

The German Minimum Wage: Countering the Wage and Employment Gap between Natives and Migrants?

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Minimum Wages in Changing Labour Markets

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Minimum Wage in Germany

- In 2015: Introduction of nationwide statutory minimum wage of 8.50€ per hour with **two objectives**:
 - Protect employees in the low-wage sector from wage dumping
 - Precipitate improvement in social security for lower income groups
- **Justification**:
 - Reduction in the number of employees covered by collective agreements
 - Rising wage inequality in Germany since the 1990s (e.g., Biewen et al., 2019; Bossler and Schank, 2020, Dustmann et al., 2009)
- **Coverage**:
 - In 2014, there were around 4 million employment relationships with an hourly wage of less than €8.50, or 11.3 percent of all employees (Mindestlohnkommission, 2018)
 - However, approximately one quarter of the German labour force was still employed in the low-wage sector (Grabka and Schröder, 2019)

The Minimum Wage and Migrants

- Numerous studies on wage and employment effects due to the minimum wage introduction in Germany, but are **no studies on the situation of migrants**.
 - **One in four persons** in the labour force has a migration background (Federal Statistical Office, 2020)
 - Migrants were much **more likely to be below the minimum wage threshold of €8.50/hour** than natives (19 vs. 12 %, Amlinger et al., 2016)
 - **Structural wage inequalities** between migrants and natives (e.g. Aldashev et al. 2012; Ingwersen & Thomsen, 2021)
 - **Relative labour market disadvantages** due to:
 - Lower language proficiency, job qualifications, and the usability of their human capital (e.g., Aldashev et al., 2009; Kogan, 2011)
 - Statistical discrimination (Kaas and Manger, 2012) → not necessarily as the result of intentional decisions but partly arise from misaligned incentives.
 - **Migrants** more often work in the low-wage sector, typically characterized as marginal employment (so-called mini-jobs) or part-time employment (Grabka and Schröder, 2019)
- *“Only a few studies have looked at the effect of the minimum wage on immigrants. Research has been limited exclusively to the US.”* (Zavodny, 2014:5)

This Study

- **How did the introduction of the minimum wage 2015 in Germany affect migrants?**
 - Has there been a **convergence or divergence in wages** between migrants and natives?
 - Has the introduction of the minimum wage led to migrants being employed in comparatively better **employment** contracts?
 - Did the **labour market situation of migrants** improve due to the introduction of the statutory minimum wage in 2015?
- **Approach**
 - Empirical analysis based on data from **SOEP for 2010 to 2016**
 - **Causal analysis** of effects
 - on **hourly wages, working hours** and **monthly salaries of migrants and natives**
 - application of a **differential trend adjusted difference-in-differences (DTADD) analysis** (suggested by Burauel et al., 2020; Dustmann et al., 2022).
 - Complementary comprehensive descriptive analysis of **labour market participation patterns** and **wage distribution** to illustrate and discuss potential changes → **for eliciting potential mechanisms**

Related Literature

Effects of the Minimum Wage in Germany

- **Wages:** Significant wage growth in the lowest wage decile. Also, spillover into higher wage groups. However, often no increases in monthly salary due to a reduction in working hours (e.g. Bossler & Schank, 2020; Dustmann et al., 2022; Grabka & Schröder, 2019; Caliendo et al., 2019; Bruttel, 2019)
- **Employment:** Regular employment was unaffected by the minimum wage introduction. Half of the marginal employment was converted into regular employment (e.g. Amlinger et al., 2016; Berge & Weber, 2017; Caliendo et al., 2019; Dustmann et al., 2022; Garloff, 2019; Holtemöller & Pohle, 2019)
- **Welfare dependency:** minimum wage has not helped to reduce welfare dependency and the risk of poverty (Bruttel, 2019).
- **Labour substitution:** Employers to shift away from the least-skilled workers toward more-skilled workers (e.g. Dustmann et al., 2022; Zavodny, 2014)

Effects of the Minimum Wage for Migrants

- **US/UK:** The introduction of the minimum wage is associated with a reduction in the wage gap between ethnic minorities and white workers at the lower end of the pay scale (Clark & Nolan, 2021; Wursten & Reich, 2021)
- In this regard, Edo and Rapoport (2019) observe that, in the U.S., high federal minimum wages preserve native-born workers from competition with migrants with similar qualifications.
- **Consequently, the relative level of the minimum wage could affect the labour force participation of ethnic minorities and could thus influence wage inequality between migrants and natives.**
- **For Germany:** Caliendo et al. (2019) indicate that employees who seem to have benefitted the most are low educated, marginally employed, women and people with a migration background (**explicitly mentioned - but not analysed!**)

Expected Effects – Theoretical Considerations

Expected Effects: Potential Employer Reactions

- Minimum wage may lead to wage increases and employment losses (Bruttel, 2019; Zavodny, 2014) → **interplay of income and substitution effects**
- **Possible options for employers:**
 - Reduce the contractual weekly working hours
 - Demand employees to work harder or face termination
 - Profit incentive to substitute away from the least-skilled towards more-skilled workers (Zavodny, 2014)
 - Reduced hiring of low-skilled workers; if primarily low-wage earners become unemployed, this would **raise the average wage** of the lower income groups and **promote inequality**
 - Pass-through of the additional labour costs to their customers by raising prices for goods and services (Bruttel et al., 2018; Bruttel, 2019) (→ Companies that raised prices relatively frequently were less likely to lay off employees in return (Link, 2022))
 - Reduction in investments and adjustment of work requirements (Caliendo et al., 2019)
 - Eventually, small employers may be forced to exit the market (Dustmann et al., 2022)

Labour Market Situation of Migrants

- Reasons for the lower average wages are manifold, but lower **human capital endowment** is key:
 - **Lower level of education** and **generally poorer language skills** (Ingwersen and Thomsen, 2021)
 - **Imperfect transferability of human capital** (first-generation migrants (Aldashev et al., 2009; Basilio et al., 2017))
 - **Migrant-specific challenges in the German education system** (for later-generation migrants (Christl et al., 2018))
 - **Wage differentials** cannot be attributed to productivity differences alone:
 - **Less bargaining power** vis-à-vis the (potential) employer than natives (Signorelli, 2020)
 - **Statistical discrimination**, which (partly) arises from cultural differences (Ingwersen and Thomsen, 2021) → employer's reservations about hiring, retention, and promotion can lead to a preference for native-born workers (Kaas and Manger, 2012)
- **Clear selection of migrants into low-income occupations and sectors** (irrespectively of actual cause or its relevance) (Humpert, 2013)

Expected Effects for Migrants

- **Pro:**

- Worse labour market situation of migrants compared to natives,
 - Strong overrepresentation of people with a migration background at the bottom of the wage distribution, their hourly wages would rise to a greater extent than those of native Germans would due to the minimum wage
 - Minimum wage may contribute to closing the migrant-native wage gap in Germany.

- **Con:**

- Migrants' employment opportunities may also excessively deteriorate in response to the minimum wage (Zavodny, 2014)
 - Trouble entering the labour market or keeping their jobs, and they benefit from higher wages only if they are in employment.

→ **Due to the opposing forces at work, we conjecture that migrants are more strongly affected than natives by the introduction of the minimum wage – both positively and negatively**

Identification Approach

Differential Trend Adjusted Difference-in-Differences Analysis (DTADD)

- Based on an approach suggested by Burauel et al. (2020) and Dustmann et al. (2022)
- **Identification strategy:**
 - Wages below the MW-threshold (treatment group) would have developed identically to those just above the MW-threshold (control group) if the minimum wage had not been introduced
 - To empirically support the plausibility of this assumption, we consider previous wage trends in the model.
- The **treatment effect** is represented by the **difference between wage changes in the treatment group** and the **wage changes perceived in the control group**
- **Robustness check:** control group may be partially affected by MW-introduction → use of peer group

group	wages in 2014	wage changes towards 2015/16
treated group	€5.00 to < €8.50	<ul style="list-style-type: none"> ▪ (subordinate) overall wage trend ▪ wage increase above the threshold of €8.50
control group	€8.50 to < €10.00	<ul style="list-style-type: none"> ▪ overall wage trend ▪ small additional wage increase due to indirect effects of the minimum wage introduction (wage spillover)
peer group	€10.00 to < €12.00	<ul style="list-style-type: none"> ▪ overall wage trend ▪ (almost) unaffected by the minimum wage introduction

Empirical Specification

$$\Delta w_{it} = \beta_0 + \beta_1 T_i + \beta_2 T_i \times Y_{it} + \beta_3 T_i \times Y_{it-k} + \beta_4 X_{it} + \beta_5 Z_{it} + \alpha_t + \varepsilon_{it}$$

- Δw_{it} : logarithmic change in individual hourly wage
- T_{it} : "treatment group indicator"
- β_1 : average hourly wage growth of individuals of the treated group
- β_2 : The interaction term between T_{it} and the time vector Y_{it} indicates deviations from the average hourly wage growth of the treated group → **"minimum wage effect"**
- β_3 : Placebo for average hourly wage growth

- Separate estimations for treated migrants and treated natives
- Estimation of two model variants: **1) one-year analysis** and **2) two-year analysis** (preferred, for reducing impact of short-term wage fluctuations, lagged minimum wage implementation and adjustment of hiring behavior)

Data and Descriptive Statistics

- Survey data for **2010 to 2016 from the German Socio-Economic Panel (SOEP)**
(w/o migration samples from after 2013 to minimize bias from refugee samples and immigrants immediately before the minimum wage introduction in 2015; age range from 25 to under 60 years ; use of individual level survey weights)
- **Migrants:**
Persons who were born in Germany but have at least one parent who immigrated to Germany (indirect migration background, second and subsequent generations of immigrants) or who immigrated themselves (direct migration background, first-generation immigrants)
- **Natives:**
Persons who have no known migration history (DIW-SOEP, n.d.)
- **Main outcome variable: gross hourly wage**
(calculated from individual gross wages for each month divided by contractual working hours of the last week in the main job extrapolated to monthly hours; contractual working hours have the advantage over actual working hours in that a bias in hourly wages due to additional overtime pay is not included. Wages from side jobs are not considered. We assume that there are 4.35 weeks in each month for the calculation. We further apply symmetric trimming to the wage growth rates by dropping the upper and lower one percent from the analysis to correct for outliers.)
- **Estimation sample:** 75,456 observations with wages; 21.2 % migrants (73 % with a direct migration background and 27 % with an indirect migration background)

Sample Description: Wages and Working Hours (2014)

Characteristics of workers	Treatment group (€5.00- €8.50)			Control group (€8.50- €10.00)	Peer group (€10.00- €12.50)
	total	migrants	natives	total	total
Wage					
gross hourly wage	7.04***	7.04***	7.04***	9.22	11.07***
Std. dev.	0.96-	0.89-	0.98-	0.43	0.56-
p10	5.52-	5.71-	5.45-	8.62	10.35-
p50	6.98-	6.89-	7.02-	9.20	11.20-
gross monthly wage	879.16***	883.08***	877.85***	1,408.67	1,596.40***
working hours (contracted)	28.53***	28.65***	28.49***	35.03	33.06**
working hours (actual)	30.22***	29.90***	30.33***	37.36	35.90
No. of obs.	493	173	320	237	357

Notes: Self-employed, apprentices, interns, handicapped workers in sheltered workshops, and branches with industrial wage floors above the statutory minimum wage are excluded from the sample. Source: SOEP (2021) v36, own calculations incl. survey weights.

Sample Description: Employment and Qualification (2014)

Characteristics of workers	Treatment group (€5.00- €8.50)			Control group (€8.50- €10.00)	Peer group (€10.00- €12.50)
	total	migrants	natives	total	total
Employment					
full-time employment	0.37***	0.49***	0.33***	0.71	0.63**
part-time employment	0.42***	0.31**	0.46***	0.22	0.31**
marginal employment	0.21***	0.20***	0.21***	0.07	0.06
Qualification					
low-skilled	0.21	0.44***	0.13**	0.19	0.15
medium-skilled	0.72	0.47***	0.80**	0.73	0.76
high-skilled	0.07	0.09	0.06	0.08	0.10
labour market experience	13.85***	11.33***	14.69***	18.05	18.25
job tenure	6.60***	5.39***	7.01**	8.53	9.27
No. of obs.	493	173	320	237	357

Notes: Self-employed, apprentices, interns, handicapped workers in sheltered workshops, and branches with industrial wage floors above the statutory minimum wage are excluded from the sample. Source: SOEP (2021) v36, own calculations incl. survey weights.

Empirical Results: Causal Analysis

DTADD-Results: Log. Change in Gross Hourly Wage

	Two-Year Analysis		
	Total	Migrants	Natives
	(1)	(2)	(3)
Hourly wage <€8.50 ¹	0.054***	0.074**	0.049***
[T _i]	(0.015)	(0.032)	(0.015)
× DTADD 2014-2016 ²	0.055**	0.034	0.055
[T _i × Y _{it}]	(0.023)	(0.040)	(0.025)
× Placebo 2010-2012 ²	-0.033	-0.136	-0.02
[T _i × Y _{it-k}]	(0.034)	(0.097)	(0.035)
Control Variables			
Year fixed effects [α _t]	yes	yes	yes
Socio-demographic info. [X _{it}]	yes	yes	yes
Job characteristics [Z _{it}]	yes	yes	yes
Constant	0.084*	0.063	0.083*
	(0.051)	(0.072)	(0.049)
Observations	1,907	936	1,657
Adj. R ²	0.104	0.071	0.100

average wage growth

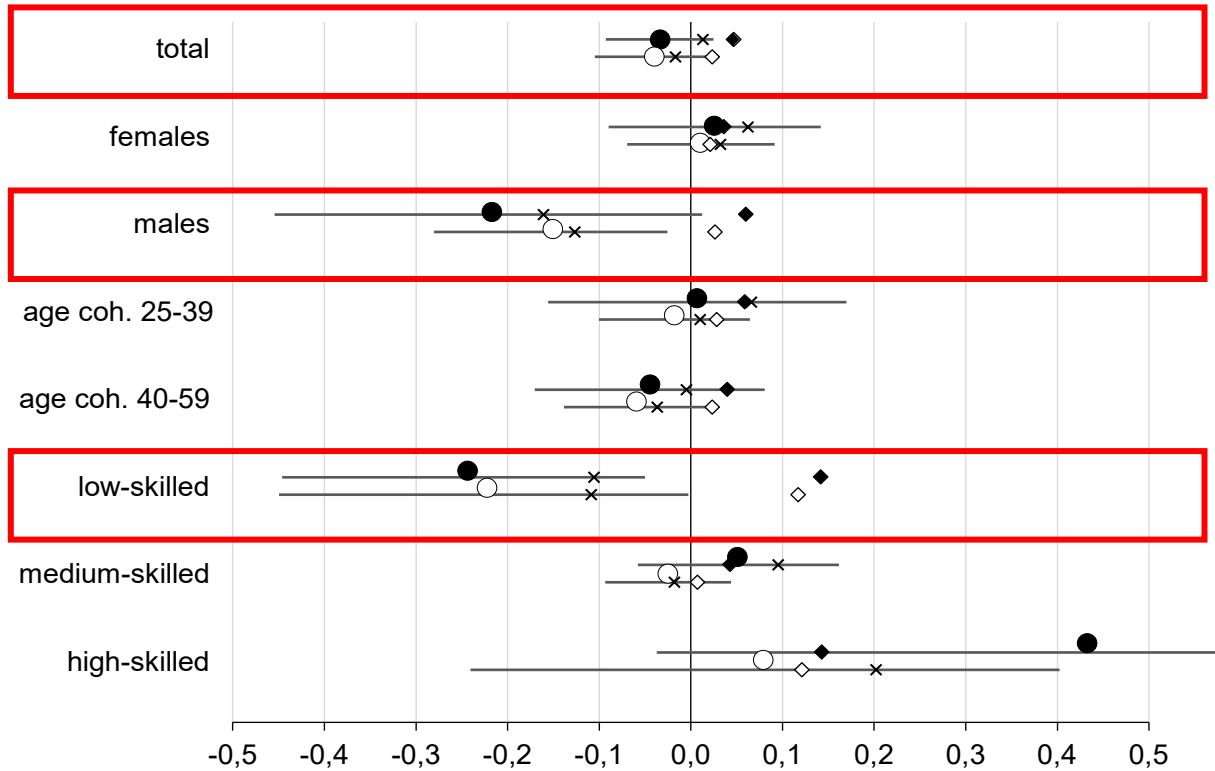
“Minimum Wage Effect”

wage trend pre-MW

Notes: The table shows the effect of the minimum wage introduction on the change in gross hourly wages. Self-employed, apprentices, interns, handicapped workers in sheltered workshops, and branches with industrial wage floors above the statutory minimum wage are excluded from the sample. 1) Treated group (€5.00 to <€8.50/hour): (1) all workers, (2) with migration background, (3) without migration background. Control group (€8.50 to <€10.00/hour): (1)-(3) all workers. 2) DTADD and placebo are the respective different interaction terms, depending on the treated group. Source: SOEP (2021) v36, 2010-2016, own calculations. Robust standard errors, clustered at the individual level. Standard errors in parentheses. Significance levels: * p<0.1, ** p<0.05, *** p<0.01.

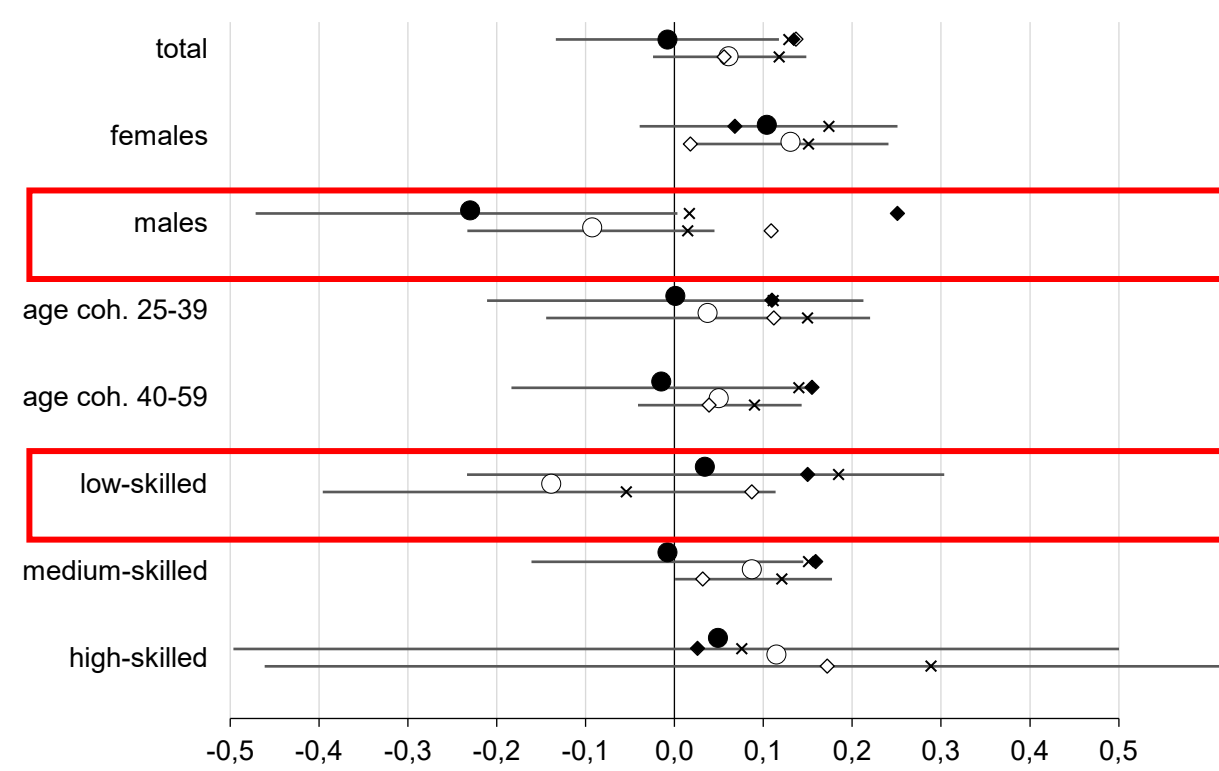
DTADD-Results: Weekly Working Hours and Monthly Wage

Weekly Working Hours



- minimum wage effect for migrants, 2014-16
- minimum wage effect for natives, 2014-16
- 95% Conf. Interval for MWE
- ◆ average growth in working hours of migrants, 2010-16
- ◇ average growth in working hours of natives, 2010-16
- x overall change in working hours, 2014-16

Monthly Wage

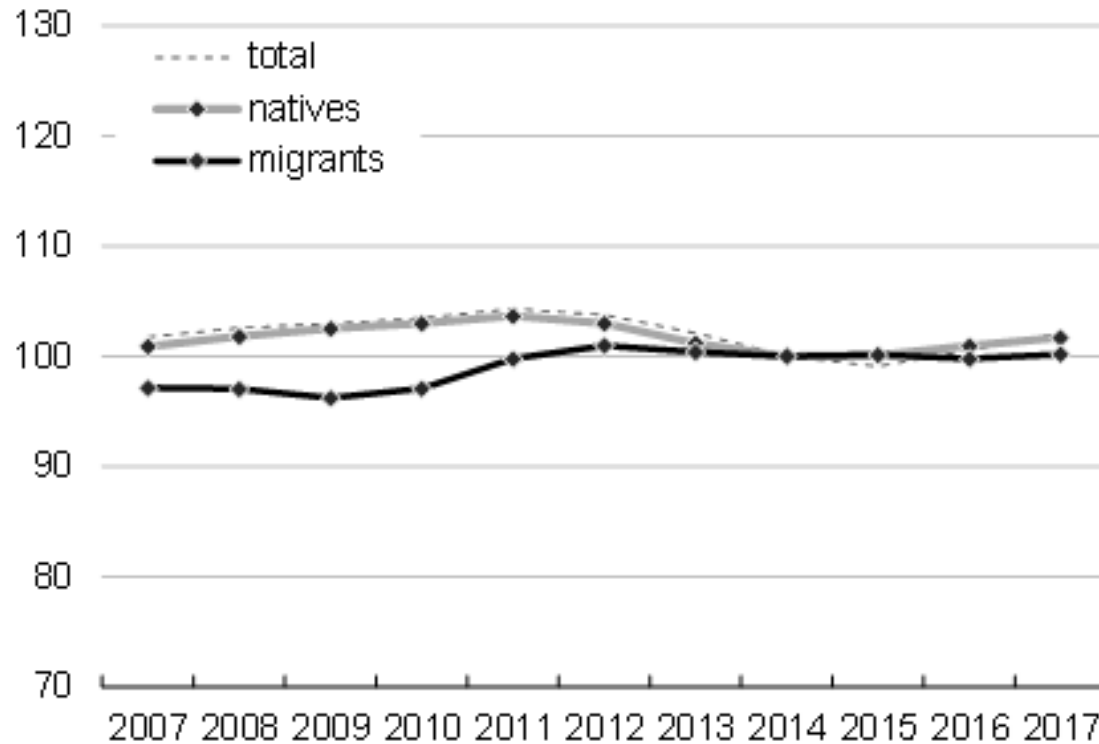


- minimum wage effect for migrants, 2014-16
- minimum wage effect for natives, 2014-16
- 95% Conf. Interval for MWE
- ◆ average monthly salary growth of migrants, 2010-16
- ◇ average monthly salary growth of natives, 2010-16
- x overall monthly salary change, 2014-16

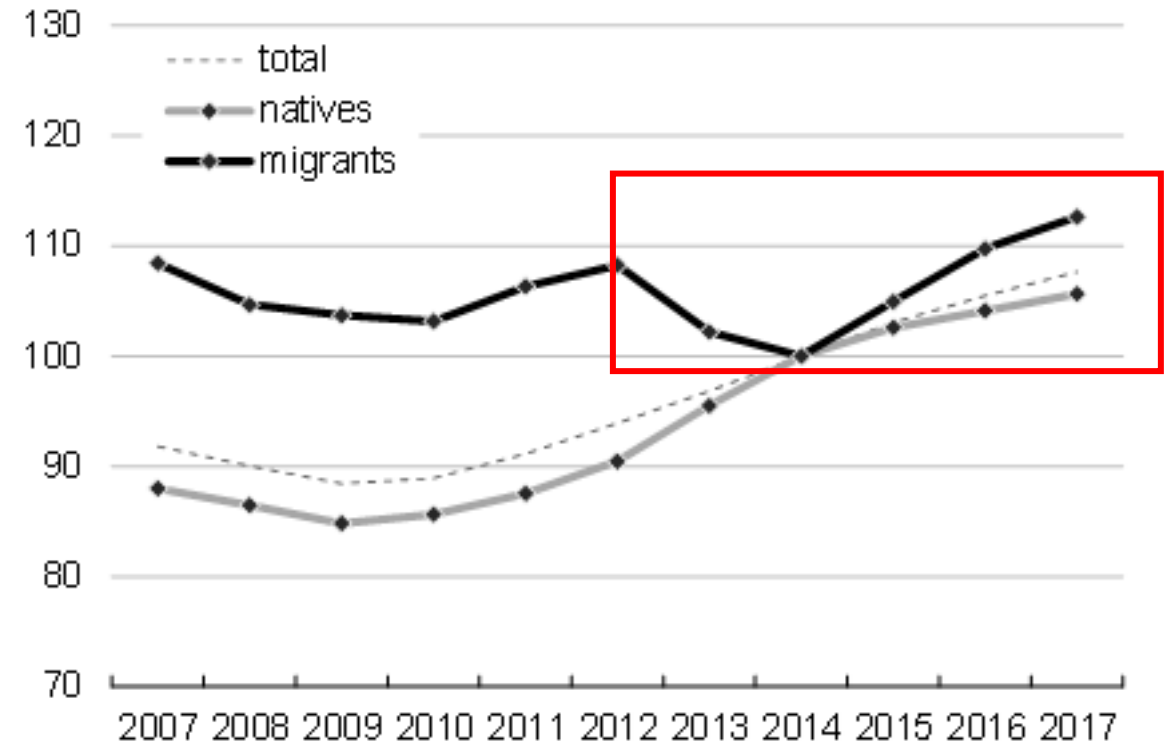
Elicitation of Potential Mechanisms

Full-time and Part-time Employment (2007-2017)

Full-time employment



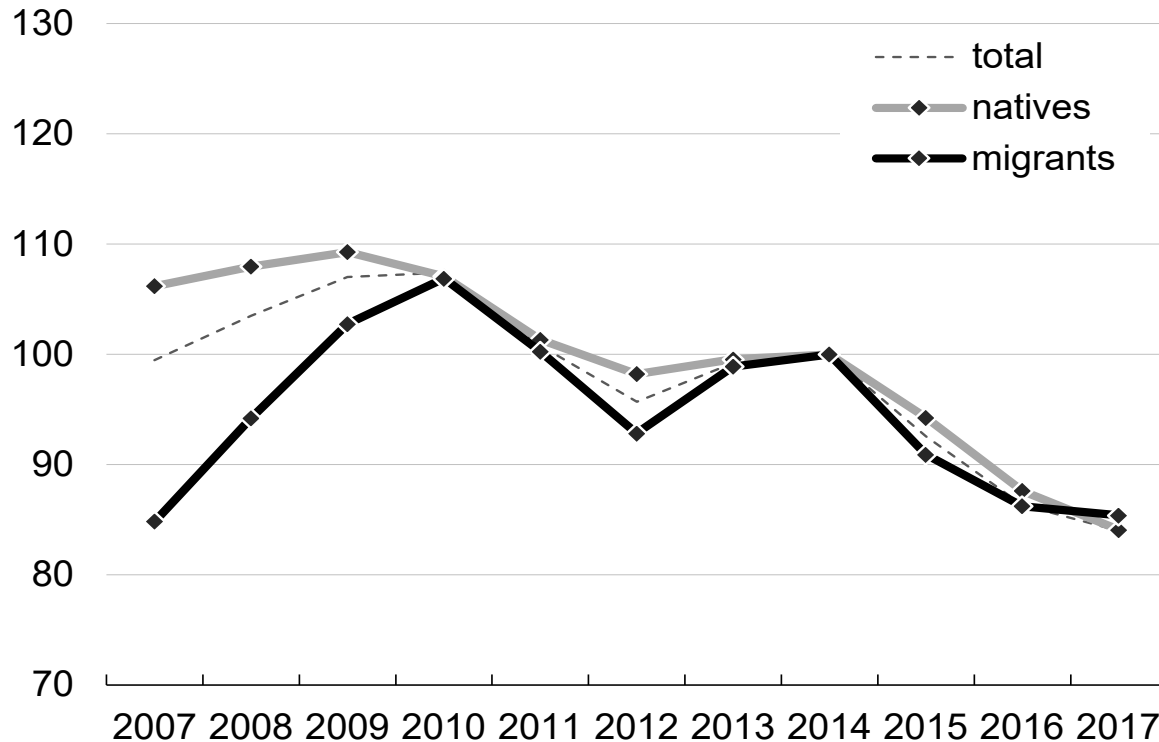
Part-time employment



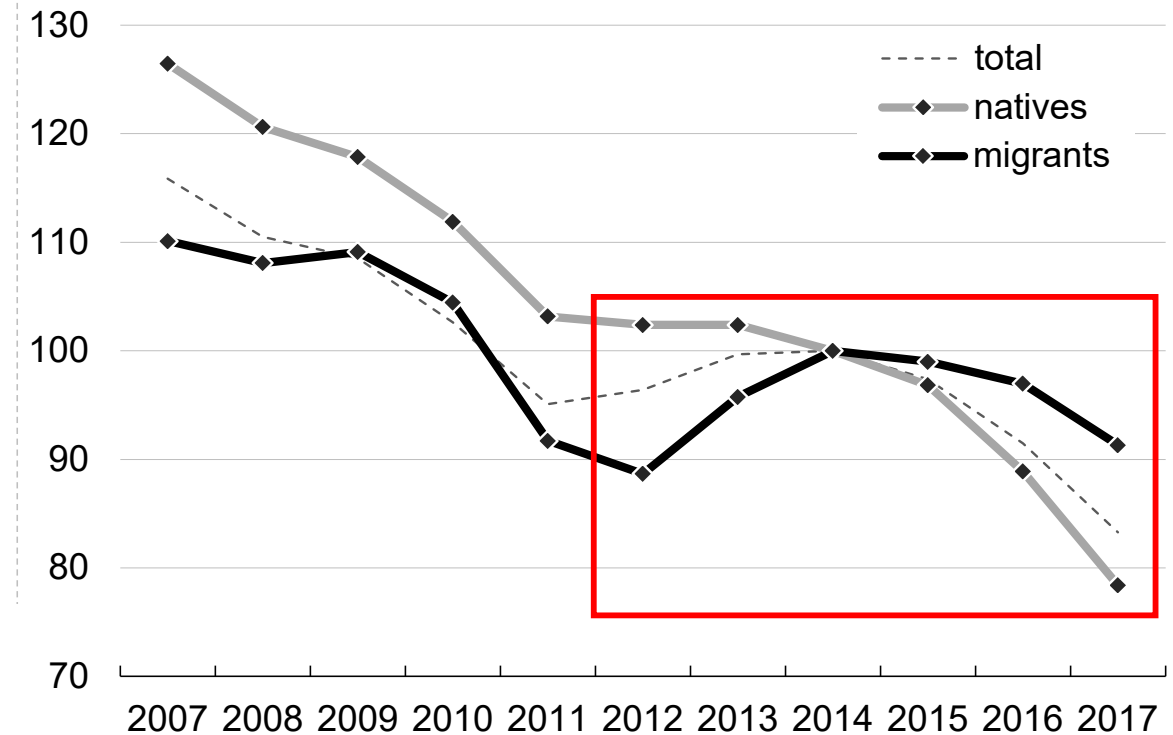
Notes: Index 2014=100. The index is smoothed with adjacent years. Self-employed, apprentices, interns, handicapped workers in sheltered workshops, and branches with industrial wage floors above the statutory minimum wage are excluded from the sample. Source: SOEP (2021) v36, 2007-2017, own calculations incl. survey weights.

Marginal Employment and Unemployment (2007-2017)

Marginal time employment

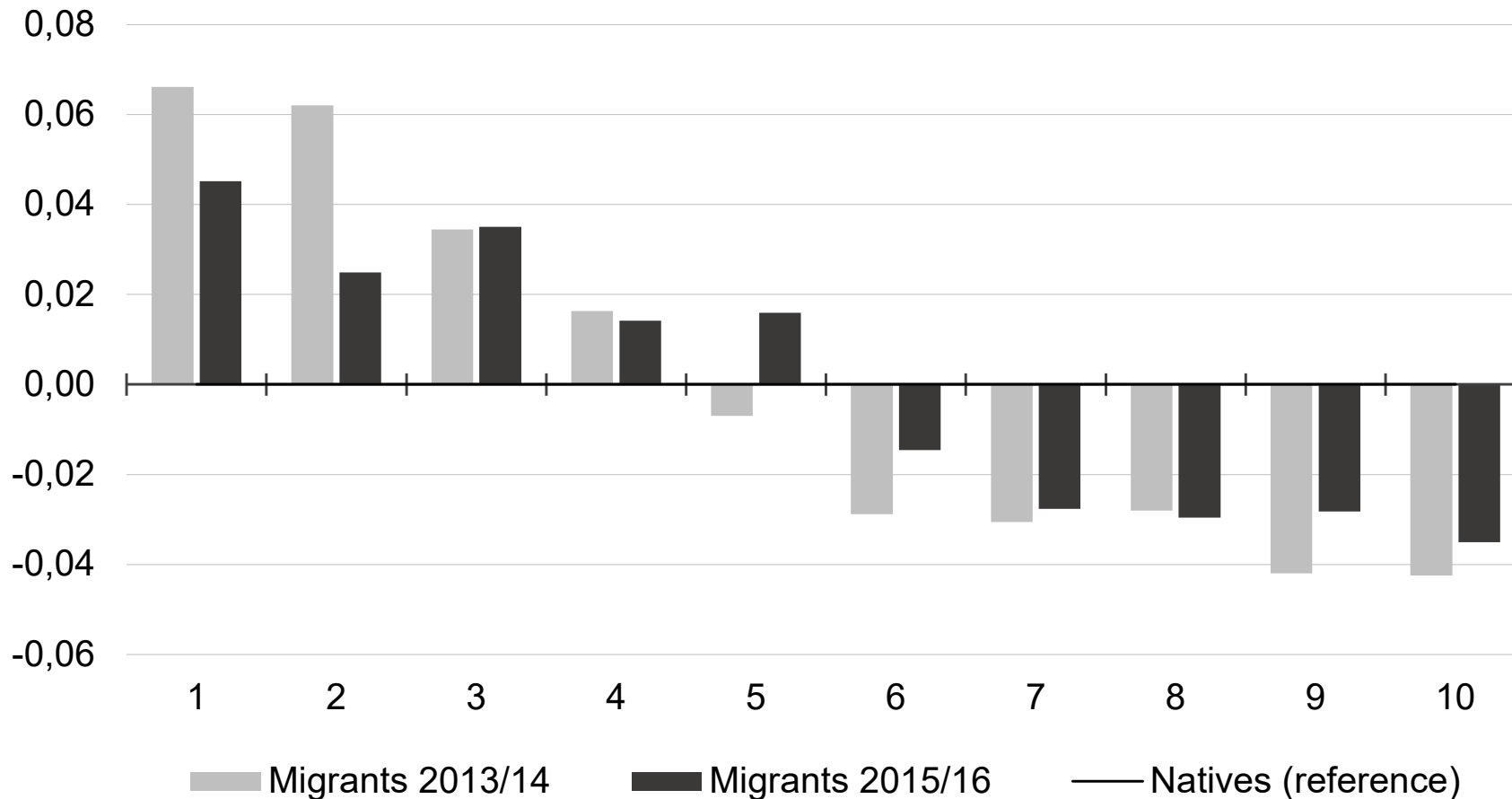


Unemployment



Notes: Index 2014=100. The index is smoothed with adjacent years. Self-employed, apprentices, interns, handicapped workers in sheltered workshops, and branches with industrial wage floors above the statutory minimum wage are excluded from the sample. Source: SOEP (2021) v36, 2007-2017, own calculations incl. survey weights.

Wage Distribution



Deviation of migrants' wages by the wage deciles of natives

Notes: The figure shows the deviation of the proportion of employees with migration background within the wage deciles of employees without migration background, 2013/14 and 2015/16. Self-employed, apprentices, interns, handicapped workers in sheltered workshops, and branches with industrial wage floors above the statutory minimum wage are excluded from the sample. Source: SOEP (2021) v36, 2013-2016, own calculations incl. survey weights. Illustration based on Clark and Nolan (2021).

Conclusion

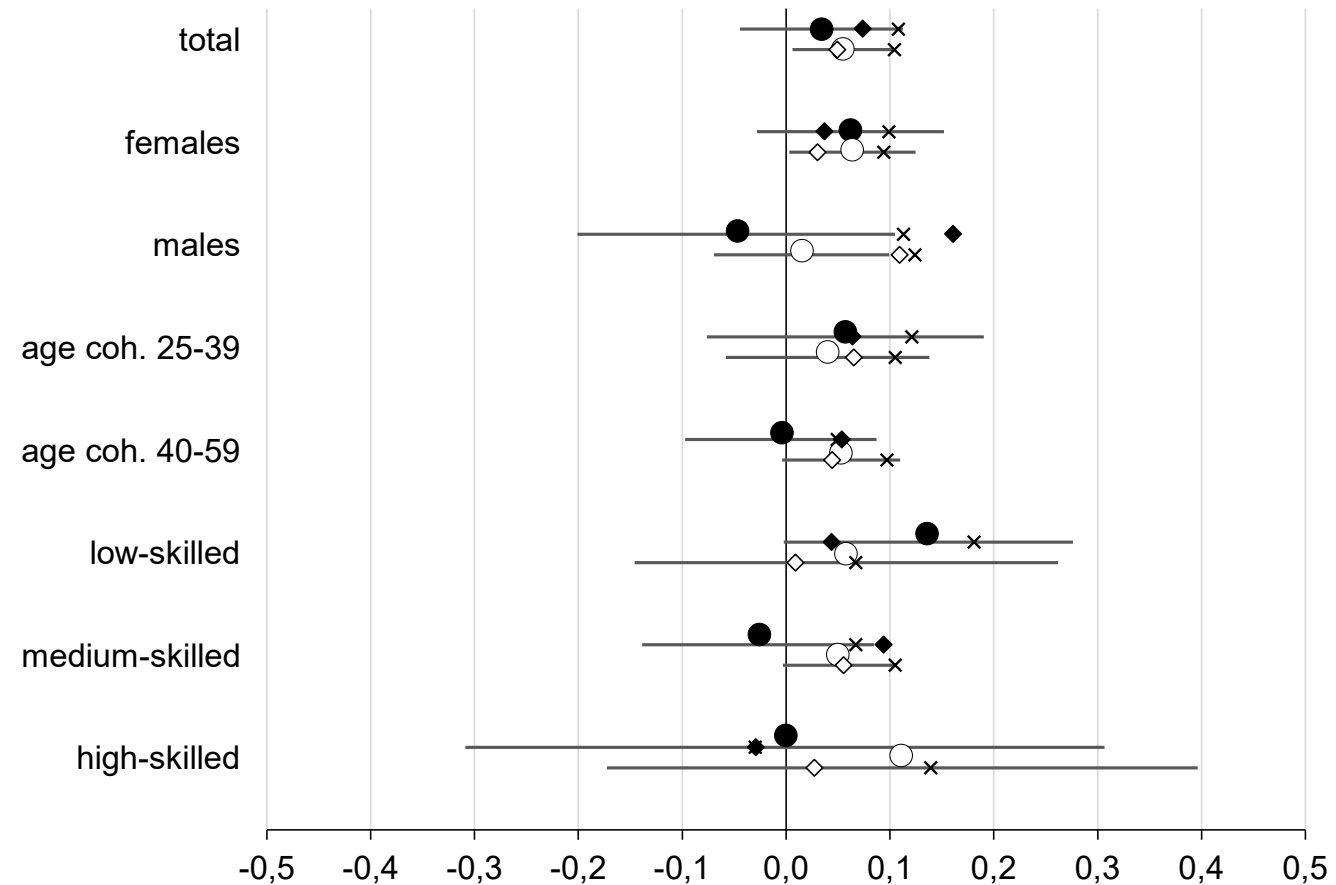
Conclusion

- **Causal analysis:**
 - Hourly wages show stronger wage growth for migrants compared to natives, but no significant effect of minimum wage introduction → no lasting convergence due to minimum wage introduction
 - Results indicate reduction of working hours (with large heterogeneity) → no change in monthly wage (but differences for certain socio-economic groups)
- **Elicitation of channels:**
 - Increase in part-time employment
 - Unemployment declined less sharply
 - Wage distribution indicates some convergence, but large differences remain (even in lower deciles)
- **Overall: Minimum wage at 8.50 € worsened relative labour market position of migrants**
- **Perspective:**
 - Further increases of minimum wage since its introduction very likely intensified labour market competition
 - Wages and employment between migrants and natives at the lower end of the wage distribution will further diverge → at the cost of migrants
 - *Bürgergeld* has probably exacerbated the situation further

Thank you for your attention

Appendix

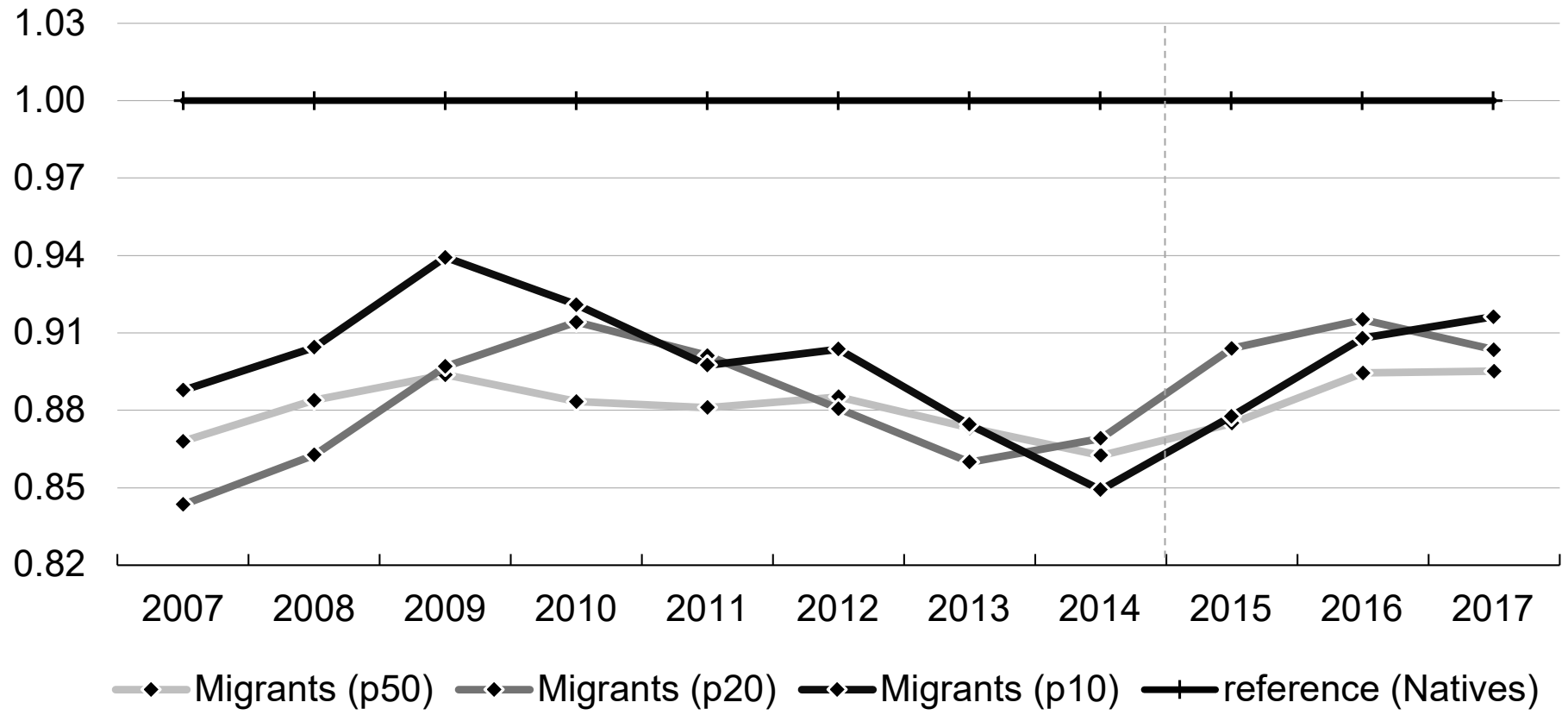
DTADD-Results: Gross Hourly Wage



● minimum wage effect for migrants, 2014-16
○ minimum wage effect for natives, 2014-16
– 95% Conf. Interval for MWE

◆ average hourly wage growth of migrants, 2010-16
◇ average hourly wage growth of natives, 2010-16
x overall hourly wage change, 2014-16

Wage Distribution



Wage convergence by selected hourly wage percentiles, 2007-2017

Notes: The figure shows the ratio between the 10th, 20th and 50th wage percentiles of employees with a migration background to employees without a migration background (reference=1), 2017-2017. Wage ratios are smoothed with adjacent years. Self-employed, apprentices, interns, handicapped workers in sheltered workshops, and branches with industrial wage floors above the statutory minimum wage are excluded from the sample. Source: SOEP (2021) v36, 2007-2017, own calculations incl. survey weights.