Assessing the impact of labour market spendings on unemployment dynamics across demographics in OECD countries

Osama SHAIKH, Ph. D.

Selcen OZTURK, Ph. D.

Department of Economics

Hacettepe University – Ankara - Türkiye

Motivation

Why Revisit Labour Market Policies in the OECD?

Unemployment disparities persist across OECD countries **despite decades of reform**

Youth unemployment remains structurally higher than adult unemployment

OECD governments allocate **substantial public resources** to ALMPs

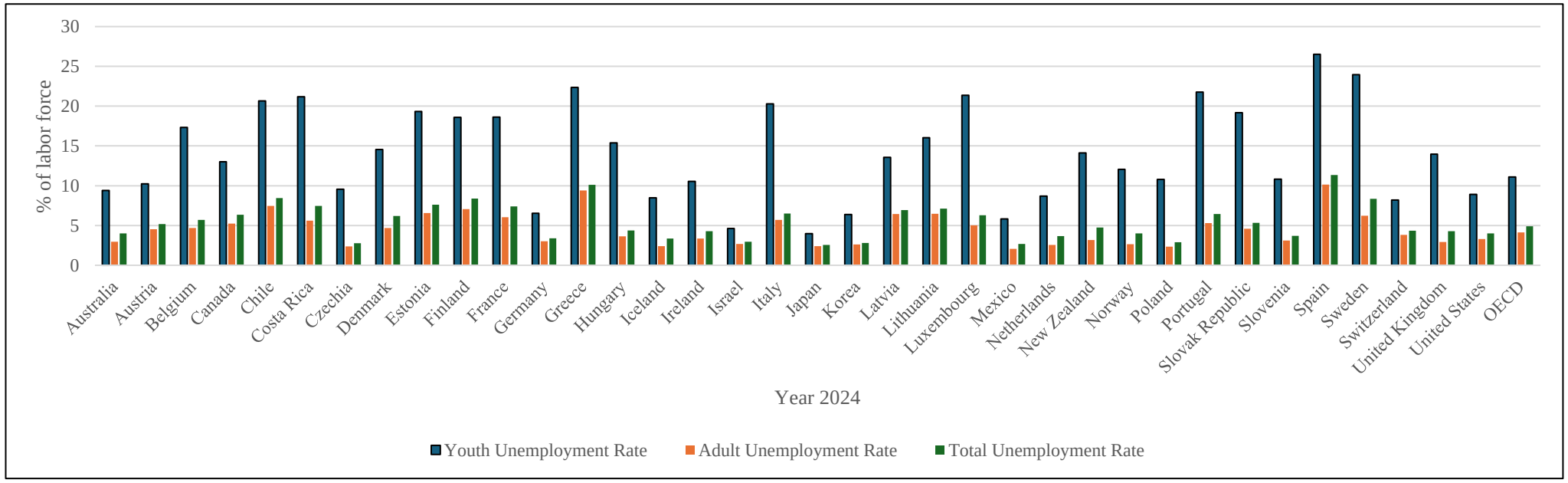
Yet **long-run macro-level evidence remains mixed**

Central Policy Question

Do labour market spendings reduce unemployment uniformly across demographics, institutional settings, and economic periods?

Stylized Facts: Demographic Unemployment Gaps in the OECD

Youth vs Adult Unemployment Rates



Stylized Facts
Youth unemployment is systematically higher than adult unemployment across OECD countries
In several countries, youth unemployment is two to three times higher
Substantial cross-country dispersion, even within similar welfare regimes

Why This Matters for Policy

Aggregate unemployment conceals demographic-specific vulnerabilities
Uniform policy prescriptions risk being ineffective or counterproductive
Highlights the need for a disaggregated, long-run policy evaluation

Key message:

Persistent demographic unemployment gaps motivate a differentiated evaluation of labour market policies.

What the Existing Literature Shows

Predominantly micro-level evaluations of ALMPs

Focus on short- to medium-run effects

Limited attention to **cross-country dependence** and **heterogeneity**

Mixed evidence on income support and wage effects, especially across age groups

What This Study Adds

Long-run macro-level evidence for 36 OECD countries (2004–2022)
Age-disaggregated analysis: youth, adults, and total unemployment
Second-generation panel methods addressing: Cross-sectional dependence and Institutional heterogeneity
Comparative insights across welfare regimes and economic sub-periods

Core Research Questions

Do labour market spendings reduce unemployment in the long run?

Are activation policies and training equally effective across age groups?

Do income support and wage dynamics generate disincentive effects?

Are policy impacts heterogeneous across welfare regimes and periods?

Core Hypotheses

H1: Activation and training expenditures reduce unemployment, particularly among youth

H2: Minimum income benefits and wage rigidities are associated with higher unemployment

H3: Labour force participation increases measured unemployment by re-engaging marginal workers

Data & Variables

Panel Data Overview

- **36 OECD countries | 2004–2022 | Annual**
- **Sources:** OECD Labour Market Policy Database; OECD Statistics

Variable	Type	Description	Combined unit of measure
YUNP	Dependent	Youth unemployment rate	% of youth labour force, aged 15-24
AUNP		Adult unemployment rate	% of adult labour force, aged 25+
UNP		Total unemployment rate	% of total labour force, aged 15+
APWEMI	Independent	Public expenditure on active labour market policies without employment incentives	% of GDP
LNITI		Institutional training investments (logged)	National currency in millions
LNTRI		Public training expenditure (logged)	
LNMIB		Minimum income benefits (logged)	National currency
LNAAW		Average annual wages (logged)	USD, PPP-adjusted, constant 2023 prices
LNLFPR		Labor force participation rate (logged)	Number of economically active persons

Empirical Framework

What is being modeled?

Following Calmfors & Skedinger (1995), unemployment is analyzed separately by age group:

Youth unemployment (YUNP)	Adult unemployment (AUNP)	Total unemployment (UNP)

Each unemployment category is modeled as a function of:

Activation & policy intensity (APWEMI)	Labour market policies	Labour supply conditions

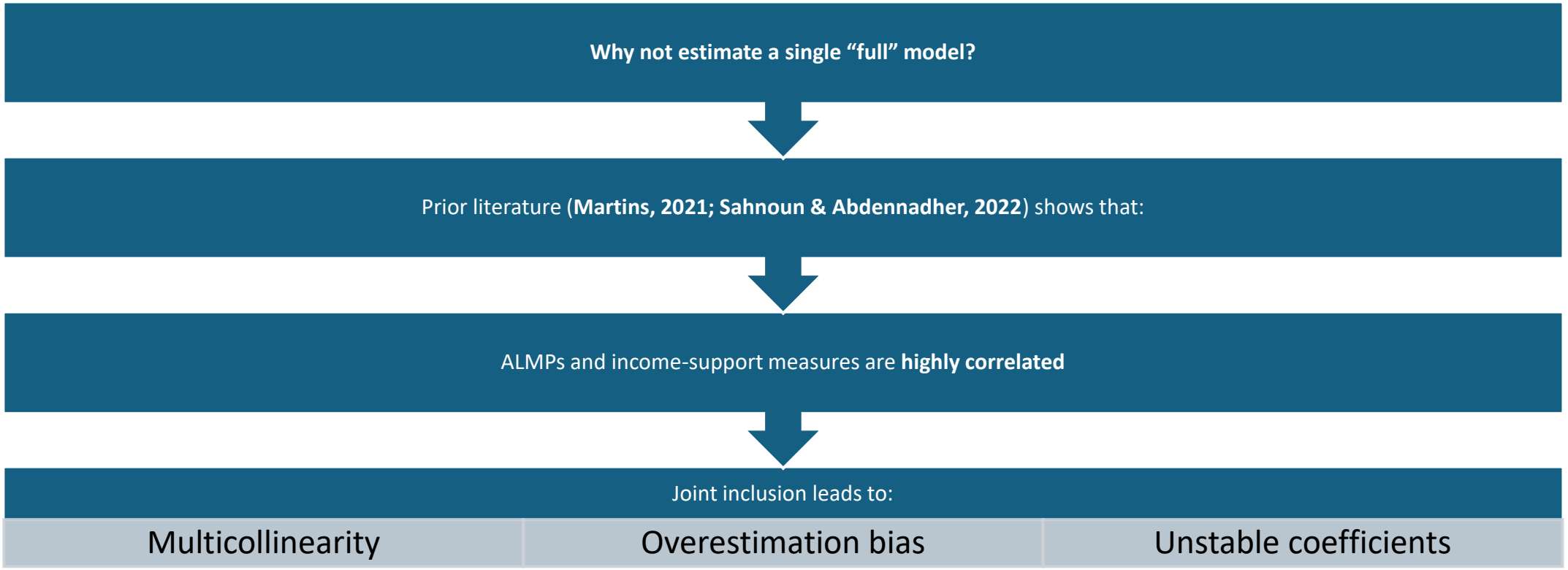
General Functional Form

$$UNP_{it}^{g} = f(\text{APWEMI}_{it}, \text{LNITI}_{it}, \text{LNTRI}_{it}, , \text{LNMIB}_{it}, \text{LNAAW}_{it}, \text{LNLFPR}_{it})$$

$$\text{Where, g} = \{\text{Youth, Adult, Total}\}$$

***Rationale*:** Age groups respond differently to labour-market institutions and policies.

Model Specification Strategy



Estimation Approach

- **APWEMI included in all models**
- Combined with **one additional policy variable at a time**:
  - Training intensity
  - Income support
  - Wage dynamics
  - Labour supply
- ✔ **15 equations estimated**
  (5 policy measures × 3 age groups)

Representative Specification

- $UNP_{it}^{g} = \beta_1 APWEMI_{it} + \beta_2 Policy_{it} + \mu_t$
- Time effects μ_t capture **common macroeconomic shocks**

Why Second-Generation Panel Methods?

Motivation

- OECD economies are **interdependent**
  - Global financial crises, pandemics, EU-wide policy spillovers
- Ignoring interdependence ⇒ **biased and inconsistent estimates**

Key Econometric Challenges

- **Cross-sectional dependence**
  - Common shocks affecting all countries
- **Slope heterogeneity**
  - Labour-market policies do *not* have uniform effects
- **Non-stationarity**
  - Long-run relationships dominate short-run fluctuations

Implication

- First-generation panels (FE, RE, GMM) are **inadequate**
- Requires estimators that allow:
  - Country-specific responses
  - Common unobserved factors

Estimation Strategy

Long-Run Estimators

- **CCEMG (Pesaran, 2006):** Controls for unobserved common factors and Allows heterogeneous country-specific coefficients
- **Mean Group (MG):** Estimates long-run effects without slope homogeneity restrictions

Robustness Estimator (**FMOLS):** Corrects for endogeneity and serial correlation

Dumitrescu–Hurlin panel causality (Dynamic Linkages): Identifies short-run causal direction and allows heterogeneity across countries

Validation Tests (pre-estimation)

- Cross-sectional dependence (Pesaran CD)
- Unit roots (CIPS)
- Cointegration (Westerlund)

Main Results I: Baseline Long-Run Effects

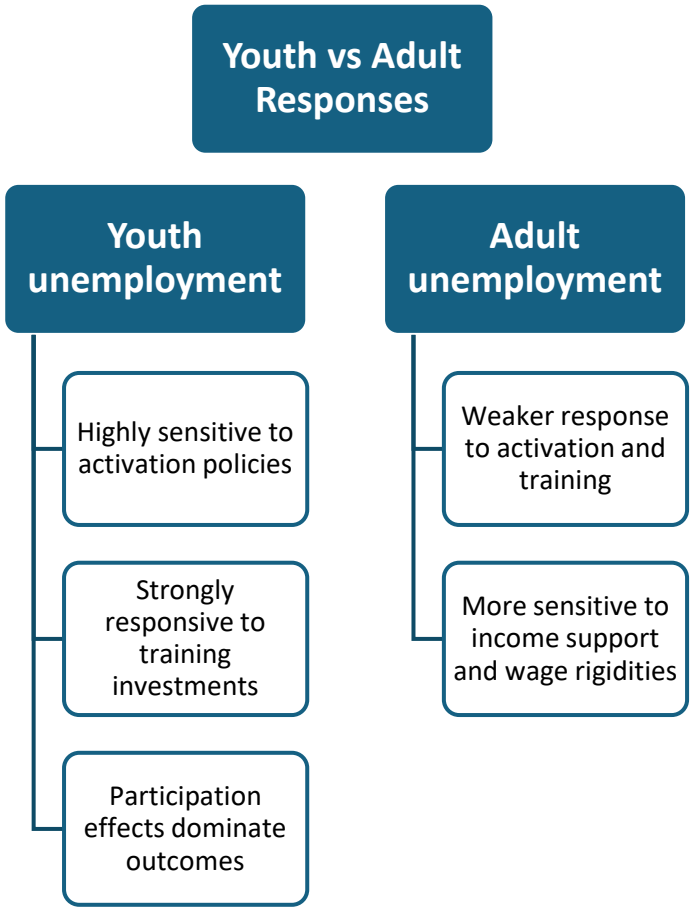
- **Baseline Long-Run Estimates (2004–2022)**

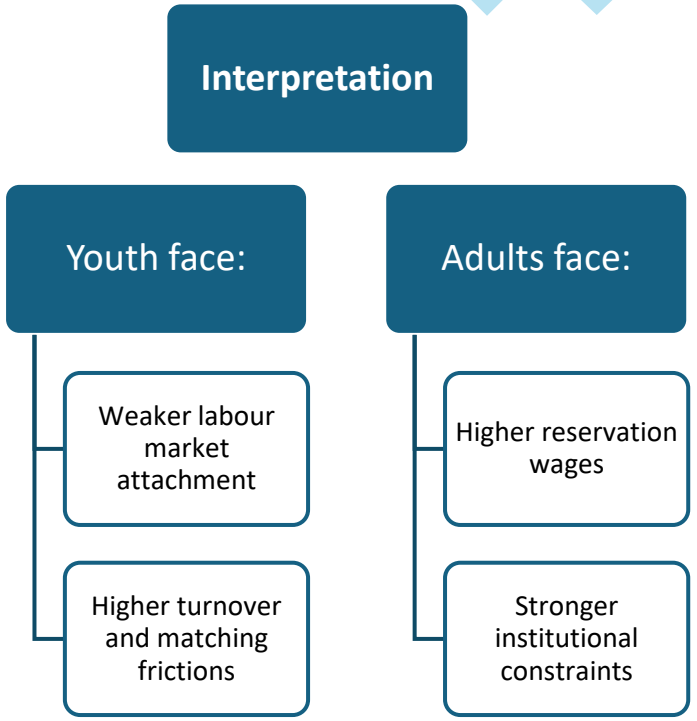
Key Findings

- **Activation spending (without job retention)**
  - ↑ unemployment across all groups
  - **Strongest effect for youth**
- **Training investments (institutional & public)**
  - ↓ **youth unemployment significantly**
  - Weak or insignificant effects for adults
- **Minimum income benefits**
  - ↑ adult and total unemployment significantly
- **Wages**
  - ↑ adult and total unemployment significantly
- **Labour force participation**
  - ↑ unemployment across all groups

Eq. No.	Dependent variable	Independent variable	CCEMG	MG	FMOLS
E1	YUNP	APWEMI	117.38	18.81***	9.64*
		LNITI	-26.17**	-1.20	-0.37*
E2		APWEMI	18.69	29.97***	8.98*
		LNTRI	-2.17	-1.95	-0.08*
E3		APWEMI	12.15**	12.90*	6.18*
		LNMIB	1.45	0.70	1.19*
E4		APWEMI	74.34***	14.37*	1.28*
		LNAAW	2.54	2.35	1.51*
E5	AUNP	APWEMI	4.47	7.80**	3.27*
		LNLFPR	24.53***	16.83*	1.85*
E6		APWEMI	7.79***	6.93**	5.13*
		LNITI	-0.93	-0.21	-0.19*
E7		APWEMI	6.37	8.26	4.81*
		LNTRI	-0.85	-0.18	-0.06*
E8		APWEMI	5.16**	6.16*	2.09*
		LNMIB	1.00***	0.54	0.44*
E9		APWEMI	1.04	2.13	0.41*
		LNAAW	8.24**	2.72**	0.55*
E10		APWEMI	0.19	1.72	1.18*
		LNLFPR	14.91**	8.24*	0.63*
E11		APWEMI	9.39***	12.76**	6.37*
		LNITI	-1.14	-0.83	-0.32*
E12	UNP	APWEMI	2.04	11.08**	5.68*
		LNTRI	-9.66***	-0.54	-0.08*
E13		APWEMI	6.16**	7.17*	2.61*
		LNMIB	1.43**	0.55*	0.51*
E14		APWEMI	1.37	6.19**	0.58*
		LNAAW	9.31**	2.24	0.66*
E15		APWEMI	2.01	2.11	1.45*
		LNLFPR	16.46**	9.38*	0.75*

Main Results II: Heterogeneity by Age





Welfare Regimes Heterogeneity

Policy Effects Are Not Uniform Across Welfare Regimes

Nordic & Continental

- Strongest **activation → higher youth unemployment**
- **Training most effective** in reducing youth unemployment

Liberal regimes

- Weaker activation effects
- Wage and participation channels more relevant

Southern & Eastern

- Smaller and often insignificant effects
- Reflects weaker institutions and lower policy intensity

Subperiod Heterogeneity (Structural Breaks)

Post-2008 crisis

- Activation effects amplified (temporary unemployment inflation)
- Training more effective for youth

Pre-pandemic (2013–2019)

- Stabilization but persistent youth sensitivity

Post-COVID

- Short-run mitigation dominates
- Long-run effects remain activation-inflationary

- 📌 **Key message:** Labour market policies are **institutionally mediated and time-sensitive.**

Causality & Robustness

Key Findings

- **Bidirectional causality:**
  Unemployment ↔ Labour market policies (APWEMI, training, benefits, wages, participation)
  - Youth unemployment especially sensitive
- **Robustness:**
  - Results hold across **CCEMG, MG, FMOLS**
  - Stable over **sub-periods** and across **welfare regimes**
- **Takeaway:** Policies respond to unemployment but also shape it.

Policy Implications

What NOT to do ❌

- Rely on activation policies **alone** → temporary unemployment spikes
- Provide generic income support without considering work incentives

What TO do ☑

- **Combine activation + job retention/support** → smoother employment transitions
- **Target training programs toward youth** → reduce long-term youth unemployment
- **Calibrate income support** → balance social protection and labour market participation
- Monitor **wages & participation** to avoid structural unemployment frictions

Takeaway 🎯

- "Smart, targeted policies matter more than blanket programs."

Conclusions: Key Findings

Main Empirical Results

- **Activation spending without employment maintenance**
  → **Raises unemployment**, particularly among **youth**
- **Institutional and public training**
  → **Significantly reduce youth unemployment**
  → **Weak or negligible effects for adults**
- **Income benefits and wage dynamics**
  → **Increase adult and total unemployment**
- **Labour force participation**
  → Re-engages marginal workers, **raising observed unemployment**

Answer to the Central Policy Question

- **No. Labour market spendings do *not* reduce unemployment uniformly.**
  Effects are **demographic-specific** and vary across policy instruments.

Contribution & Final Takeaway

Scientific Contribution

- Provides **long-run macro evidence** (2004–2022) for OECD countries
- Uses **second-generation panel estimators** to address:
  - Cross-sectional dependence
  - Heterogeneous policy effects
  - Non-stationarity
- Demonstrates that **policy–unemployment interactions are bidirectional**

Final Takeaway

- *"Labour market policies operate through different channels across age groups and institutional settings—uniform approaches risk misdiagnosing unemployment dynamics."*

Thank You!

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TABLE A1: *Fixed-effects regressions by sub-periods (pre-crisis: 2004-2007, post-crisis: 2008-2012, pre-pandemic: 2013-2019, post-pandemic: 2020-2022)*

Eq. no.	Dependent variable	Independent variable	Pre-crisis	Post-crisis	Pre-pandemic	Post-covid
E1	YUNP	APWEMI	-0.38	14.13*	15.91**	9.25*
		LNITI	-0.12*	-1.26	0.05	-1.18
E2		APWEMI	-0.16	14.09*	16.97**	7.77*
		LNTRI	-0.17**	-1.25	-0.52	-0.24
E3		APWEMI	-1.27	11.40**	13.18**	5.16**
		LNMIB	0.50	-0.97	-11.38*	-14.02*
E4		APWEMI	-2.81	12.19*	12.24**	5.33**
		LNAAW	-32.29*	-31.00**	-33.84*	-56.56*
E5		APWEMI	-2.64	11.14**	14.22**	-0.88
		LNLFPR	-17.79***	-26.78**	-27.47*	-67.11*
E6	AUNP	APWEMI	0.93	6.32*	7.04**	2.54
		LNITI	-0.15*	-0.14	-0.12	-0.20
E7		APWEMI	1.05	6.40*	7.18**	2.52***
		LNTRI	-0.17*	-0.18	-0.20	-0.17
E8		APWEMI	0.32	6.02*	5.71**	1.54
		LNMIB	-0.06	-0.01	-4.62**	-4.86*
E9		APWEMI	-0.61	6.36*	5.22***	1.62
		LNAAW	-15.53*	-14.49***	-14.36*	-16.66*
E10		APWEMI	-0.76	5.87*	6.11***	-0.68
		LNLFPR	-11.00***	-12.34***	-10.97**	-23.57*
E11	UNP	APWEMI	2.00	7.13*	8.11**	3.19**
		LNITI	-0.18*	-0.22	-0.10	-0.25
E12		APWEMI	2.13	7.19*	8.32**	2.90**
		LNTRI	-0.20*	-0.25	-0.22	-0.06
E13		APWEMI	1.23	6.66*	6.64**	2.00
		LNMIB	0.01	-0.06	-5.27**	-5.53*
E14		APWEMI	0.23	7.04*	6.09***	2.07
		LNAAW	-17.30*	-16.12***	-16.45*	-20.11*
E15		APWEMI	0.05	6.50*	7.05**	-0.81
		LNLFPR	-12.46**	-13.42***	-13.35*	-29.33*

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TABLE A2: *CCEMG estimates across welfare regimes*

Eq. no.	Dependent variable	Independent variable	Nordic	Liberal	Continental	Southern	Eastern	Other
E1	YUNP	APWEMI	49.48*	21.63**	135.90	-24.80*	0.20	68.09
		LNITI	-21.66**	-1.58	-24.92	-3.46	-0.76	-6.52
E2		APWEMI	55.41*	16.83	69.87**	-6.27*	-11.97*	94.37
		LNTRI	-26.42**	-0.95	-23.75	1.39	2.10*	-8.33
E3		APWEMI	10.38*	39.28**	7.09	-5.98*	8.25	-8.56*
		LNMIB	14.01	6.16	23.20	-0.60	6.38*	-1.62
E4		APWEMI	10.40*	13.79	2.59	-9.76**	15.34	-73.79**
		LNAAW	-2.70	20.24**	-1.56	8.84	14.63	-22.50*
E5		APWEMI	14.14*	27.97	4.96	-10.12**	-3.07	-20.82***
		LNLFPR	62.37***	-54.32	13.02	-4.84	59.04**	-4.45
E6	AUNP	APWEMI	2.62	11.33**	0.70	-0.04	-0.13	-11.06
		LNITI	-3.24*	-0.90	0.89	-0.10	-0.75***	-0.24
E7		APWEMI	2.16	10.81	0.32	-2.27*	-37.65***	37.04
		LNTRI	-3.65**	-0.66	0.45	2.43	5.51**	-4.27
E8		APWEMI	-5.60	6.59*	1.57	0.61	5.45	-2.06*
		LNMIB	37.54**	-1.86	4.00	-1.13*	2.12**	-0.70
E9		APWEMI	1.59	1.52	-2.63	0.40	-7.66	-24.99***
		LNAAW	4.17	10.71*	-32.55***	10.22**	-57.24***	-13.16
E10		APWEMI	1.91	16.59	1.99***	-1.30	-1.84	-16.74**
		LNLFPR	16.59*	1.11	4.95	7.57*	30.37*	2.42
E11	UNP	APWEMI	4.32**	12.29**	0.66	0.64	-0.012	225.75
		LNITI	-3.53**	-1.03	0.88	-0.75	-0.728***	-13.39**
E12		APWEMI	4.01***	11.58	0.30	-2.85*	-5.347*	38.86
		LNTRI	-4.07**	-0.80	1.22	2.75	0.002	-5.02
E13		APWEMI	1.57	8.63*	3.51**	0.53	5.987	-2.74*
		LNMIB	5.43	-0.58	3.78	-1.04**	2.597**	-0.78**
E14		APWEMI	2.54**	6.76	-2.84	-2.76	6.229***	-11.89
		LNAAW	3.94	23.25*	-26.24**	8.43	6.559	-7.05
E15		APWEMI	4.16	15.18	3.13**	-1.94	-1.954	-18.47**
		LNLFPR	16.09***	-27.85	2.98	7.58*	35.012*	-1.21

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TABLE A3 : ***Panel Granger causality test results (Dumitrescu and Hurlin, 2012)***

Dependent variable	Independent variable	Lag (AIC)	Z-bar	Z-bar tilde	Direction of causality
YUNP	APWEMI	2	5.50*	2.92*	YUNP ⇔ APWEMI
	LNITI	2	8.07*	4.70*	YUNP ⇔ LNITI
	LNTRI	2	7.03*	3.99*	YUNP ⇔ LNTRI
	LNMIB	1	3.32*	2.06*	YUNP ⇔ LNMIB
	LNAAW	2	5.47*	2.91	YUNP ⇔ LNAAW
	LNLFPR	1	5.46*	3.69*	YUNP ⇔ LNLFPR
AUNP	APWEMI	2	30.02*	19.61*	AUNP ⇔ APWEMI
	LNITI	2	21.38*	13.75*	AUNP ⇔ LNITI
	LNTRI	2	24.15*	15.64*	AUNP ⇔ LNTRI
	LNMIB	2	5.11*	2.68*	AUNP ⇔ LNMIB
	LNAAW	2	11.66*	7.12*	AUNP ⇔ LNAAW
	LNLFPR	2	3.97*	1.88*	AUNP ⇔ LNLFPR
UNP	APWEMI	2	25.50*	16.53*	UNP ⇔ APWEMI
	LNITI	2	25.79*	16.75*	UNP ⇔ LNITI
	LNTRI	2	25.79*	16.75*	UNP ⇔ LNTRI
	LNMIB	2	4.64*	2.36*	UNP ⇔ LNMIB
	LNAAW	2	10.57*	6.37*	UNP ⇔ LNAAW
	LNLFPR	1	5.84*	3.98*	UNP ⇔ LNLFPR

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FIGURE A2: *Public spending on labour market programs across OECD countries*