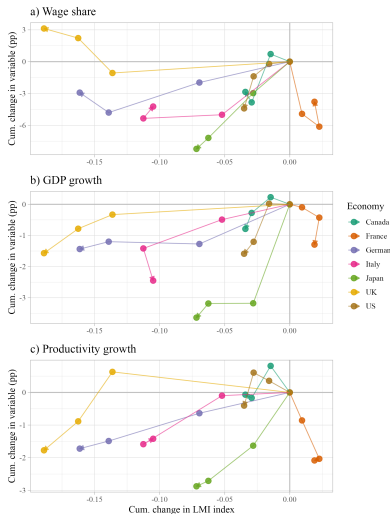

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Figure: Cumulative changes in labour market institutions and in endogenous variables, G7 economies, business cycles, 1981-2019