Inter-generational conflict and the declining labor share

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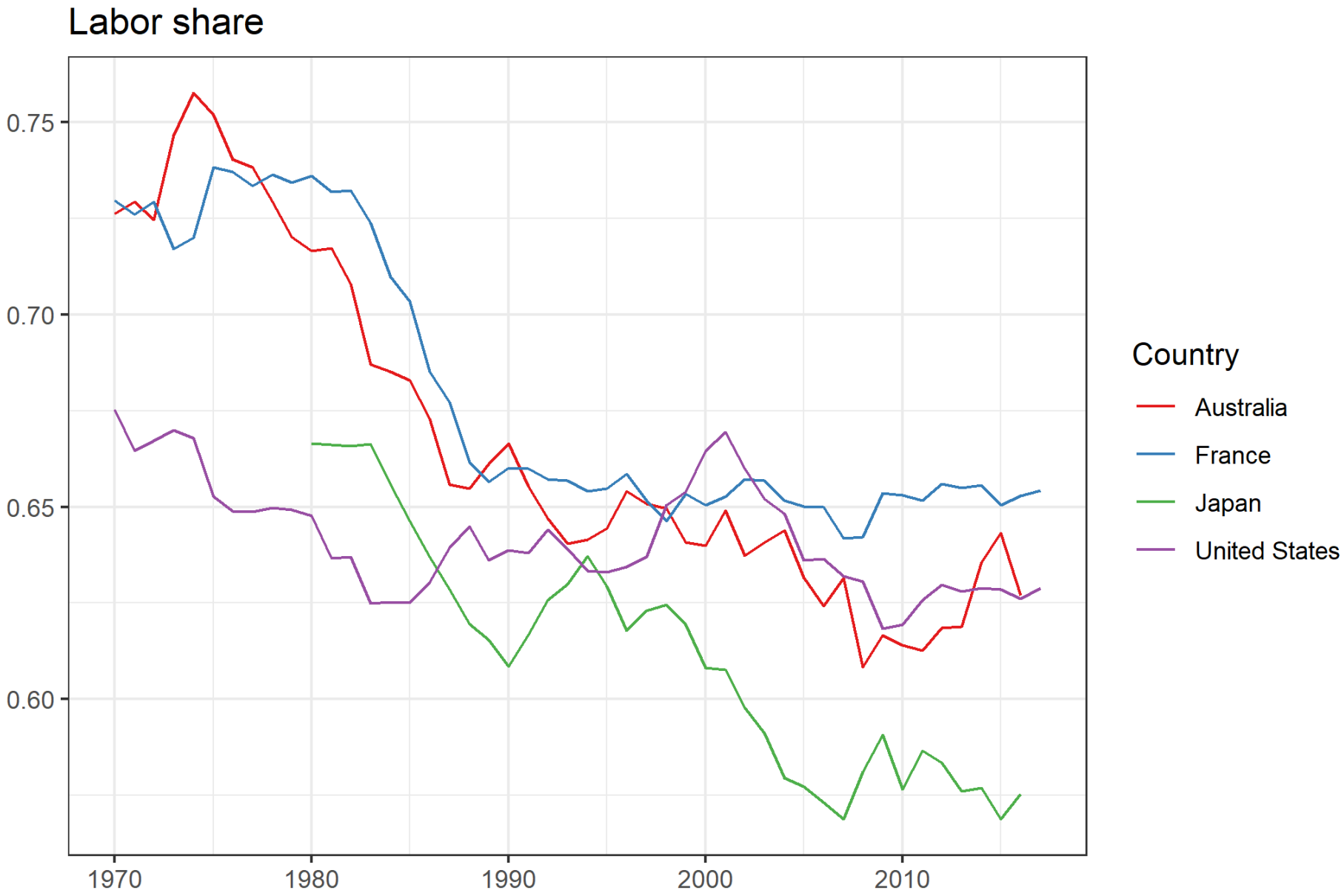
Declining labor share in high-income countries



Declining labor share in high-income countries

- Main determinants:
  - Globalization: Autor et al. (2020); Jayadev (2007); Pica (2010); Young and Tackett (2018)
  - Biased technical change: Acemoglu (2002); Acemoglu (2003); Karabarbounis and Neiman (2014)
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The impacts of an aging population

- Aging directly affects the economy: Dedry et al. (2017); Futagami and Nakajima (2001); Schmidt and Vosen (2013); Razin et al. (2002)

Figure: Chloe Swarbrick in New Zealand Parliament on October 5, 2019

- But also **indirectly through institutional changes**: Busemeyer et al. (2009); Gonzalez-Eiras and Niepelt (2012); Jäger and Schmidt (2016); Sørensen (2013)
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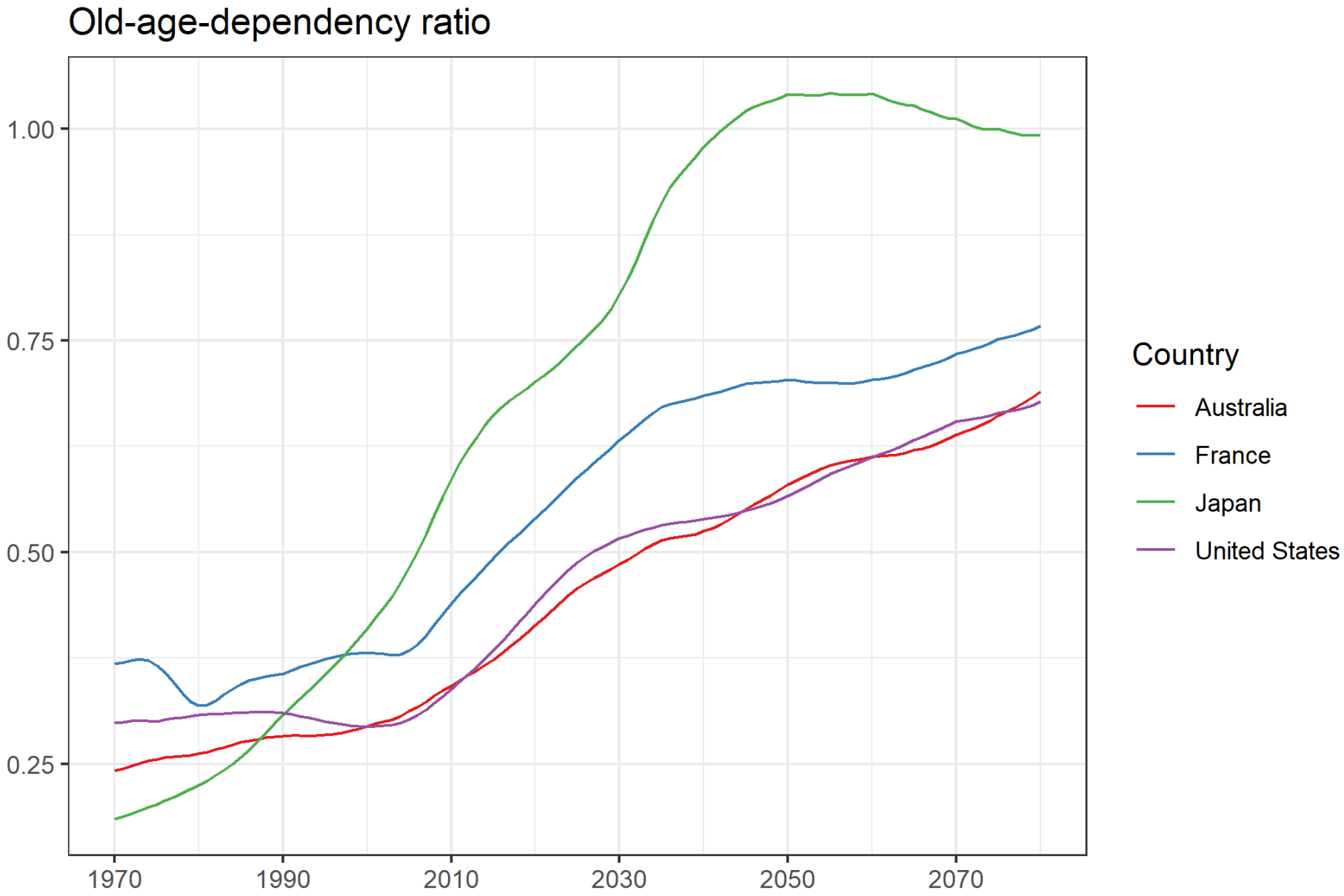
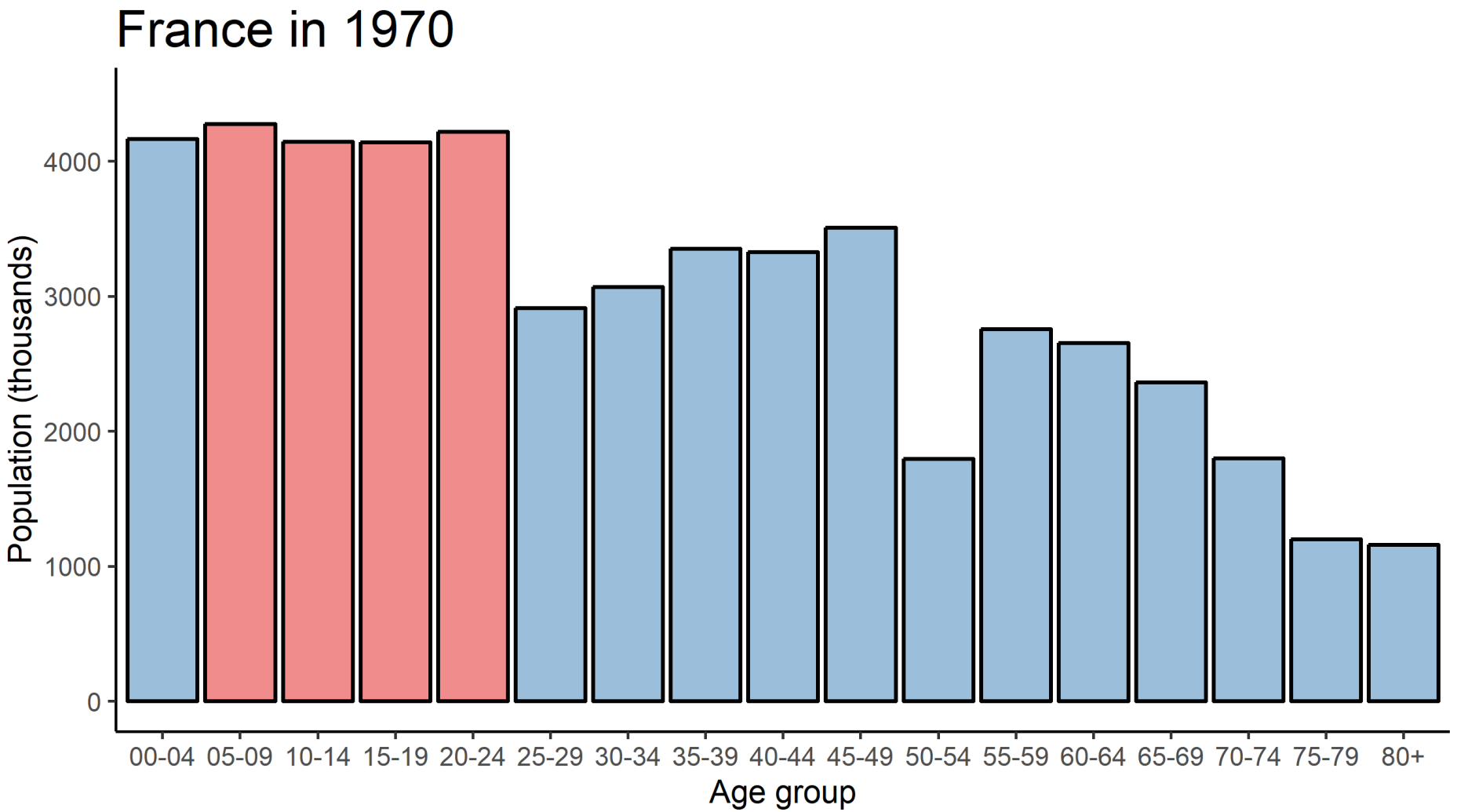
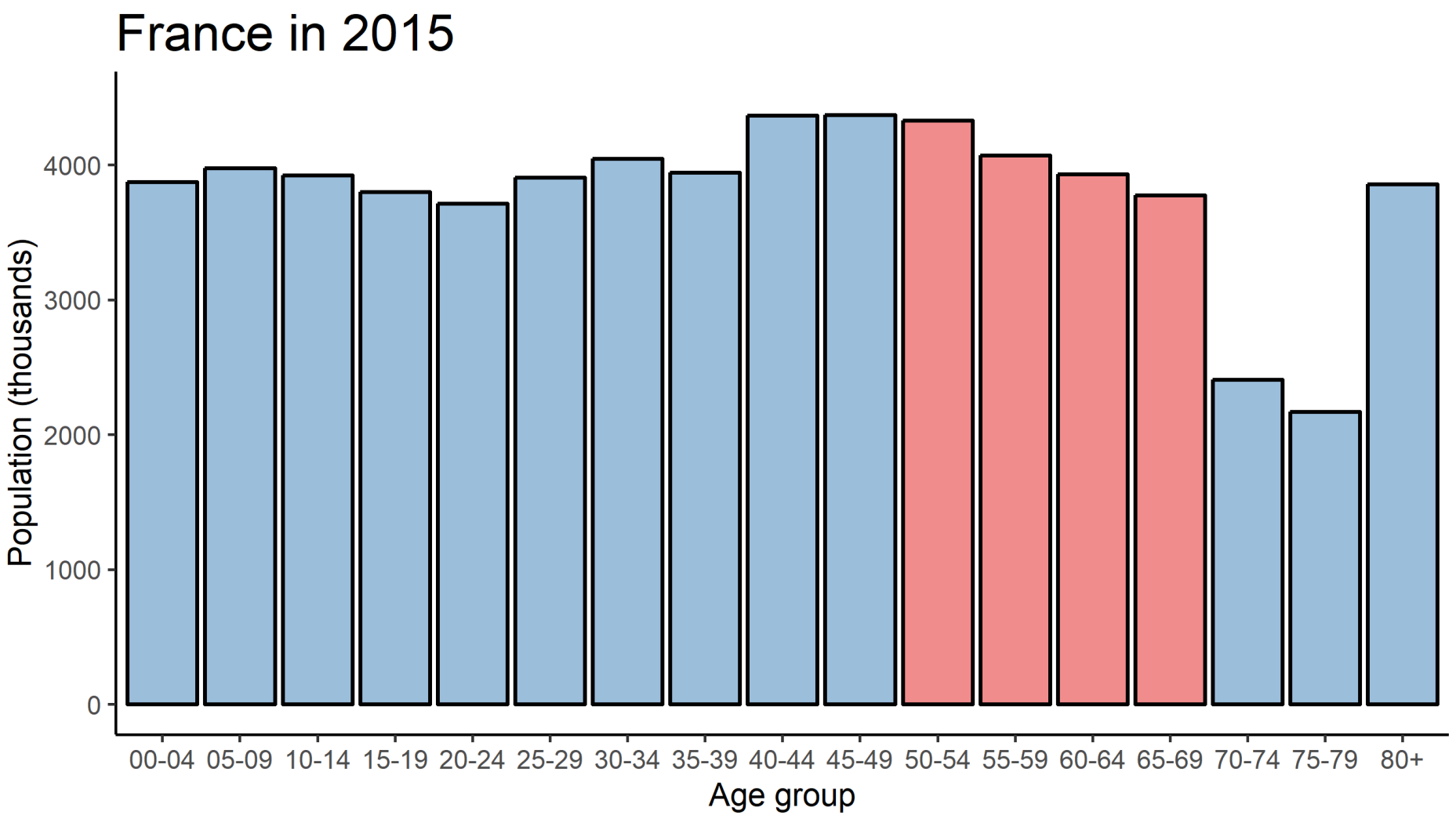
Aging population in these countries



From the *baby-boomers'* coming...



... to their retirement



Research questions

1. How does age structure affect the income allocation between capital and labor in high-income countries ?

2. To what extent the age structure can influence the institutions that play a role in the income allocation ?

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What I do

- Build an **OLG model** with (indirect) policy mechanism
  - The youth face an unemployment risk and use their political power to raise the unemployment benefits

  $\Rightarrow$ Consequences for wage bargaining and labor share

- **Calibrate** the model to analyze the co-movement between labor share and age structure

- **Counterfactual analysis** to quantify the role of the indirect policy mechanism

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Contributions

1. Build a theoretical framework with a **new policy mechanism** to explain the declining labor share
   - Changes in labor market institutions are endogenously determined by the age structure of the population through voting

2. Identify the **boomers' cohort** as
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Overview

Overview

Overlapping generations model

- Standard 2-period OLG model with logarithmic utility function and CES production function
  - Key parameter: **capital-labor elasticity of substitution** (σ)
- Closed economy and capital fully depreciates between two periods: $R_t = r_t$ and $K_t = S_{t-1}$
- Two cohorts: continuum of homogeneous agents
  - **Young**: supply labor inelastically, earn income, pay taxes, consume and save for retirement
  - **Old**: earn the return of their savings, pay taxes, consume and derive utility from the government health spending

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Demography and labor share

- Demographic dynamics: $\begin{cases} N_t^y = n_t N_{t-1}^y & \text{with} \quad n_t > 0 \\ N_t^o = p_t N_{t-1}^y & \text{with} \quad p_t \in (0,1] \end{cases}$

$\Rightarrow$ Old-age-dependency ratio:

$$\frac{N_t^o}{N_t^y} = \frac{p_t}{n_t}$$

- CES production function, so the labor share:

$$\theta_t = \frac{w_t L_t}{Y_t} = \left(1 + \frac{\phi}{1-\phi} k_t^{\frac{\sigma-1}{\sigma}}\right)^{-1}$$

with $\sigma \in \mathbb{R}_+^\star \backslash \{1\}$ the capital-labor elasticity of substitution

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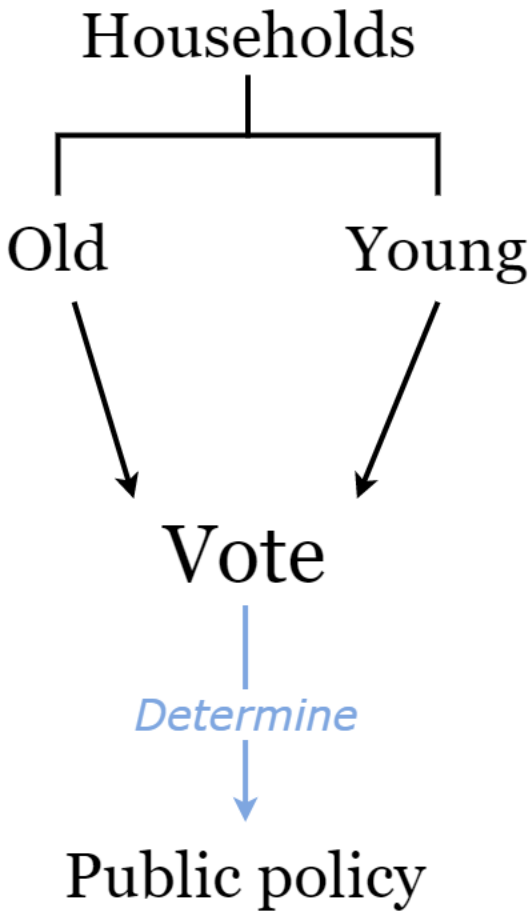

Labor union

Firm

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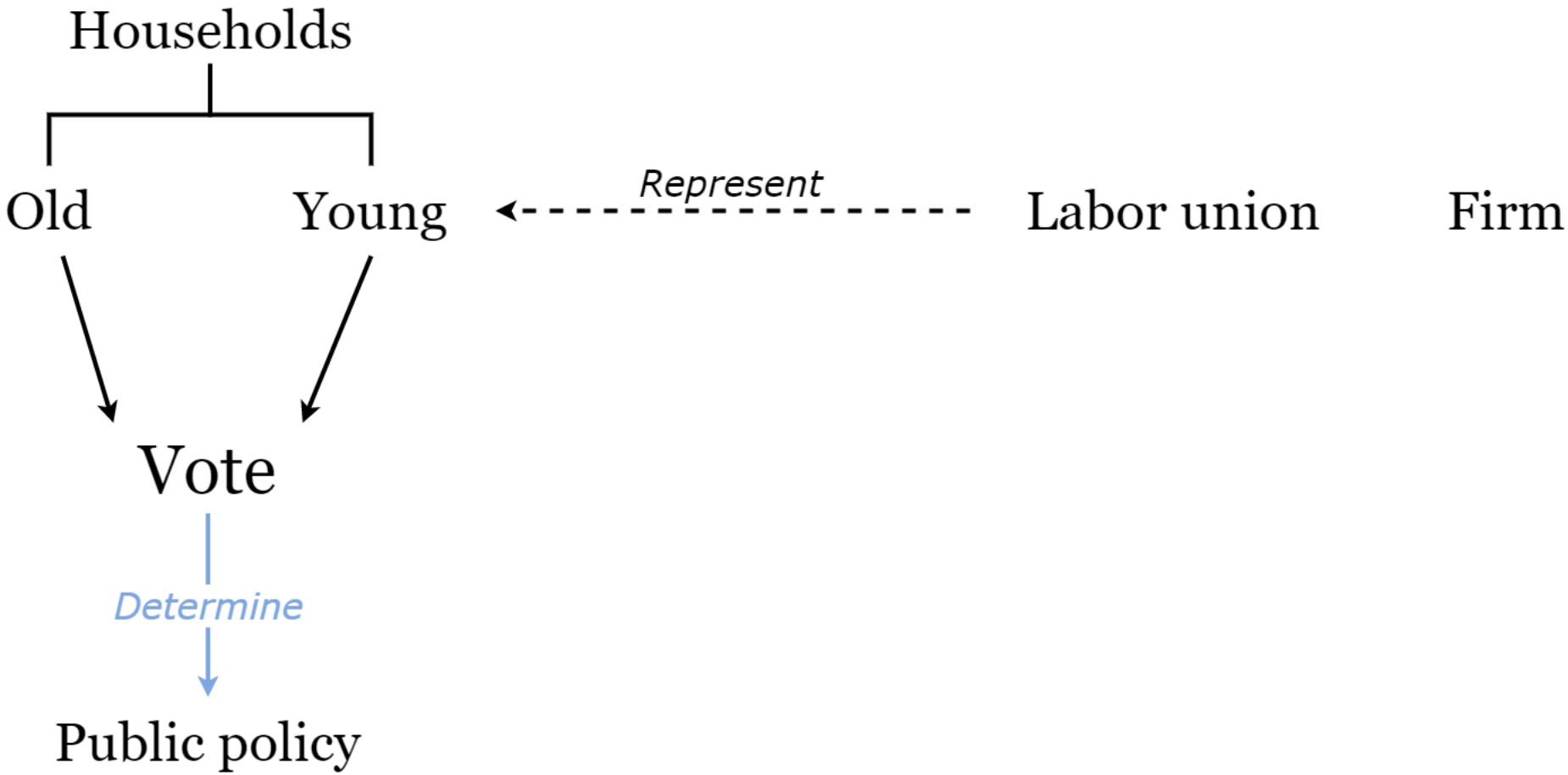

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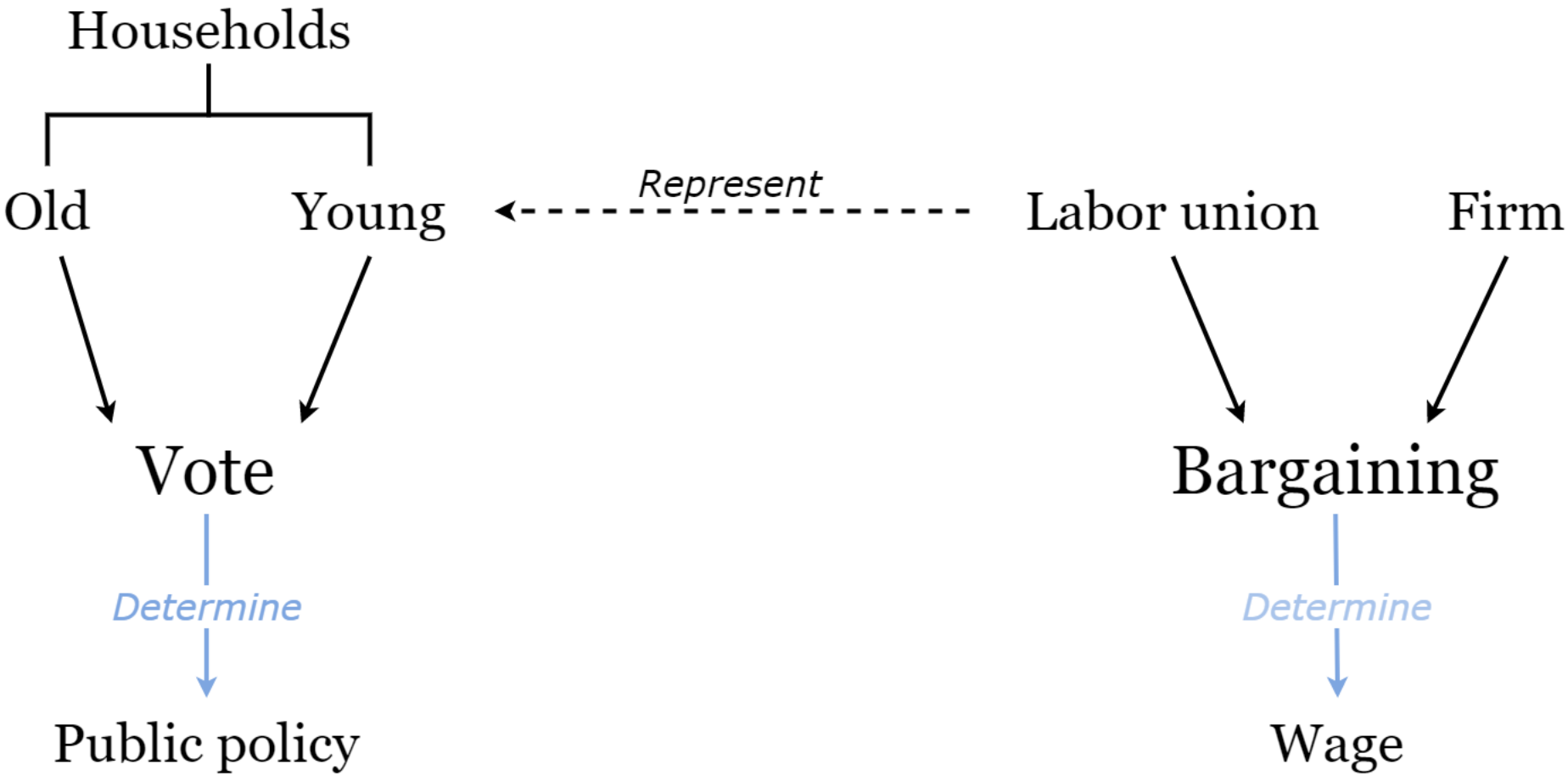

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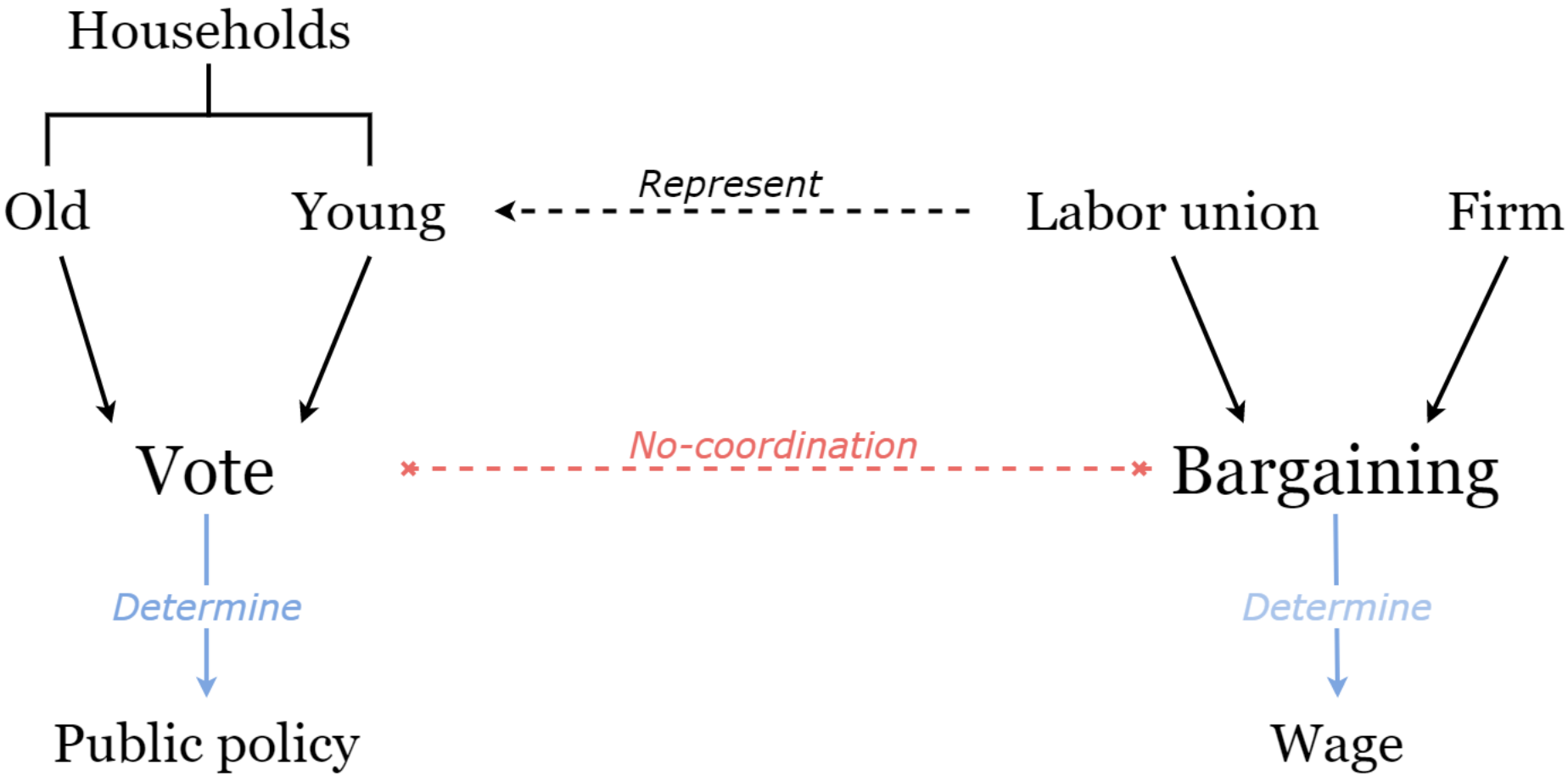

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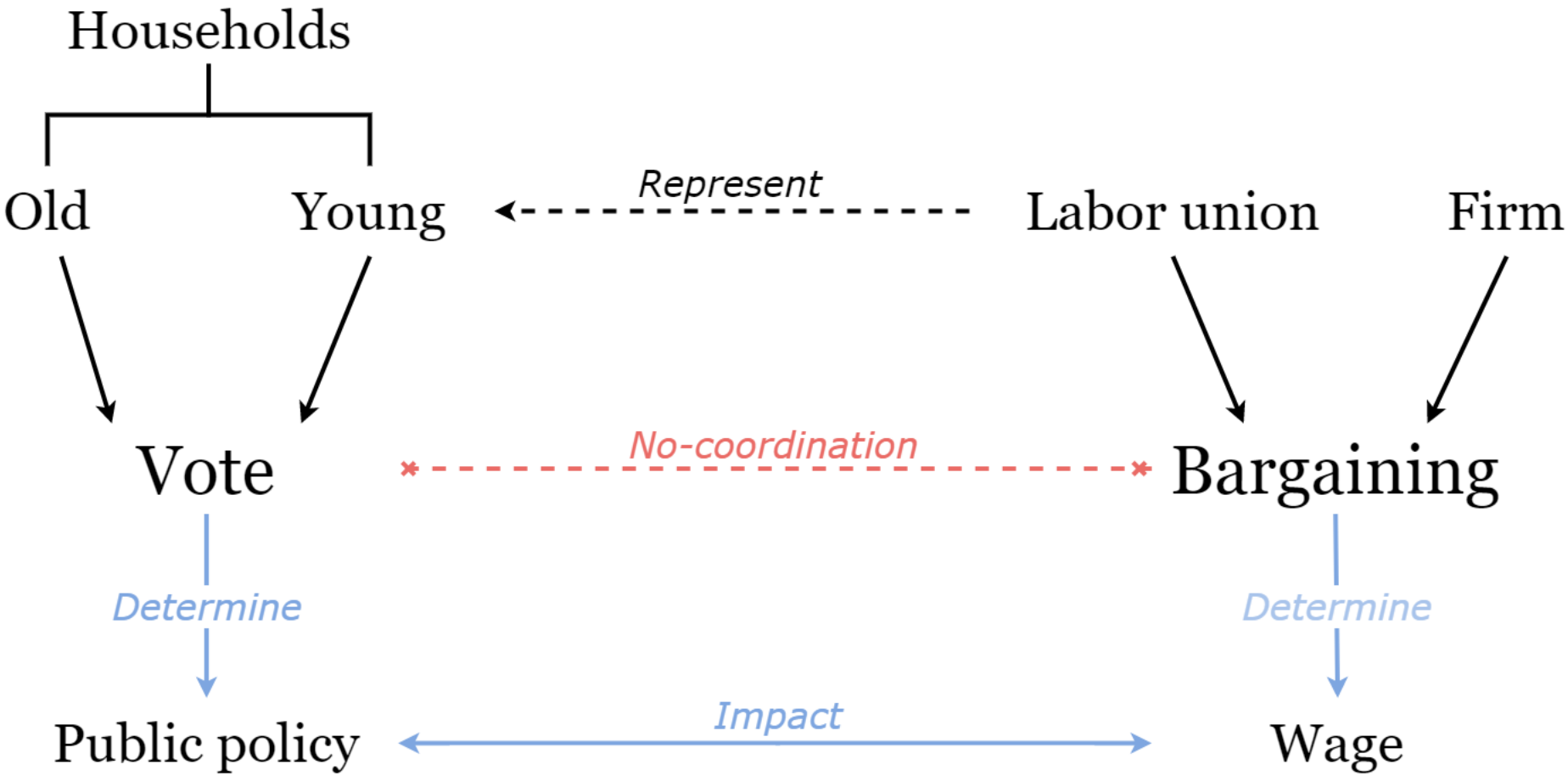

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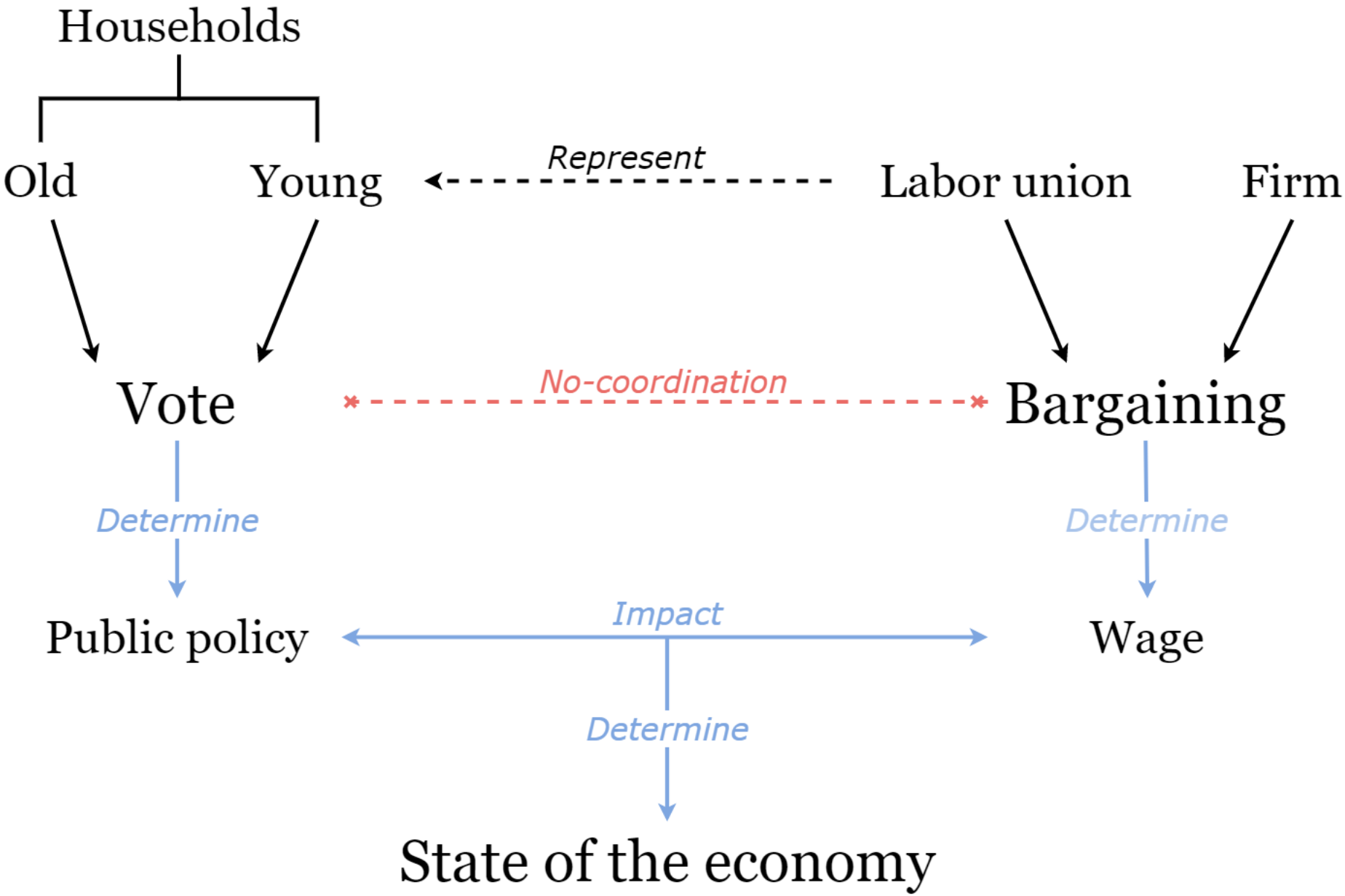

Public policy preferences

- Age-related conflict within the public policy
  - Young desire more **unemployment benefit** (b)
  - Old desire more **health spending** (h)
  - Both desire less **taxes** (τ)

- Maximization program characterizing the equilibrium policy choices with **probabilistic voting**:

$$\max_{\tau_t, b_t, h_t} W(\tau_t, b_t, h_t; \eta_t, u_t, w_t, Y_t, N_t^y, N_t^o)$$

$$\text{s.t.} \quad \tau_t Y_t = b_t u_t N_t^y + h_t N_t^o$$

where η_t is the **political weight of the youth**

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Political weight of the youth (η)

- Political weight of the youth:

$$\eta_t = \frac{n_t}{p_t} \frac{1 + \alpha p_{t+1}}{\omega}$$

- The political weight of the youth depends on
  - the old-age-dependency ratio p_t/n_t; $-$
  - their life expectancy p_{t+1} and the discount rate α; $+$
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Wage bargaining

- **Right-to-manage model** *à la* Nickell and Andrews (1983)
  - Single union that represents workers and bargains with the representative firm over wages
  - Employer retains the prerogative to hire and fire

- Maximization program characterizing the equilibrium wage:

$$\max_{w_t} \Big(L_t \left[U_t^{y,e} - U_t^{y,u} \right] \Big)^{\gamma} \Big(Y_t - w_t L_t \Big)^{1-\gamma}$$

$$\text{s.t.} \quad U_t^{y,e} - U_t^{y,u} = \log \left[\frac{(1-\tau_t) w_t}{b_t} \right]$$

  - $\gamma \in (0,1)$ the relative bargaining power of the union
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Equilibrium

- *Labor market equilibrium*, the wage and employment are functions of the net replacement rate in unemployment
- *Public policy equilibrium*, the net replacement rate in unemployment is a function of the labor income, the unemployment rate and the **youth political power** η_t
- Comparative statics depend on the **capital-labor elasticity** (σ)

$\Rightarrow$ Turn to quantitative analysis

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Overview

OLG model calibration and predictions

- Objectives:
  1. **Match the dynamics** of the labor share over the period 1970-2010
  2. **Model predictions** of the labor share over the period 2010-2080

- Following the methodology of Gonzalez-Eiras and Niepelt (2012)

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Data

	Variable	**Source**
K	Capital stock at constant 2011 national prices	PWT 9.1
Y	Real GDP at constant 2011 national prices	PWT 9.1
emp	Number of persons engaged	PWT 9.1
θ	Share of labor compensation in GDP	PWT 9.1
τ	Government revenue as a share of GDP	OECD
N^y, N^o	Demographic data	UN WPP 2017

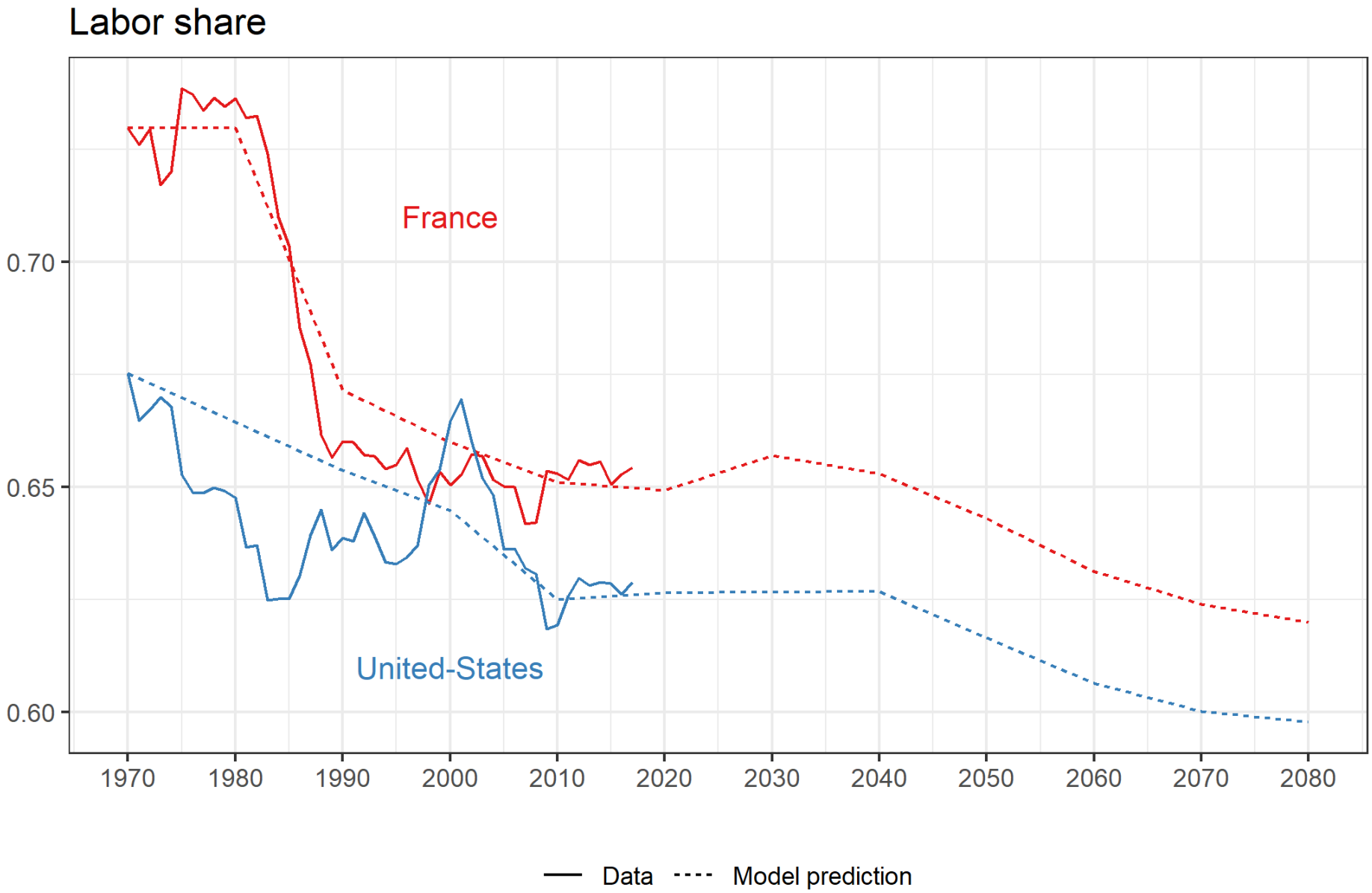
Notes: Adjustment method of the labor share: self-employed income as a compensation. The demographic data correspond to the "medium variant" estimates from the United Nations.

Parameters

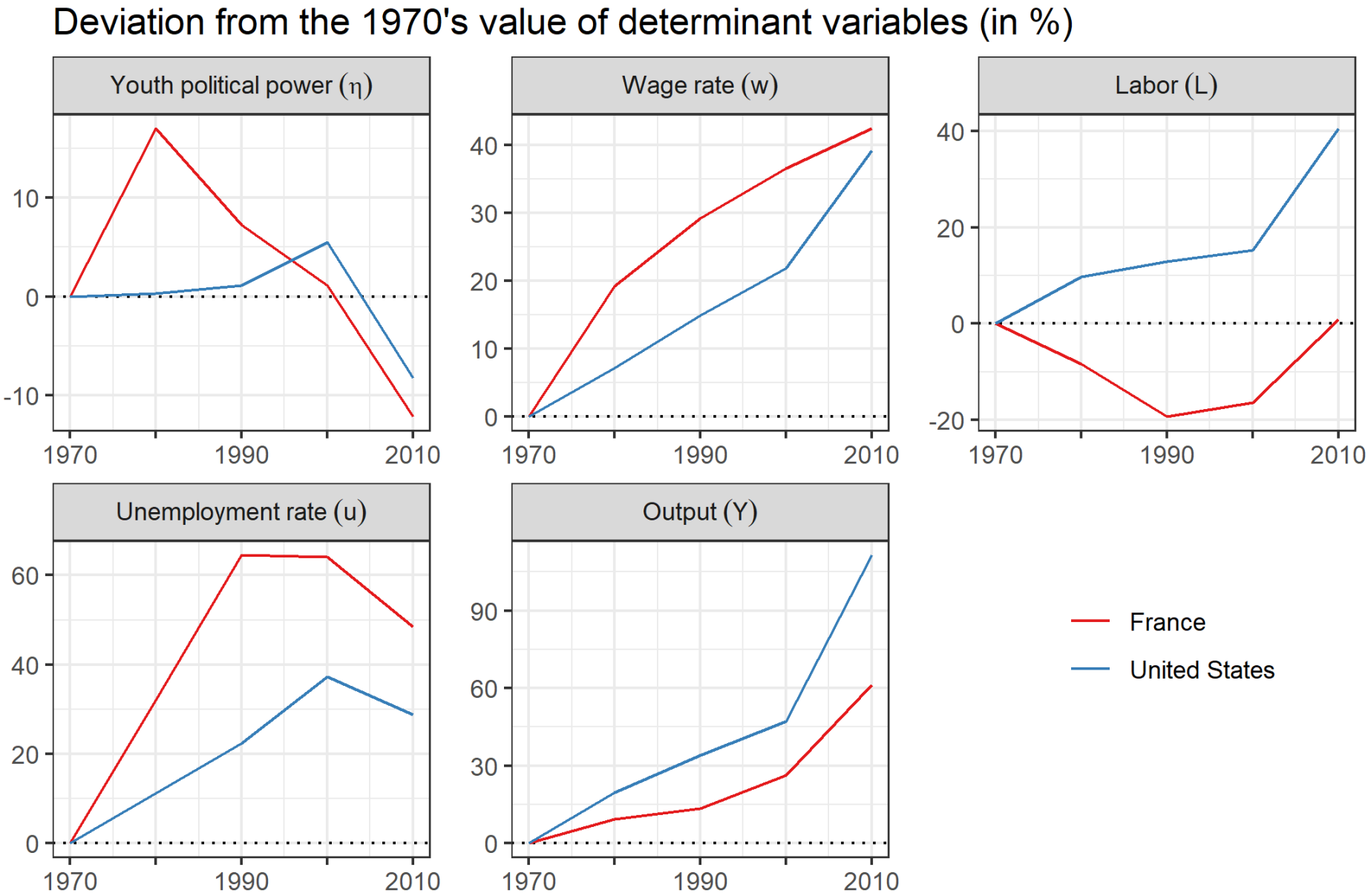
	Parameter	France	United States
ϕ	Capital share in 1970	0.270	0.325
γ	Relative bargaining power of the union	0.500	0.500
α	Discount rate	0.669	0.669
σ	Capital-labor elasticity of substitution	1.321	1.234
ω	Relative ideological spread-out	0.983	1.533
β	Preference for government health expenditure	0.739	0.138
A	Scale parameter of the production function	23.891	22.840

Notes: Single-equation estimation of σ from the two first-order conditions of the profit maximization with normalized CES production function. σ estimates are significant at $p < 0.1$ for France and $p < 0.05$ for the United-States.

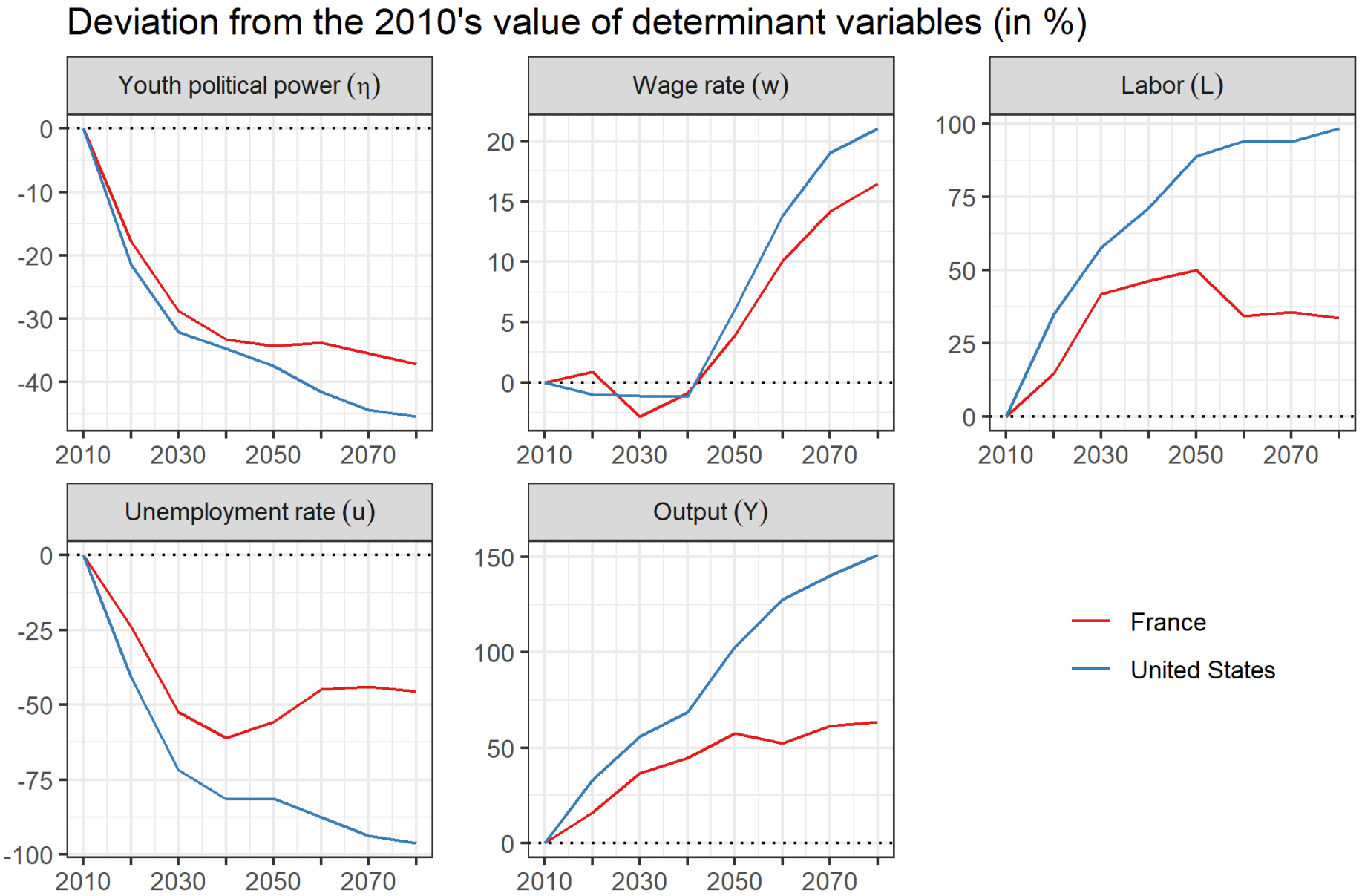
Model predictions of the labor share



The young boomers (1970-2010)



The retired boomers (2010-2050) and afterwards (2050-80)



Counterfactual and aging effect decomposition

- Objectives: quantify the role of the aging population
  - **due to** population growth (n) *vs* survival rate (p);
  - **through** factor accumulation (n, p, N^y, N^o) *vs* policy mechanism (η)

- **Intuition**: *what would have happened in terms of model predictions if this effect/channel was neutralized ?*
  - Suppose that the concerned variables remain at their 1970's level

	Variable	France	United-States
p_{1970}	Survival rate in 1970	0.417	0.476
n_{1970}	Population growth in 1970	1.134	1.597
$\frac{p_{1970}}{n_{1970}}$	Old-age-dependency ratio in 1970	0.368	0.298
η_{1970}	Youth political power in 1970	3.846	3.008

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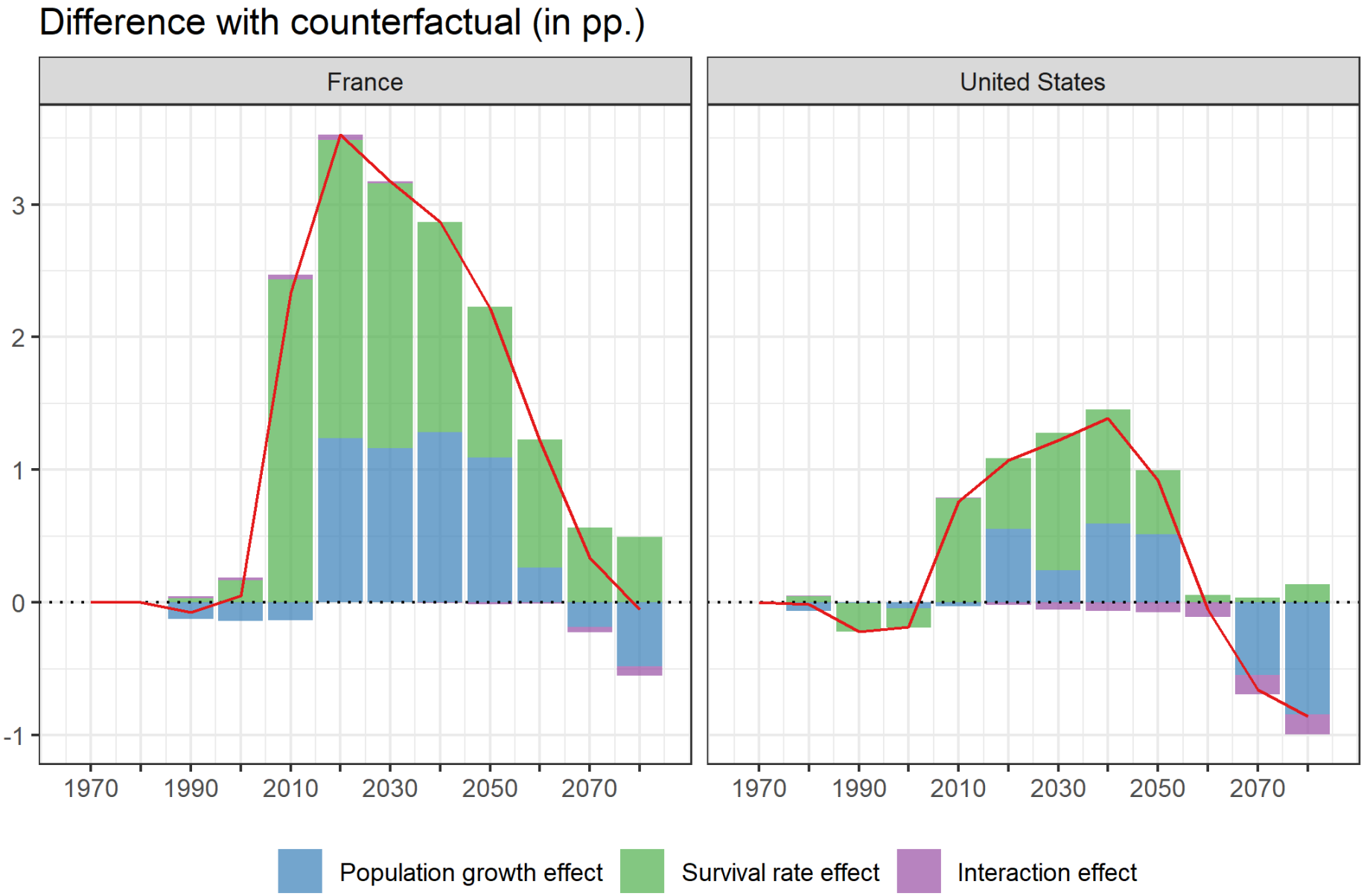
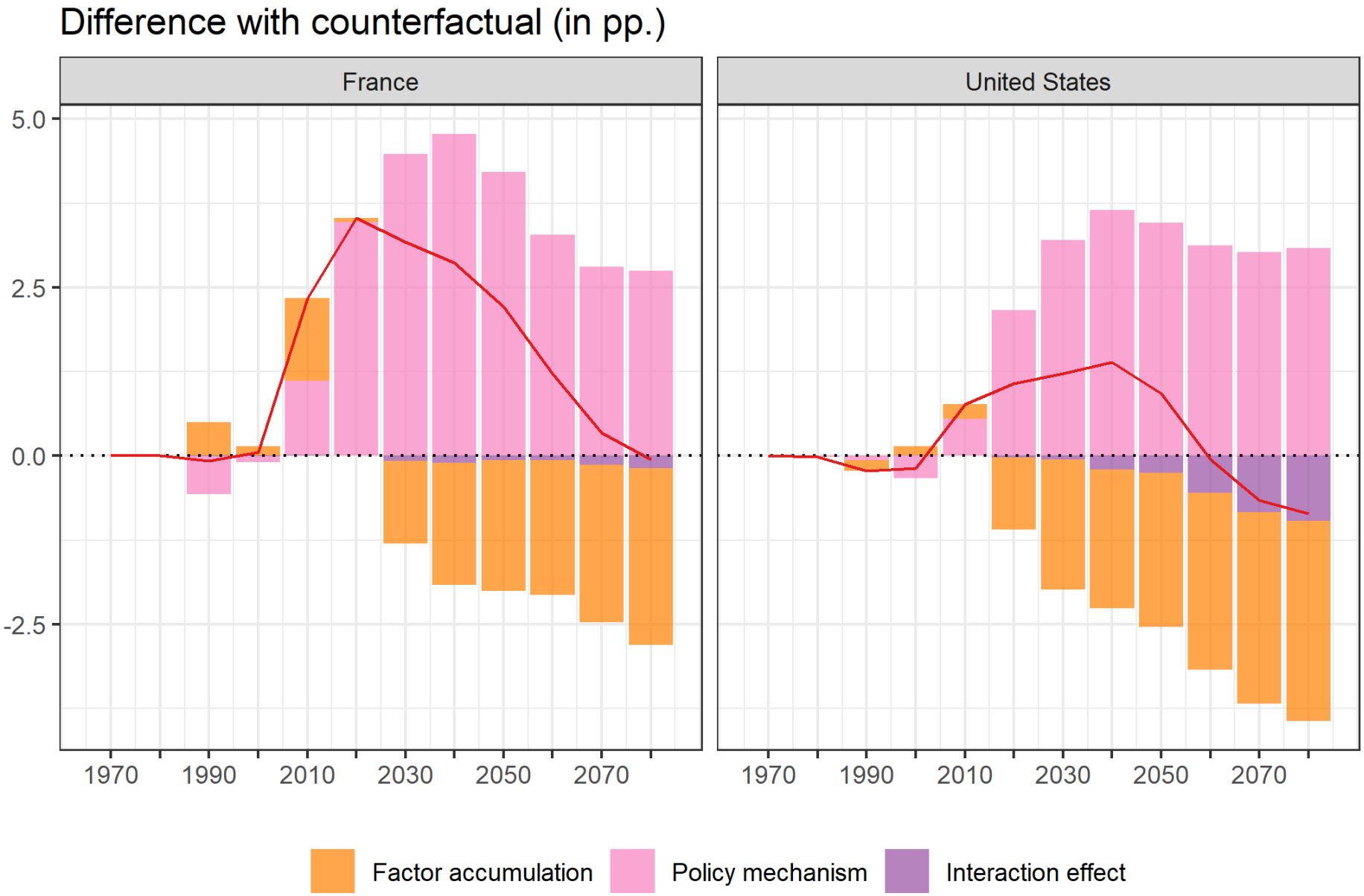
Counterfactual predictions: pop. growth *vs* survival rate

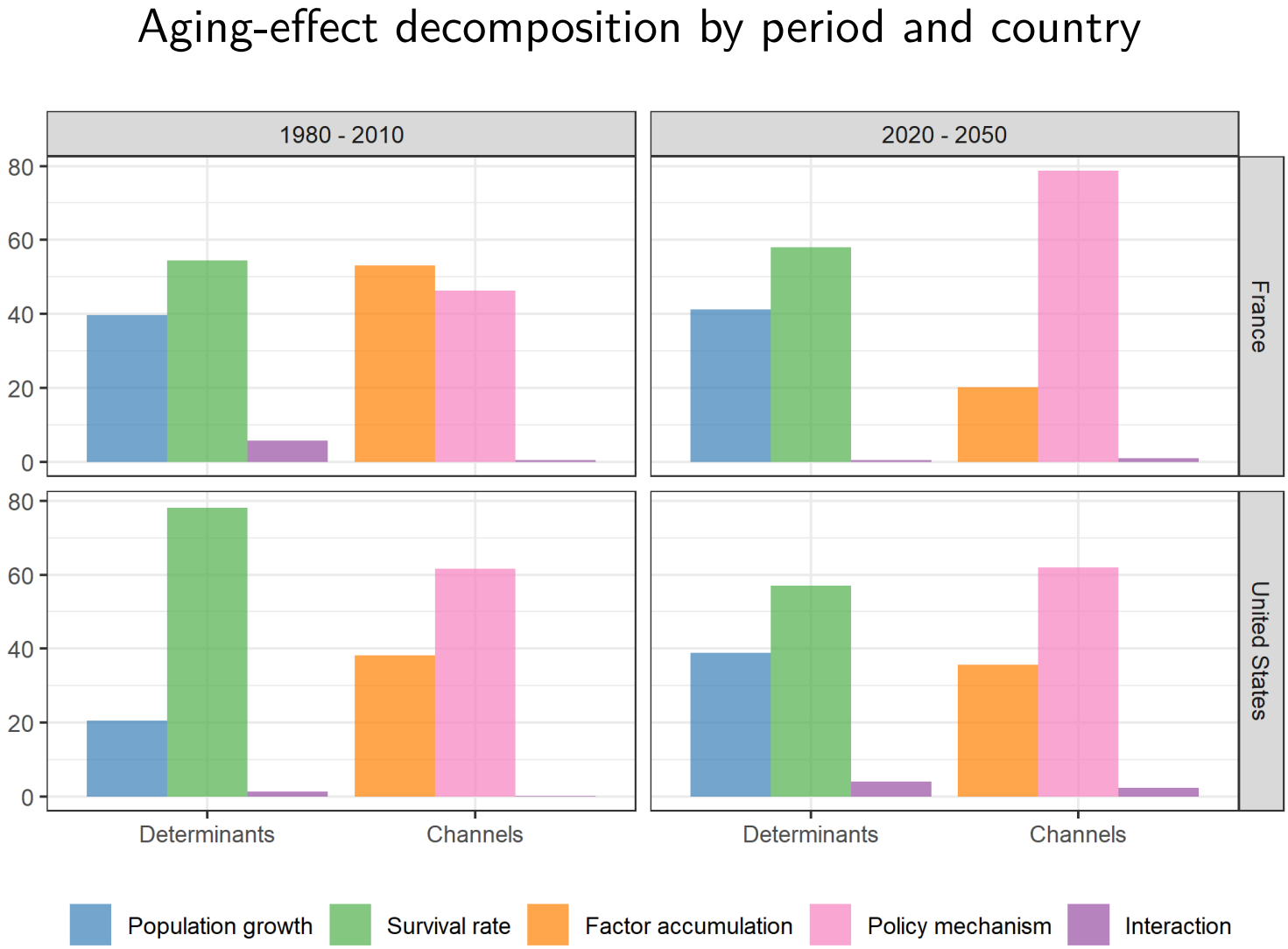
Decomposition: population growth *vs* survival rate



Decomposition: direct *vs* indirect channel

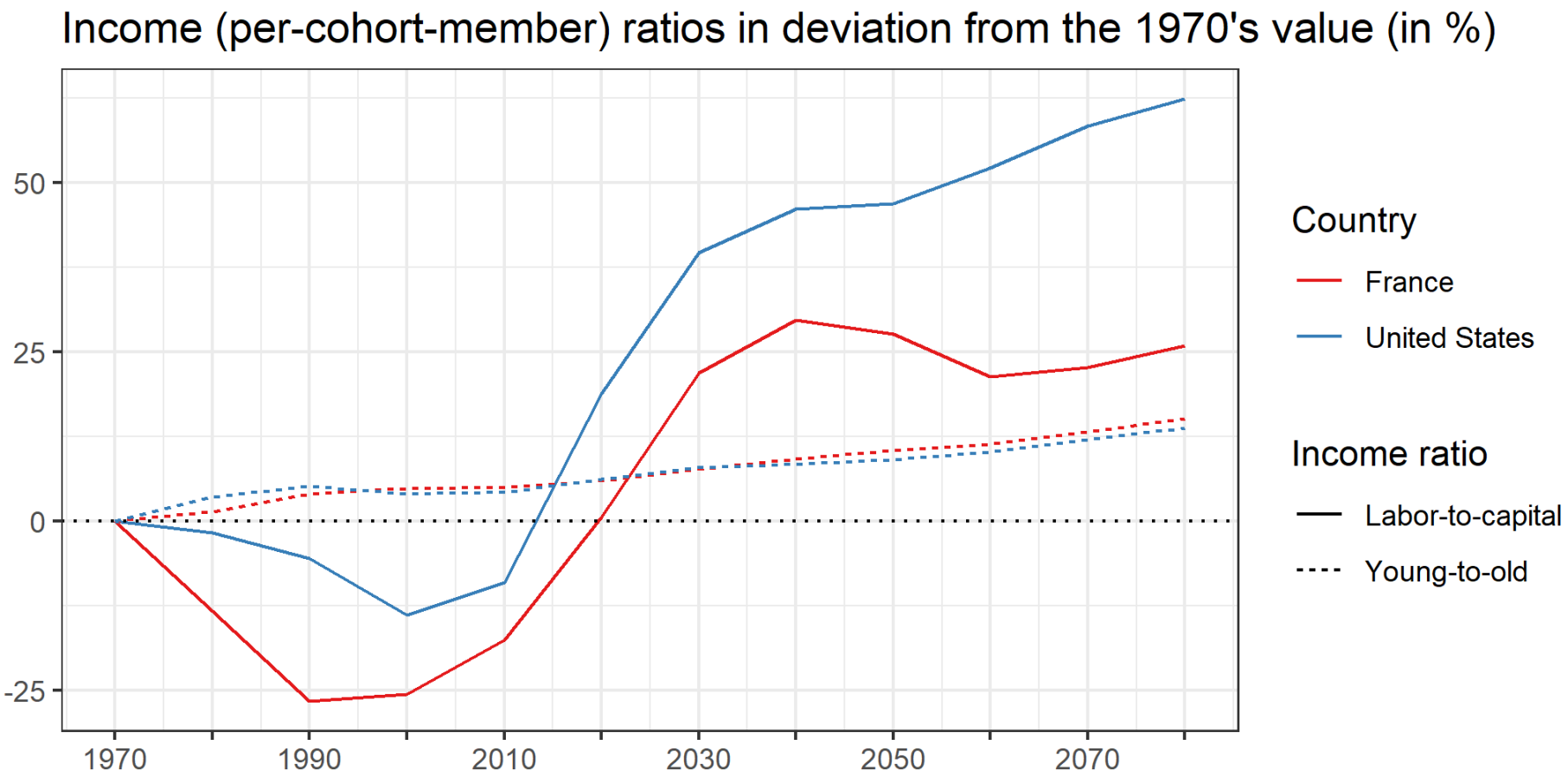


Decomposition: summary



Overview

Who are the winners of the inter-generational conflict ?



Overview

Conclusion

- Age structure affects the income allocation in aging countries
  - The predominant cohort shapes the institutions in its favor

- The boomers are the winner of the inter-generational conflict
  - Always have a relatively **greater political weight** w.r.t. to the previous and next generations
  - Extract income through redistribution

- Biased technical change is a response of firms to income share *grability* of workers (Caballero and Hammour 1998)

$\Rightarrow$ Demographic dynamics may be a determinant of this *grability* and thus be the source of the bias

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  - The predominant cohort shapes the institutions in its favor
- The boomers are the winner of the inter-generational conflict
  - Always have a relatively **greater political weight** w.r.t. to the previous and next generations
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- Biased technical change is a response of firms to income share *grability* of workers (Caballero and Hammour 1998)

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Probabilistic voting (Lindbeck and Weibull 1987)

- **Opportunist candidates**: try to maximize their probability of winning the election
  - Candidates are different in terms of popularity
  - Idiosyncratic bias among voters for one candidate

$\Rightarrow$ All candidates **choose the same policy platform** $g_t^\star$ that maximize the political objective function $W(g_t)$

- The political objective function $W(g_t)$ depends on:
  1. Population share of voters' groups: $N_t^j/N_t \quad \forall j \in \{y, o\}$;
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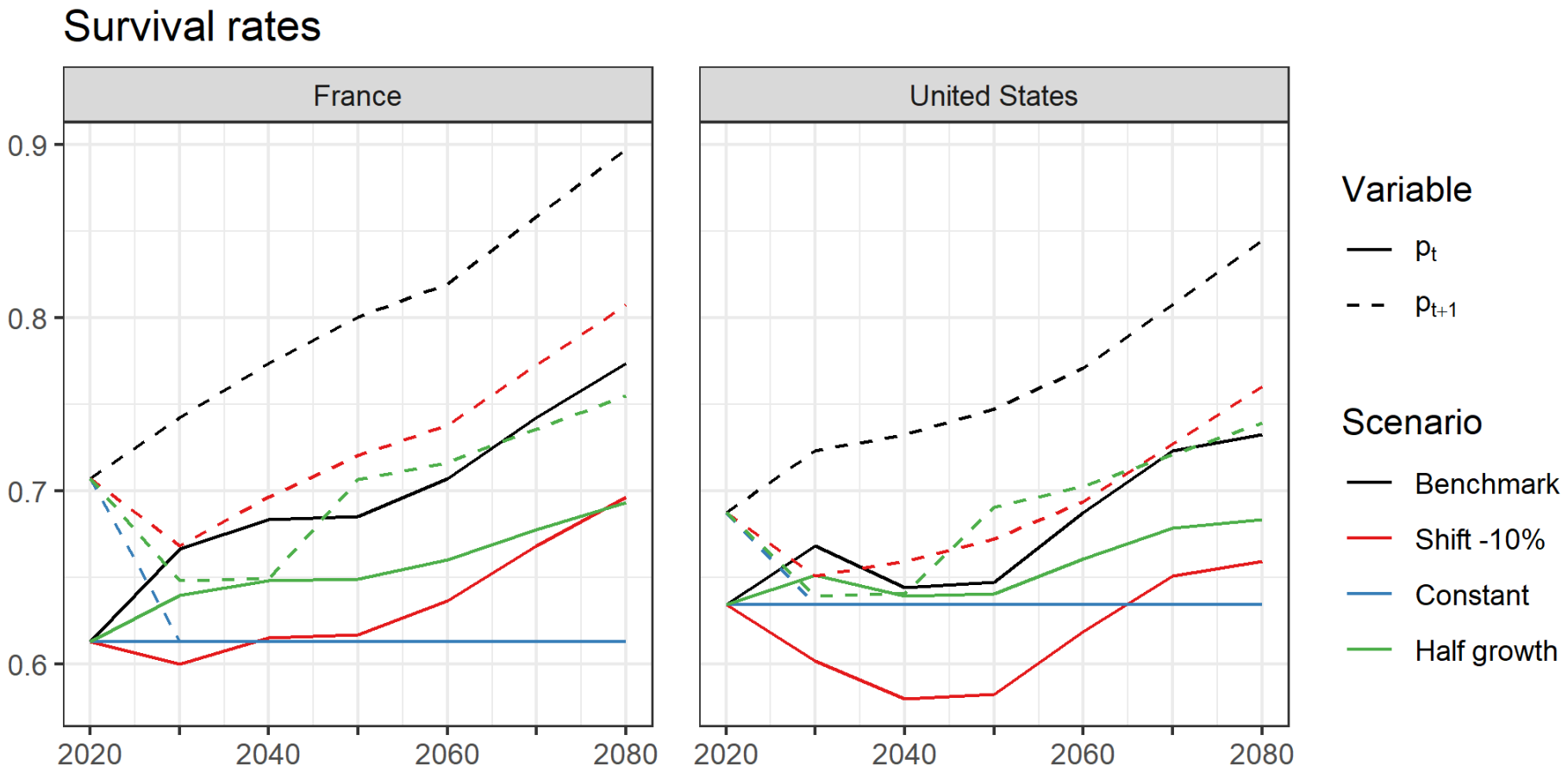

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