Rent creation and sharing: new measures and impacts on TFP

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Motivation

Two objectives

- Propose **new cross-country-industry measures of mark-up and workers' share of rents** relaxing the usual assumption of perfect labor markets
  We use these measures to approxymate for
  - *competition (rent creation) and*
  - *workers' bargaining power (rent sharing)*
- Investigate the **Total Factor Productivity (TFP) impact of competition and workers' bargaining power, and of regulations** changing them

Regulations impact on productivity: Literature review

- **Abundant literature on the impact of competition on productivity** drawing on anti-competitive Non-Manufacturing Regulations (NMR) OECD indicators

  see, for instance, Conway *et al.*, 2006; Barone & Cingano, 2011; Cette, Lopez & Mairesse, 2016; ...

- **Abundant literature also on impact of Employment Protection Legislation (EPL) OECD indicators on productivity**

  see, for instance, Bassanini, Nunziata & Venn, 2009; Cette, Lopez & Mairesse, 2016; ...

- **Blanchard & Giavazzi (2003) provides a theoretical framework**
  Confirmed by following papers, as Askenazy, Cette and Maarek (2018)
  - rent creation (/lack of competition) results from product market regulations
  - workers' share of rent (/bargaining power) is influenced by labor market regulations
- **This paper**
  - Investigates (notably) whether the impact of regulations on productivity corresponds to this framework
  - Confirms Blanchard & Giavazzi (2003) and goes further

Table of contents

We find:

- **Firms' rent differs strongly from total rent**
- **Rent creation**
  - Anticompetitive NMR influence positively rent creation
  - EPL has no impact on rent
- **Rent sharing**
  - NMR influence positively the workers' share of rent
  - EPL has no impact on rent sharing: The positive impact of EPL on wages is offset by a negative impact on hours worked
  - EPL effects are more pronounced for low skilled workers

We find:

- **Impact on TFP**
  - Lack of competition and workers' bargaining power have negative impacts on TFP
  - A switch of countries NMR to the lowest NMR values would increase TFP of 3.7% on average on the long-run

Part 1

New measures of rent creation and sharing

Definitions of our new measures

Main assumptions:

- Product and service market imperfections, leading to:

  $P_i = (1 + MUR_i) \times C_i$ *Where*

  - P_i is the relative production price of industry i,
  - MUR_i the Mark-Up Rate
  - C_i the marginal cost

- Labor market imperfections:
  workers may capture part of the created rent
  Our measures are largely inspired by Dobbelaere & Mairesse (2013, 2015, 2017) analyses on French firms

Empirical assumptions:

- **Variable costs approximate the marginal costs**, so:

$$C_i = \frac{\sum_j \left[W_j^r . N_{ij} \right] + M_i}{Q_i}$$ Where

- W_j^r is the 'reservation wage' per hour at skill level *j*
- N_{ij} the number of hours worked, in the industry *i* by skill level *j*
- M_i the intermediate input in industry *i*
- C_i the total cost of industry *i*
- Q_i the production of industry *i* at constant prices

Empirical assumptions:

- The '**reservation wage**' W^r (the wage that would be observed if there were no workers' bargaining power) is equal to or lower than the minimum wage observed for a given country, year and skill level
  3 dimensions: country *c*, time *t*, skill *j*
- **Our main measures** assume a reservation wage equal to 95% of the minimum observed (average industry) wage, but our results are robust to various choices

Therefore:

$$MUR_i = \frac{P_i - C_i}{C_i} = \frac{P_i Q_i - (W_i^r N_i + M_i)}{W_i^r N_i + M_i}$$

$$WSR_i = \frac{(W_i - W_i^r) N_i}{P_i Q_i - \left(W_i^r N_i + M_i\right)}$$

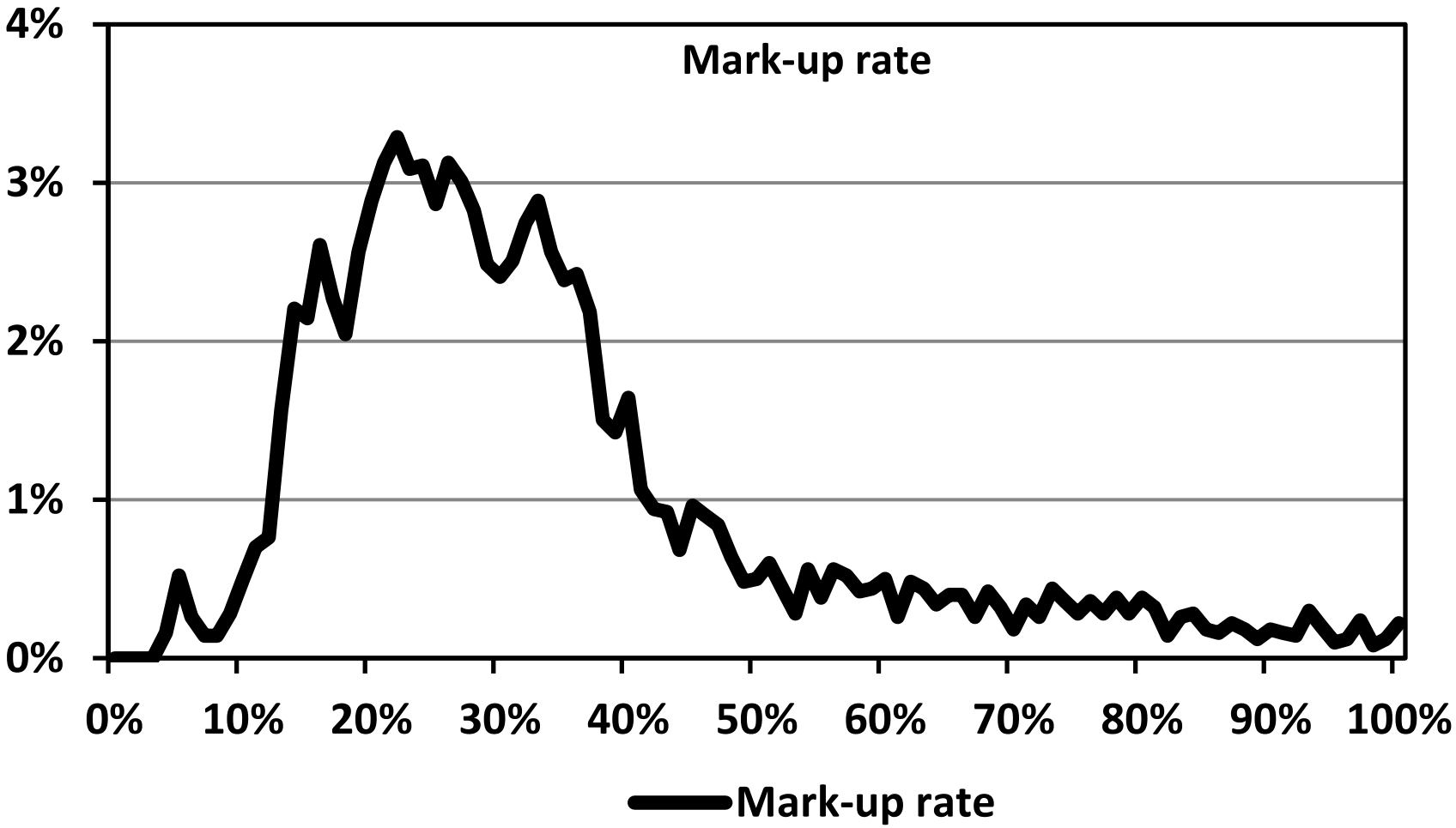
where WSR_i is the Workers' Share of Rent in industry i

DATA

- We use the OECD STAN and EUKLEMS databases to calculate these measures
- The sample :
  - 4,988 observations
  - covering 14 OECD countries
  - 19 industries
  - over the 1985-2005 period
- Unbalanced dataset

Chart 1: Mark-up rate and workers' share of rent

Kernel density estimation of the probability density function



Descriptive analysis

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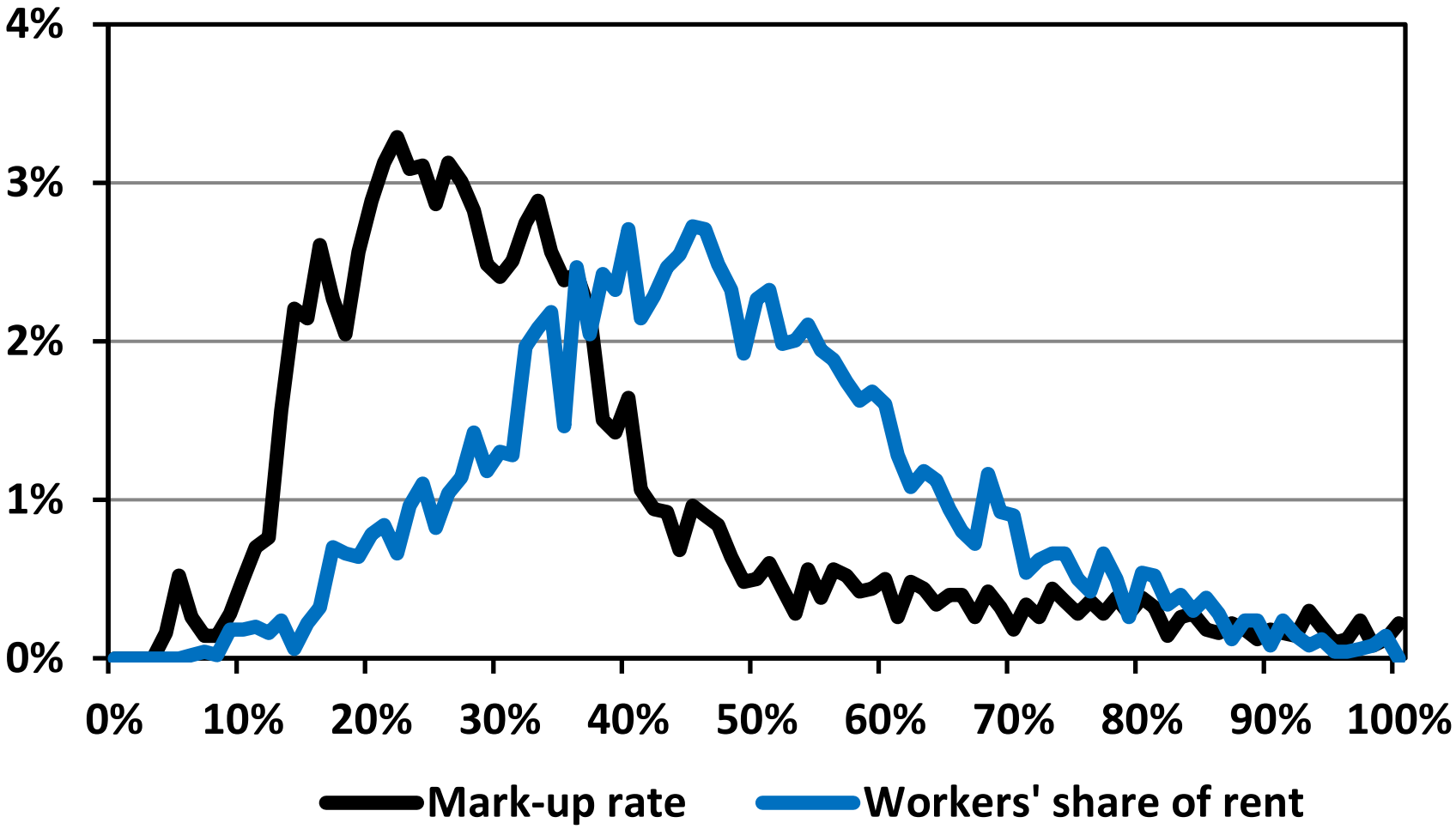

Part 2

Regulations impact on competition & bargaining power

OECD indicators of regulations

Anticompetitive Non-Manufacturing Regulation indicators (NMR)

- Measure the extent to which competition and firm choices are restricted where there are no a priori reasons for government interference, or where regulatory goals could plausibly be achieved by less coercive means
- Based on information on laws, rules and market, country or industry settings
- 5 industries covered: Energy, transport, communication, retail services and professional services

Anticompetitive Non-Manufacturing Regulation indicators (NMR)

- **We use two sub-level indicators**:
  - **NMR - State** (NMR^S): extent of public ownership, control of strategic choices and price controls
  - **NMR - Entry** (NMR^E): barriers to entry, vertical integration and market structure

Employment Protection Legislation indicator (EPL)

- Measures the procedures and cost involved in dismissing individual workers with regular contracts and regulations on temporary contracts
- Based on information on laws, rules and market, country or industry settings

Estimated specifications

$$log(y_{cit}) = \theta_1 \times NMR^E_{cit} + \theta_2 \times NMR^S_{cit} + \theta_3 \times (\lambda_i \times EPL_{ct}) + \phi_{ci} + \phi_{ct} + u_{cit}$$

Where:

- Our dependant variables '*y*' are our *MUR* and *WSR* measures, but also the components of *WSR*:
  - Workers' rent per hour $((W-W^r)/P^{GDP})$
  - Number of hours worked per output unit (N/Q)
- Rent per output unit $((P-C)/P^{GDP})$
- λ is the intensity of use of labour in the US
- *c, i, t* the country, industry and time indices
- ϕ fixed effects and *u* the estimation residuals

Estimation results

Table 1: Impact of regulation indicators on mark-up and workers' share of rent

	(1)	(2)=(3)+(4)-(5)	(3)	(4)	(5)
Dep. var. (log)	**Mark-up rate (μ)**	**Workers' share of rent (β)**	**Workers' rent per hour ($(w - w^r)/P^{GDP}$)**	**Hours worked per output unit (N/Q)**	**Rent per output unit ($(P - C)/P^{GDP}$)**
NMR – Entry	0.0516***	0.0644***	0.0510***	0.0744***	0.0611***
(NMR^E)	[0.0107]	[0.0105]	[0.0111]	[0.0141]	[0.0116]
NMR - State	0.0229**	0.00546	-0.00696	0.0425***	0.0301**
(NMR^S)	[0.0112]	[0.0110]	[0.0100]	[0.0156]	[0.0120]
EPL - impact	0.0124	-0.161	0.375***	-0.787***	-0.250***
($\lambda_i \times EPL$)	[0.0889]	[0.103]	[0.0950]	[0.0961]	[0.0913]
Observations	4,988	4,988	4,988	4,988	4,988
R-squared	0.949	0.875	0.981	0.979	0.893

Country*industry and country*year fixed effects included
Newey-West standard errors in brackets - $***p<0.01$, $**p<0.05$, $*p<0.1$

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Table 2: Impact of regulation indicators, by skill

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var. (log)	**Workers' rent per hour**			**Hours worked per output unit**		
Skills	**High**	**Medium**	**Low**	**High**	**Medium**	**Low**
NMR - Entry	0.0467***	0.0476***	0.0416**	0.0778***	0.0796***	0.0884***
(NMR^E)	[0.0157]	[0.0154]	[0.0167]	[0.0130]	[0.0146]	[0.0161]
NMR - State	-0.0301*	-0.0197	0.00710	-0.0182	0.0344**	0.0340*
(NMR^S)	[0.0156]	[0.0142]	[0.0148]	[0.0140]	[0.0166]	[0.0183]
EPL - impact	0.100	0.545***	0.528***	-0.280**	-0.824***	-1.293***
($\lambda_i \times EPL$)	[0.131]	[0.112]	[0.152]	[0.134]	[0.109]	[0.122]
Observations	4,988	4,988	4,988	4,988	4,988	4,988
R-squared	0.970	0.977	0.977	0.984	0.976	0.986

Country*industry and country*year fixed effects included
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Part 3

Impact on TFP of competition & bargaining power

Estimated specification

$$log(TFP_{cit}) = \rho \times log\left(TFP^{US}_{it-1}\right) + \alpha \times log(MUR_{cit-1}) + \gamma \times log(WSR_{cit-1}) + \xi_{ci} + \xi_{ct} + \epsilon_{cit}$$

Where ξ are fixed effects and s the estimation residuals

(we may provide more details on our TFP computation if needed)

Estimation results

Table 3: Impact of mark-up rate and workers' share of rent on TFP - Dependant variable: TFP (in logarithm)

	(1)	(2)	(3)	(4)	(5)	(6)
Estimator	OLS			IV		
US TFP (log), lagged ($log(TFP_{t-1}^{US})$)	0.855***	0.854***	0.851***	0.783***	0.883***	0.833***
	[0.0194]	[0.0183]	[0.0188]	[0.0210]	[0.0155]	[0.0188]
Mark-up rate (log), lagged ($log(\mu_{t-1})$)	0.0227		-0.0377	-1.053***		-0.557***
	[0.0225]		[0.0255]	[0.158]		[0.160]
Workers' share of rent (log), lagged ($log(\beta_{t-1})$)		-0.0954***	-0.113***		-0.936***	-0.593***
		[0.0198]	[0.0233]		[0.122]	[0.137]
Observations	3,573	3,573	3,573	3,573	3,573	3,573
R-squared	0.805	0.808	0.809	0.443	0.550	0.724

Country*industry and country*year fixed effects included - Leads and lags of US TFP first defferences included
Newey-West standard errors in brackets - $***p<0.01$, $**p<0.05$, $*p<0.1$
Instruments: NMR-Entry, NMR-State and NMR-Entry × NMR-States

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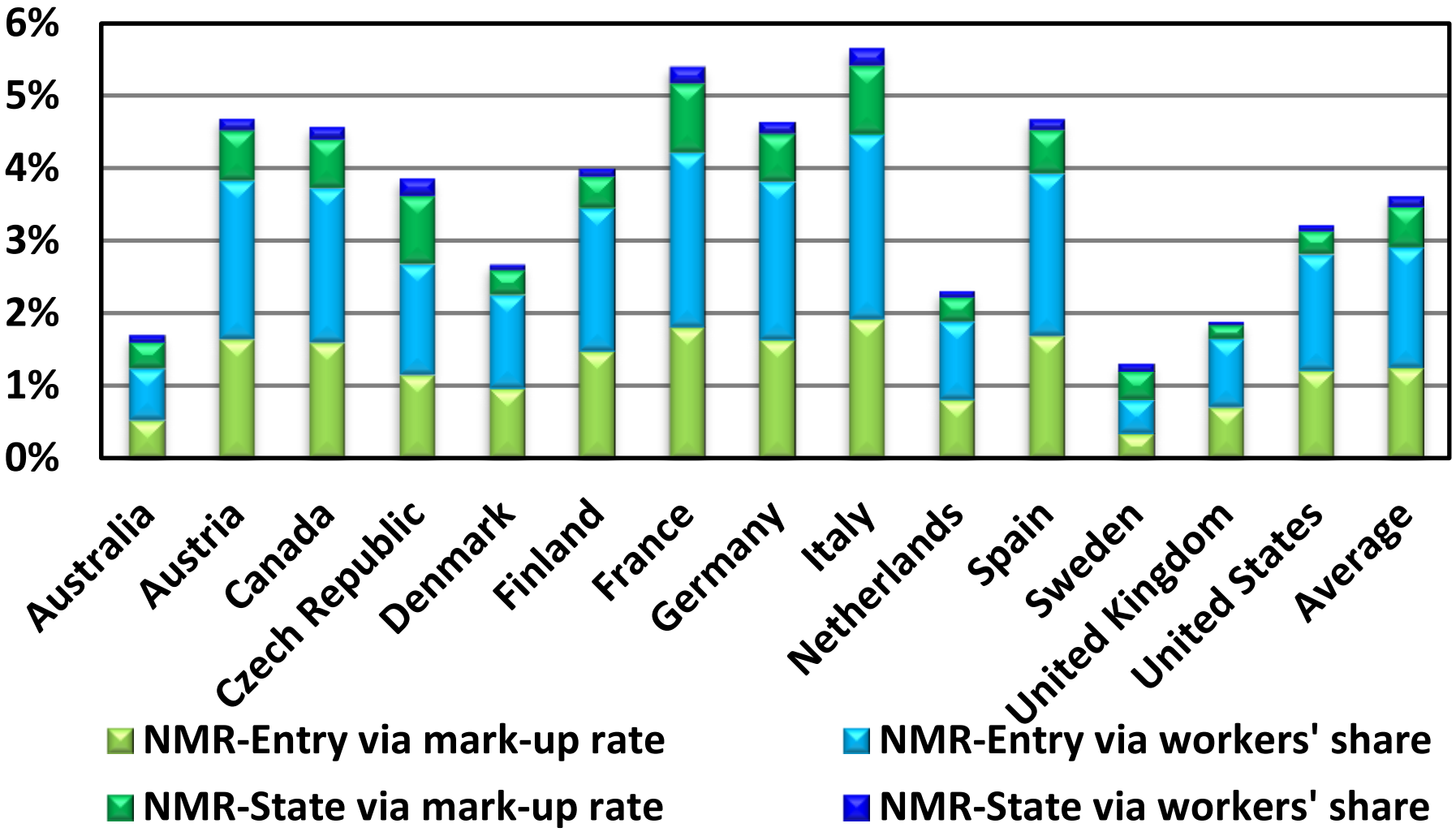
Instruments: NMR-Entry, NMR-State and NMR-Entry × NMR-States

Simulation

- We compute the expected impact on TFP of a NMR reform
- This reform is the adoption of the lowest NMR in 2013 (the OECD NMR indicators are not available later)
- This impact is calculated using Table 1 column (1) & (2) and Table 3 column (6) estimation results

Chart 2: TFP gains from a switch to the NMR lowest levels



Conclusion

Main findings

- **Firms' rent differs strongly from total rent**
  - Anticompetitive NMR influence positively rent creation and workers' share of rent
  - EPL boost wage per hour, but this is offset by a negative impact on hours worked per output unit
  - EPL effects are more pronounced for low skilled workers
- **Lack of competition as well as workers' bargaining power have substancial negative impacts on TFP**: a switch to the lowest NMR values would increase TFP of 3.7% on average on the long-run

Thank You!

Appendix

OECD regulation indicators: descriptive analysis

Chart A1: NMR-Entry OECD indicators

Scale: 0-6, with 0 for the most pro-competitive regulations

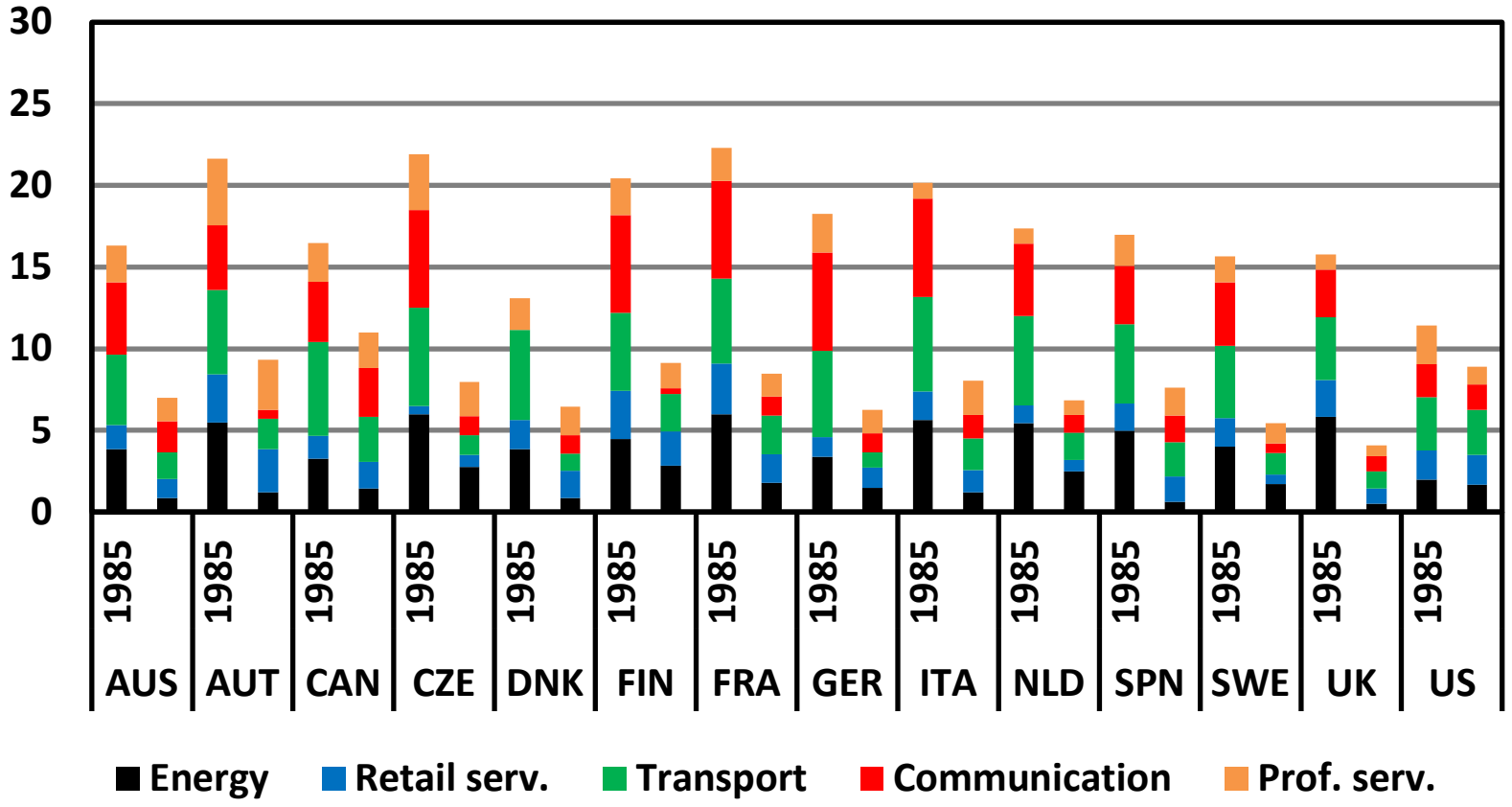


Chart A2: NMR-State OECD indicators

Scale: 0-6, with 0 for the most pro-competitive regulations

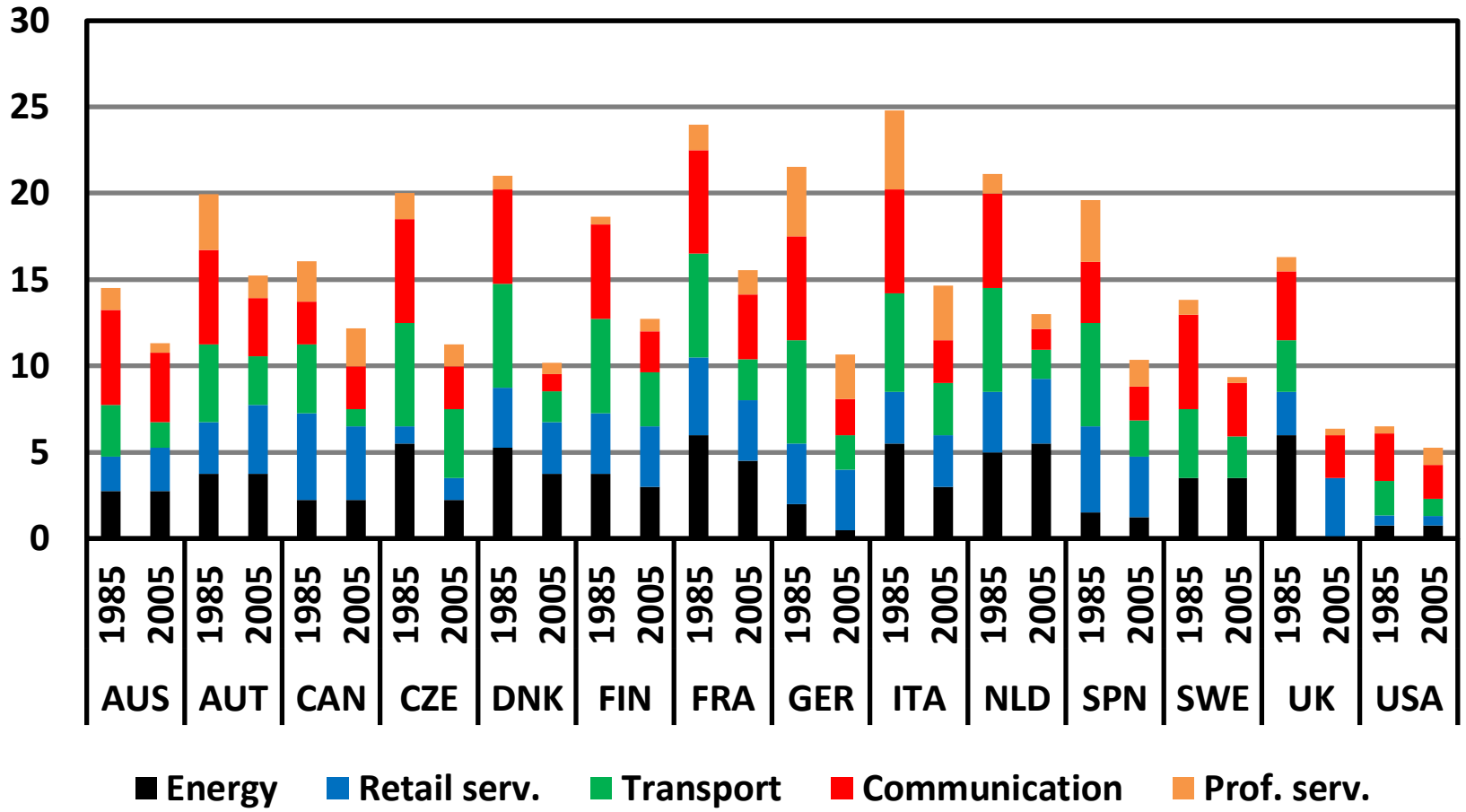
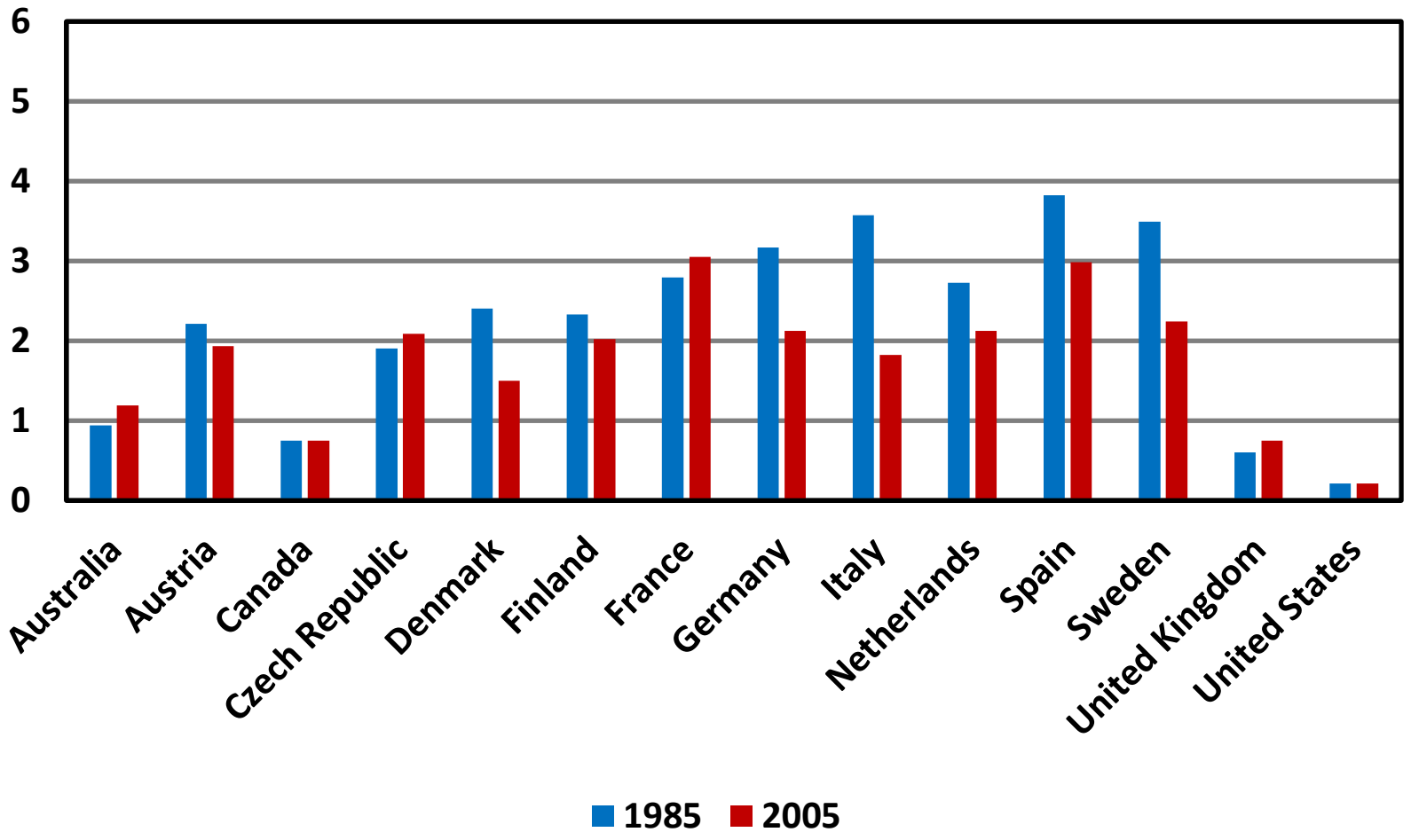


Chart A3: EPL OECD indicator

Scale: 0-6, with 0 for the most flexible



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