

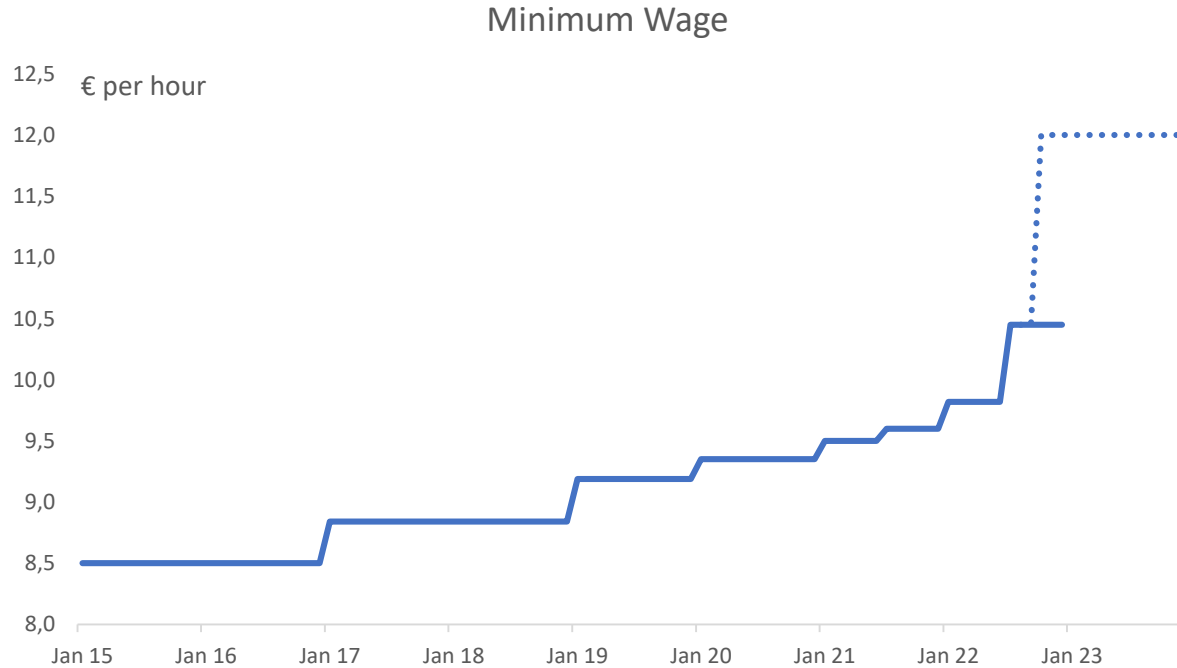
February 2022

# The causal effects of the minimum wage in Germany – What have we learned so far?

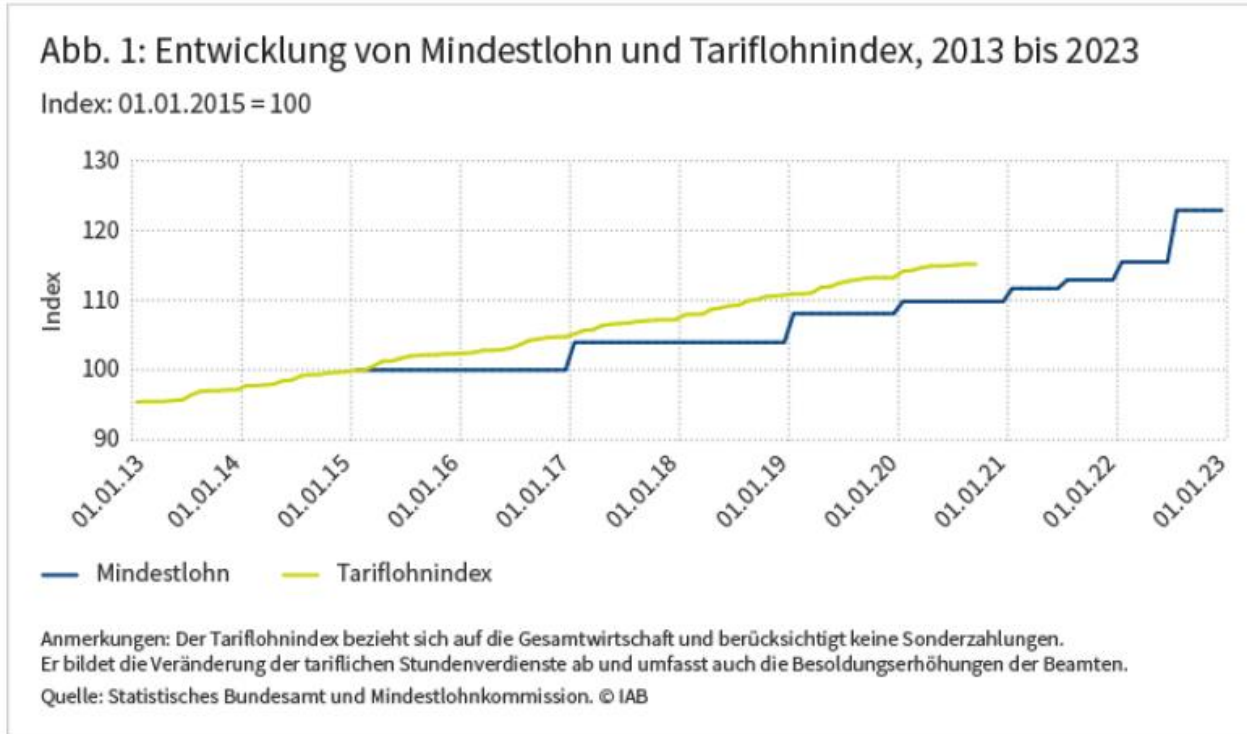
Dr. Dominik Groll  
*RC Business Cycles and Growth*



# The minimum wage since its introduction in 2015

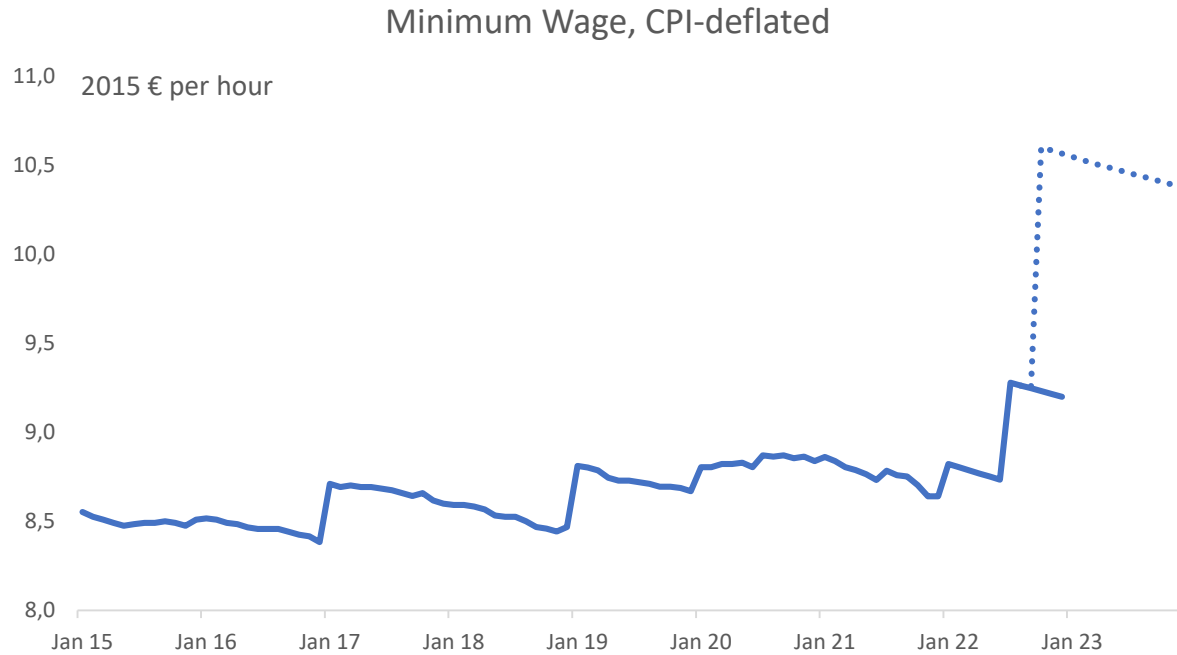


# Minimum wage lags behind negotiated wages



Source: Börschlein, Bossler, Wiemann (2021: figure 1).

# The minimum wage in real terms



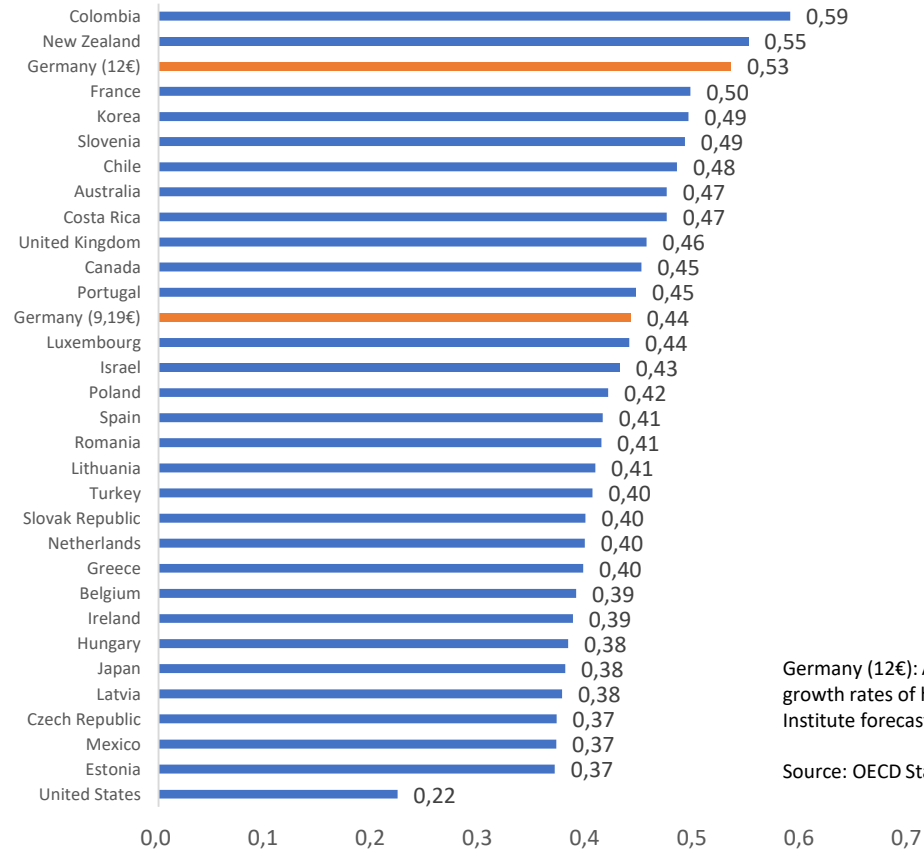
# Scope of minimum wage introduction

	2014 (8.5€)
Number of jobs affected by minimum wage (in 1000)	3974
Share of jobs affected by minimum wage (in %)	10.7
Share of total hours worked affected by minimum wage (in %)	6.7
Average increase of hourly wages of affected jobs (in %)	18.1
Average increase of hourly wages of all jobs (in %)	0.5

Source: Federal Statistical Office, *Structure of Earnings Survey April 2014*;  
Kiel Institute calculations.

# Kaitz-Index

Minimum relative to average wages of full-time workers (2019)

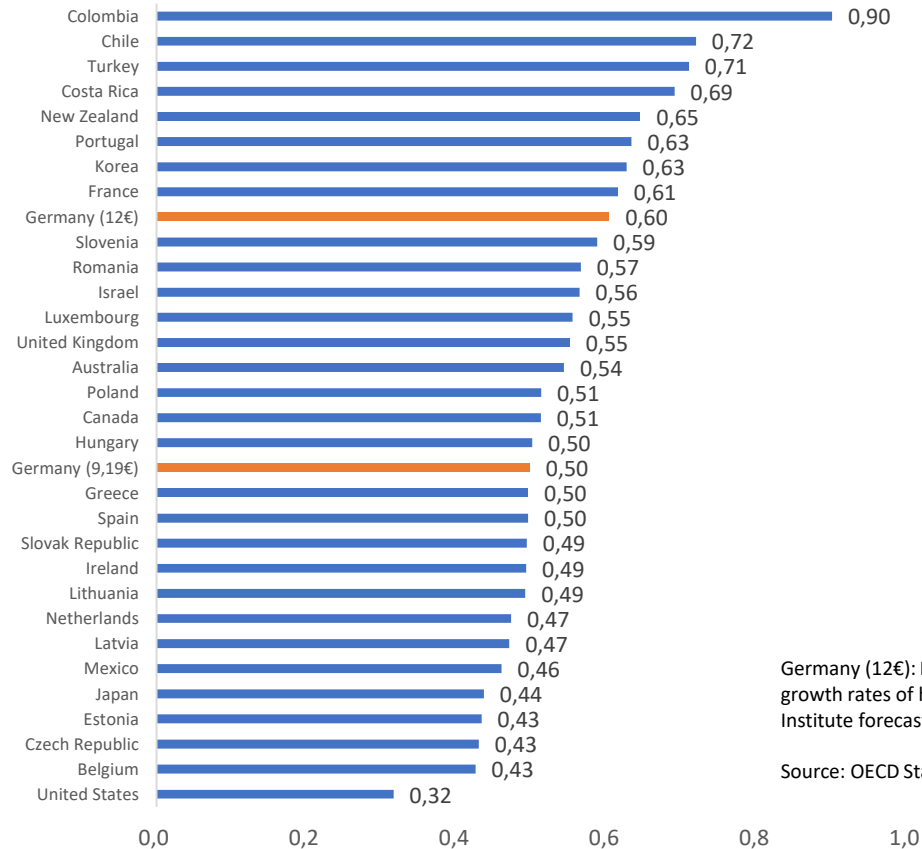


Germany (12€): Average wage for 2019 inflated by growth rates of hourly wages for 2020-2022 (incl. Kiel Institute forecast).

Source: OECD Statistics; Kiel Institute calculations.

# Kaitz-Index

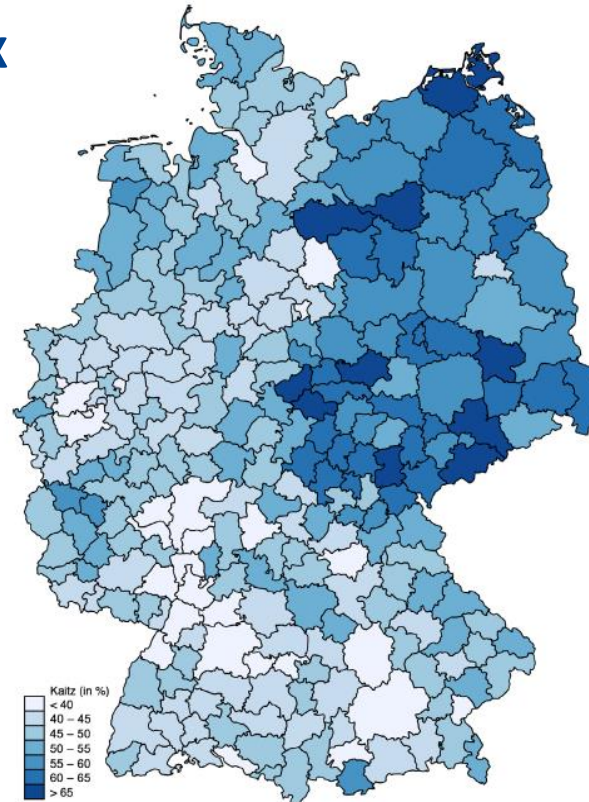
Minimum relative to median wages of full-time workers (2019)



Germany (12€): Median wage for 2019 inflated by growth rates of hourly wages for 2020-2022 (incl. Kiel Institute forecast).

Source: OECD Statistics; Kiel Institute calculations.

# Regional Kaitz-Index



**Figure 2** Kaitz-index for Germany 2014

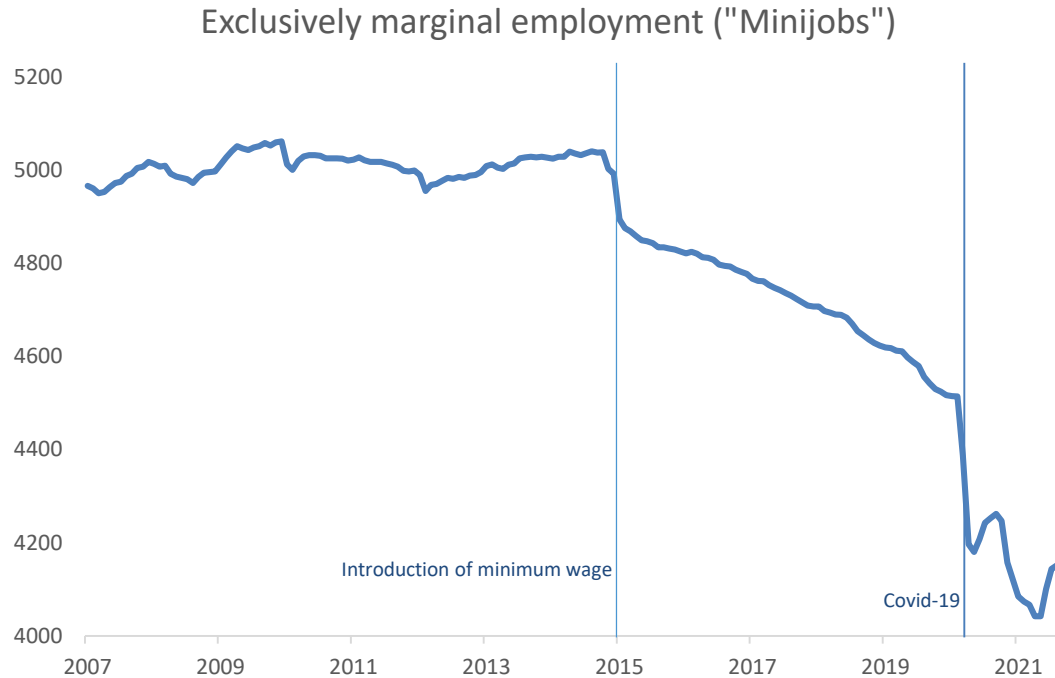
*Note:* The Kaitz-index measures the monthly income earned in a minimum wage job for 40 weekly working hours (€1,473) in per cent of the regional average earnings of full-time employees.

*Source:* Destatis, available at <https://www.destatis.de/DE/ZahlenFakten/GesamtwirtschaftUmwelt/VerdiensteArbeitskosten/Mindestloehne/Karte/Mindestloehne.html>. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

Source: Caliendo, Schröder, Wittbrodt (2019: figure 2).



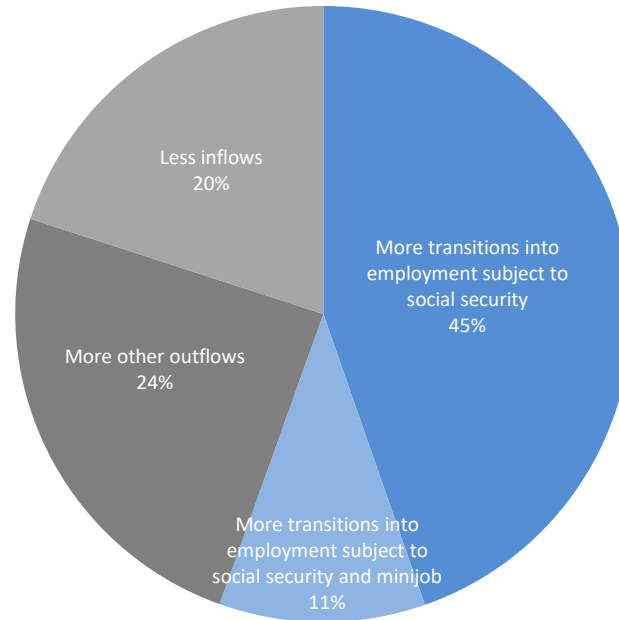
# Some descriptive evidence



Source: Deutsche Bundesbank, *Seasonally-adjusted business statistics*.

# Some descriptive evidence

**Decomposition of the decline in minijobs until April 2015 (-167,000 jobs)**



Source: Based on Groll (2016, table 1).

# Identification of causal effects

- Difference-in-differences estimation
- Three approaches:
  - » Regional variation in the „bite“ of the minimum wage:
    - Share of employees with hourly wages below 8.5€.
    - Minimum wage relative to average wage (Kaitz Index).
  - » Treatment vs. control group at the individual level:
    - Treatment group: employees with an hourly wage below 8.5€.
    - Control group: employees with an hourly wage slightly above 8.5€.
  - » Treatment vs. control group at the firm level:
    - Treatment group: Firms with a high share of employees paid below 8.5€.
    - Control group: Firms with a low share or no affected employees at all.
- Data: FEA, IBS, IEB, IAB-EP, LPP, PASS, SES, SOEP.
- Only short-run effects.

# Overview of empirical evidence

**Table 3** Causal evidence on minimum wage effects in Germany by effect sign:

Outcome/effect	Significant negative effect (-)	No significant effect (=)	Significant positive effect (+)
Hourly wages			Ahlfeldt <i>et al.</i> (2018)◇ Bossler and Gerner (2016)□ Burauel <i>et al.</i> (2018)∇ Caliendo <i>et al.</i> (2018b)◇ Caliendo <i>et al.</i> (2017)◇
Overall employment	Bonin <i>et al.</i> (2018)◇□ Bossler and Gerner (2016)□ Bossler <i>et al.</i> (2018) Caliendo <i>et al.</i> (2018a)◇ Schmitz (2017)◇	Ahlfeldt <i>et al.</i> (2018)◇ Garloff (2018)⊙ Link (mimeo)□	
Regular employment	Caliendo <i>et al.</i> (2018a)◇ Schmitz (2017)◇	Bonin <i>et al.</i> (2018)□◇	Garloff (2018)⊙ Holtemöller and Pohle (2017)⊙
Marginal employment	Bonin <i>et al.</i> (2018)□◇ Caliendo <i>et al.</i> (2018a)◇ Garloff (2018)⊙ Holtemöller and Pohle (2017)⊙ Schmitz (2017)◇		
Unemployment	Ahlfeldt <i>et al.</i> (2018)◇	Bonin <i>et al.</i> (2018)◇ Garloff (2018)⊙	
Self-employment		Bossler and Hohendanner (2016) □ Bossler <i>et al.</i> (2018) □	
Working hours	Bonin <i>et al.</i> (2018)∇ Bossler and Gerner (2016)□ Caliendo <i>et al.</i> (2017)◇ Caliendo <i>et al.</i> (2018b)◇		

Source: Caliendo, Schröder, Wittbrodt (2019, table 3).

# Overview of empirical evidence

**Table 3.** Continued

Outcome/effect	Significant negative effect (-)	No significant effect (=)	Significant positive effect (+)
Monthly earnings		Caliendo <i>et al.</i> (2017)◇ Caliendo <i>et al.</i> (2018b)◇	
Benefit recipients	Schmitz (2017)◇	Bruckmeier and Becker (2018)∇	
Poverty		Bruckmeier and Becker (2018)∇	
Prices			Link (mimeo)□
Reservation wage			Fedorets <i>et al.</i> (2018)◇
Training	Bellmann <i>et al.</i> (2017)□ Bossler <i>et al.</i> (2018)□		
Internships		Bossler and Wegmann (2018)◇□	
Satisfaction			Bossler and Broszeit (2017)∇ Güral and Ayaita (2018)∇ Pusch and Rehm (2017)∇

*Notes:* This table summarises 20 causal minimum wage studies sorted by the effect sign they identify for 15 different outcome variables. The studies are based on different causal identification approaches that are represented by the following signs: □ = Establishment-level difference-in-difference (DiD), ∇ = Individual DiD, ◇ = Regional DiD, ⊙ = Combinations and others.

Source: Caliendo, Schröder, Wittbrodt (2019, table 3).

Tab. 1

## Ex-post-Studien zu den Beschäftigungseffekten des Mindestlohns in Deutschland

	Sozialversicherungspflichtige Beschäftigung	Geringfügige Beschäftigung	Gesamt
Ahlfeldt, Roth und Seidel (2018)			+
Bonin et al. (2018, 2020)	0	-	- 76 500
Bossler und Gerner (2019)			- 45 000 bis - 68 000
Caliendo et al. (2018)	0	-	- 137 000 bis - 165 000
Friedrich (2020)	+ (kurzfristig) 0 (mittelfristig)	0	0
Garloff (2019)	+	-	+ 11 000
Holtemöller und Pohle (2019)	+	-	- 20 100 bis - 55 400 <sup>a</sup>
Link (2019)			0
Schmitz (2019)	-	-	- 150 000 bis - 260 000 <sup>a</sup>
Stechert (2018)	+ (25-64 Jahre) - (14-24 Jahre)	-	+ (25-64 Jahre) - (14-24 Jahre)

Legende: 0 = nicht signifikant, + = signifikant positiv, - = signifikant negativ. <sup>a</sup> Ermittelt als Summe der absoluten Veränderung von sozialversicherungspflichtiger Beschäftigung und geringfügiger Beschäftigung.

Quelle: Zusammenstellung der Autoren.

Source: Knabe, Schöb, Thum (2020, table 1).

# Employment effects: Predictions vs. estimates

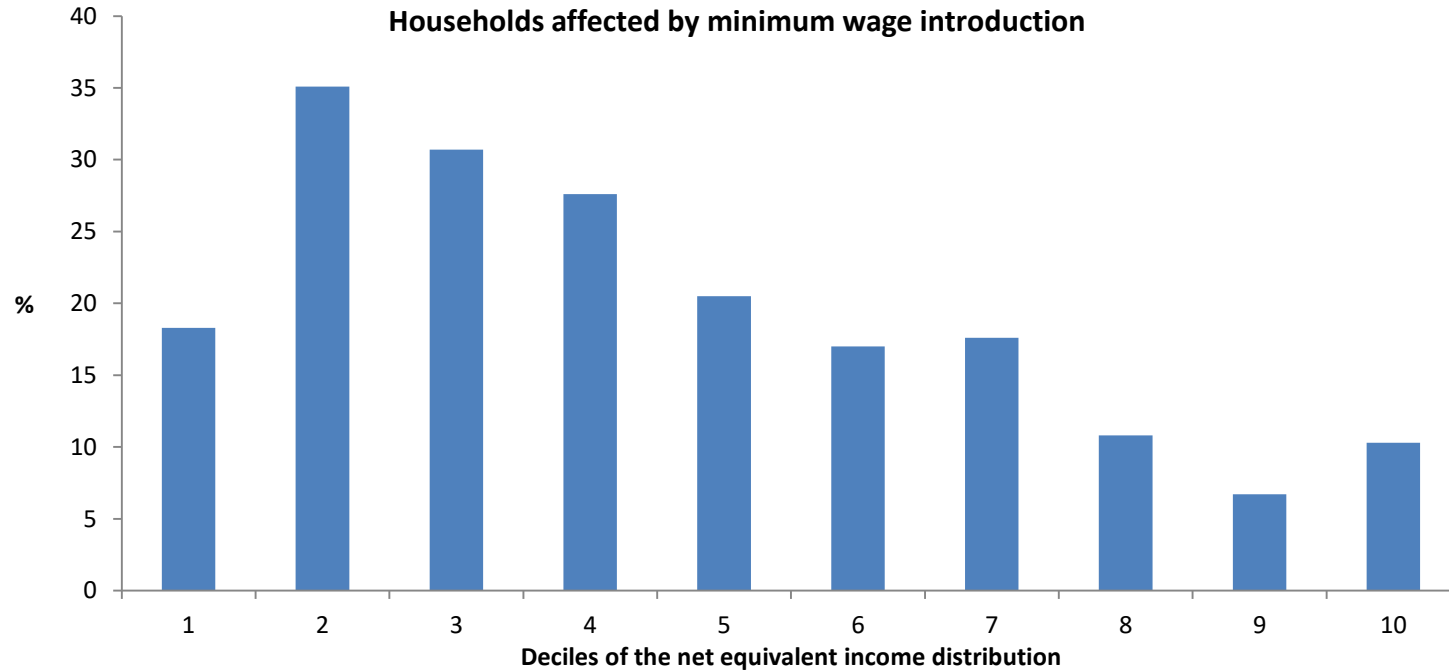
- Ex-ante predictions (Knabe, Schöb, Thum 2014) :
  - » -426,000 to -911,000 jobs
- Ex-post estimates (Knabe, Schöb, Thum 2020):
  - » +11,000 to -260,000 jobs
  - » add -140,000 to -334,000 jobs due to reduction in working time
  - » yields -129,000 to -594,000 jobs
- Additional factors to take into account for fair comparison:
  - » No exemptions from minimum wage and no non-compliance (ex-ante predictions) vs. exemptions and non-compliance (ex-post estimates).
  - » Long-run (ex-ante predictions) vs. short-run (ex-post estimates).

## Effects on poverty

- No significant effect on the at-risk-of-poverty rate
- Even without job losses, a minimum wage cannot reduce the poverty rate significantly:
  - » A minimum wage does not reach most persons at risk of poverty.
    - Just 10 percent work full-time, the rest are part-time workers, retirees, self-employed, and unemployed.
    - Unemployment is risk factor #1.
  - » Most workers with low wages are not at risk of poverty.
    - Before 2015, only 20 percent of workers with wages below 8.5€ were at risk of poverty.
    - Low-wage earners often live in medium- to high-income households (see next slide).
  - » In-work benefit recipients (“Aufstocker”): Benefit-withdrawal rate of 80-100 percent takes away most of the minimum-wage related income gain.



# Low wages not equal to low household income

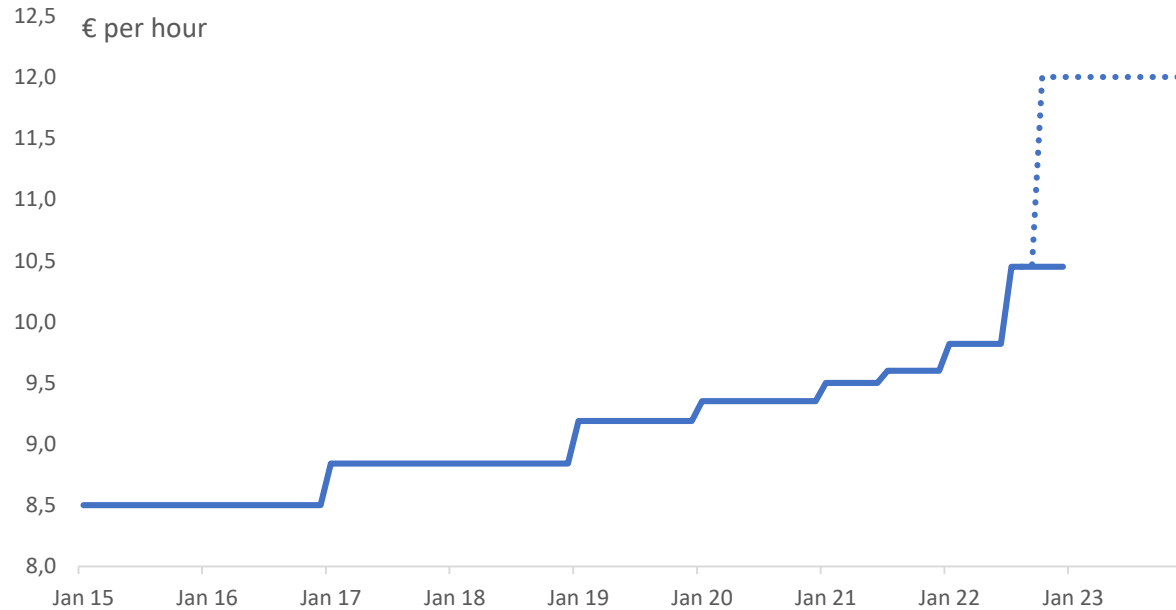


Source: Based on Müller and Steiner (2013, table 4).

- Key findings:
  - » Hourly wages increased.
  - » No effect on employment.
  - » Reallocation of workers ...
    - ... from smaller to larger firms,
    - ... from lower-paying to higher-paying firms,
    - ... from less to more productive firms.
  - » Averages establishment “quality” increased via market exit of less efficient firms.
  - » Workers not necessarily better off due to lower utility from nonpecuniary job characteristics (e.g. longer commuting time).
  - » Some consumers may be worse off due to exit of firms (e.g. nearby shops).
- Caveat:
  - » Data do not contain working hours after the introduction of the minimum wage -> negative employment effect via reduction in working time not identifiable.

# Hike to 12€

## Minimum Wage



# Scope of minimum wage hike to 12€

	2014 (8.5€)	2022 (12€)
Number of jobs affected by minimum wage (in 1000)	3974	6200
Share of jobs affected by minimum wage (in %)	10.7	15.7
Share of total hours worked affected by minimum wage (in %)	6.7	11.7
Average increase of hourly wages of affected jobs (in %)	18.1	16.2
Average increase of hourly wages of all jobs (in %)	0.5	0.9

Source: Federal Statistical Office, *Structure of Earnings Survey April 2014*, *Earnings Survey April 2021*; Kiel Institute calculations.

## Introduction (2015) vs. hike to 12€ (2022)

- Macroeconomic conditions
  - » Prolonged upswing vs. Covid-19 crisis
- Labor-market conditions
  - » Even more prolonged upswing vs. Covid-19 crisis
  - » High vs. very high degree of labor shortage
- Labor-market regulation
  - » Monthly-earnings limit of minijobs is planned to rise as well as of October 1, 2022 (from 450€ to 520€).

# My conclusions

- The introduction of the minimum wage in 2015 ...
  - » ... increased hourly wages,
  - » ... decreased working hours (=negative employment effect),
  - » ... left monthly earnings unchanged,
  - » ... had no effect on poverty/income inequality,
  - » ... led to a reallocation of workers between firms.
  - » And: There is evidence of job losses, and they are larger than they look.
- Hike to 12€ in 2022:
  - » Probably larger scope than introduction of minimum wage.
  - » But: Different macroeconomic, labor-market, and regulatory environment than in 2015.
  - » Even if there were no job losses following the introduction, there could be job losses following the hike to 12€:
    - Monopsonistic labor markets: Non-negative effect of a minimum wage on employment holds only within a certain range for the level of the minimum wage.
  - » Poverty/income inequality will hardly be reduced: Low hourly wages rarely imply low household income and vice versa.

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