Wage discrimination against migrants: How much do country of birth, tenure and product market competition matter?

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UMONS Université de Mons

ULB Solvay Brussels School Economics & Management

Motivation

- Europe and Belgium have been facing an important influx of migrants
- Belgium is one of the most multicultural countries of the European Union (Martiniello, 2003).
- Their situation on the Belgian labour market has been studied:
  - In terms of their **insertion** (Neels, 2000; Martens *et al.*, 2005; Baert and Cockx, 2013; Federal public service Employment, labour and social dialogue and Unia, 2017; High Council of Employment, 2018)
  - In terms of their **wage** and **wage discrimination** (Vertommen and Martens, 2006; Kampelmann and Rycx, 2016; Institute for equality between women and men, 2017) but **preliminary results**

➔ **Need of refinement**

Literature review (1)

Heckman (1998):

There is wage discrimination when two *identically productive* workers are differently paid due to different non-productive characteristics such as race

➔Choice of the type of data used to test wage discrimination

Method	Data	Empirics
Mincer (1974) or Oaxaca-Blinder (1973)	Individual-level data ➔ Use of undirect productivity measures (e.g. schooling, experience, age)	e.g. Daneshvary (1993), Velling (1995), Vertommen and Martens (2006), Borjas and Katz (2007), Chiswick et al. (2008), Barrett et al. (2012)
Bartolucci (2014)	Firm-level data ➔ Use of direct productivity measure (e.g. added value, output)	Bartolucci (2014); Kampelmann and Rycx (2016)

➔ Use of firm-level data to test for wage discrimination against migrants

Literature review (2)

1st goal: The impact of migrants' country of birth on wage discrimination against migrants

Method	Data	Empirics	Division of migrants by origin
Mincer (1974) or Oaxaca-Blinder (1973)	Individual-level data	e.g. Velling (1995); Vertommen and Martens (2006)	Yes
Bartolucci (2014)	Firm-level data	Bartolucci (2014)	Yes, but surprising results
		Kampelmann and Rycx (2016)	No

Literature review (3)

2nd goal: The impact of tenure on wage discrimination against migrants

Theory: **Phelps** (1972) and **Arrow** (1973) and the statistical discrimination: imperfect labour market (*imperfect information*)

- Employers do not know workers' real productivity
- Use of the statistical mean productivity of the group to which workers belong

➔ *Two equally productive workers may be paid differently because they belong to 2 different statistical groups*

➔ *Wage discrimination should disappear with tenure*

Empirically: No clear-cut results about this relationship

Literature review (4)

3rd goal: The impact of product market competition on wage discrimination against migrants

Theory: **Becker** and the taste-based discrimination (1957): perfect labour market

- Employers tend to avoid hiring foreign workers
- Search and higher pay for preferred workers

➔*Discrimination is costly*

➔*Discrimination costs only coverable when profits are made*

➔*Disappearance of wage discrimination when product market competition is high*

Empirically: To our knowledge, no one has used firm-level data to test this relationship

Method

Bartolucci technique:

$$log(w_{j,t}) = \beta_0 + \beta_1 I_{j,t} + \beta_2 log(p_{j,t}) + \beta_3 X_{j,t} + \delta_t + \varepsilon_{j,t}$$

with

- $log(w_{j,t})$ the natural logarithm of the average hourly wage
- $I_{j,t}$ the average share of hours worked by migrants
- $log(p_{j,t})$ the natural logarithm of the average hourly added value
- $X_{j,t}$ a vector containing worker and firm characteristics aggregated at the firm level
  - Education
  - Tenure
  - Age
  - Gender
  - Share of part time jobs
  - Type of contract
  - NACE codes
  - Occupations
  - Firm-level collective agreement
  - Number of employees in full time equivalent
  - Region
- δ_t the time dummies
- $\varepsilon_{j,t}$ the error term

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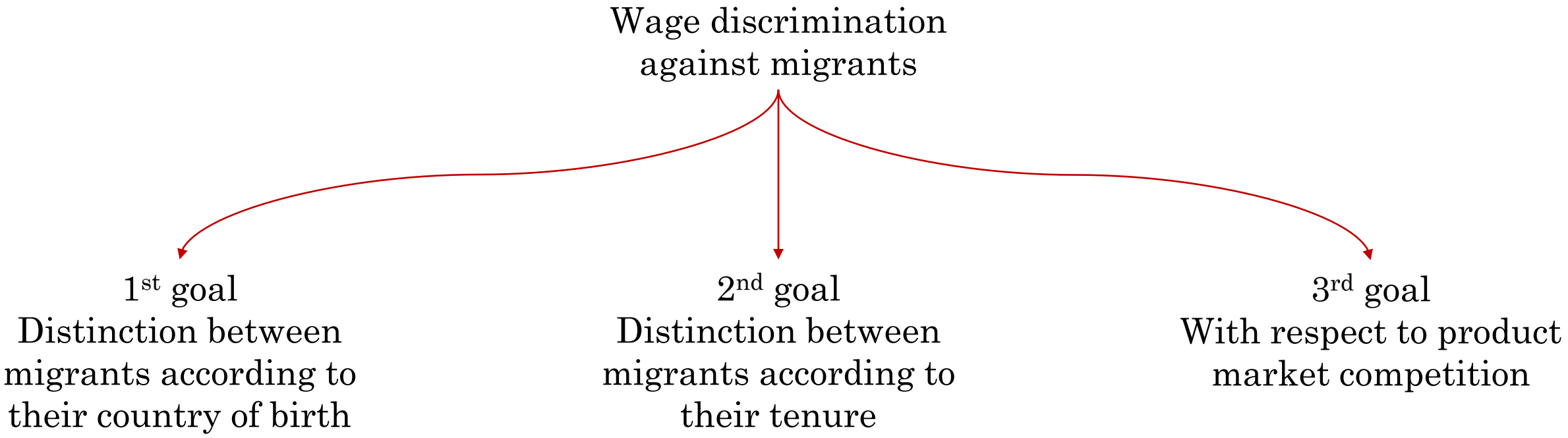
Data

- Four datasets

Dataset	Structure of Earnings Survey	Structure of Business Survey	National Register	AGORA MMS-Project
Information about	Worker and firm information	Firms financial information	Country of birth	Sectoral product market competition

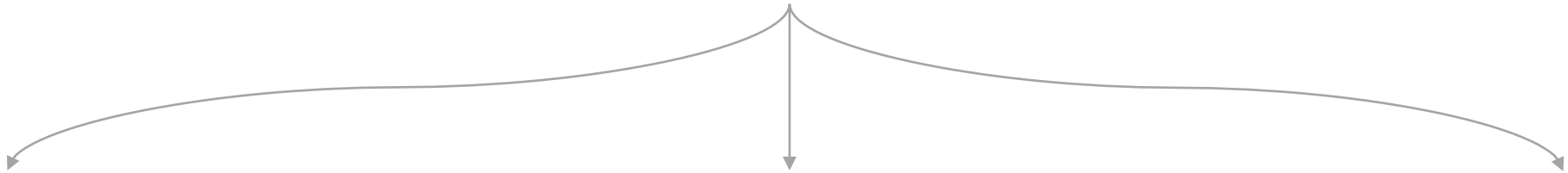
- Matched employer-employee firm-level panel data of more than 13,000 firm-observations over the 1999-2010 period about the private sector in Belgium

Results


Wage discrimination against migrants
1st goal
Distinction between migrants according to their country of birth
2nd goal
Distinction between migrants according to their tenure
3rd goal
With respect to product market competition

Results (1)

Wage discrimination against migrants considered as a whole



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Results (1)

Wage discrimination against non-EU15 workers considered as a whole

Log of hourly wage	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	FD (6)	GMM-FD (7)
Workers born in EU15	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Workers born outside EU15 countries	-0.235***	-0.052***	-0.046***	-0.036***	-0.028***	-0.061***	-0.058***
Control variables							
Human capital	No	Yes	Yes	Yes	Yes	Yes	Yes
Gender and job characteristics	No	No	Yes	Yes	Yes	Yes	Yes
Firm characteristics	No	No	No	Yes	Yes	-	-
Added value	No	No	No	No	Yes	Yes	Yes
Adjusted R^2	0.061	0.513	0.557	0.615	0.671	0.646	0.646
Underidentification test							0.00
Weak identification test							1.1e+04
Endogeneity test							0.792
Number of observations	13,631	13,631	13,631	13,631	13,631	13,631	13,631
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Results (2)

Wage discrimination against non-EU15 workers grouped by nationality at birth							
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Workers born in UE15	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Africans	-0.254***	-0.067***	-0.074***	-0.079***	-0.044***	-0.070***	-0.088***
North-Western Asians	-0.319***	0.021	0.030	0.001	0.0001	0.017	0.032
Asians	-0.255***	-0.198***	-0.180***	-0.078*	-0.072*	-0.175***	-0.132**
Eastern Europeans	-0.403***	-0.142***	-0.100***	-0.084***	-0.068***	-0.120***	-0.112***
Northern and Latin Americans	0.699**	0.243**	0.276***	0.301***	0.231***	0.160**	0.098
Southern Pacific and other origins	-0.199***	-0.022	-0.020	-0.013	-0.022	-0.059***	-0.043
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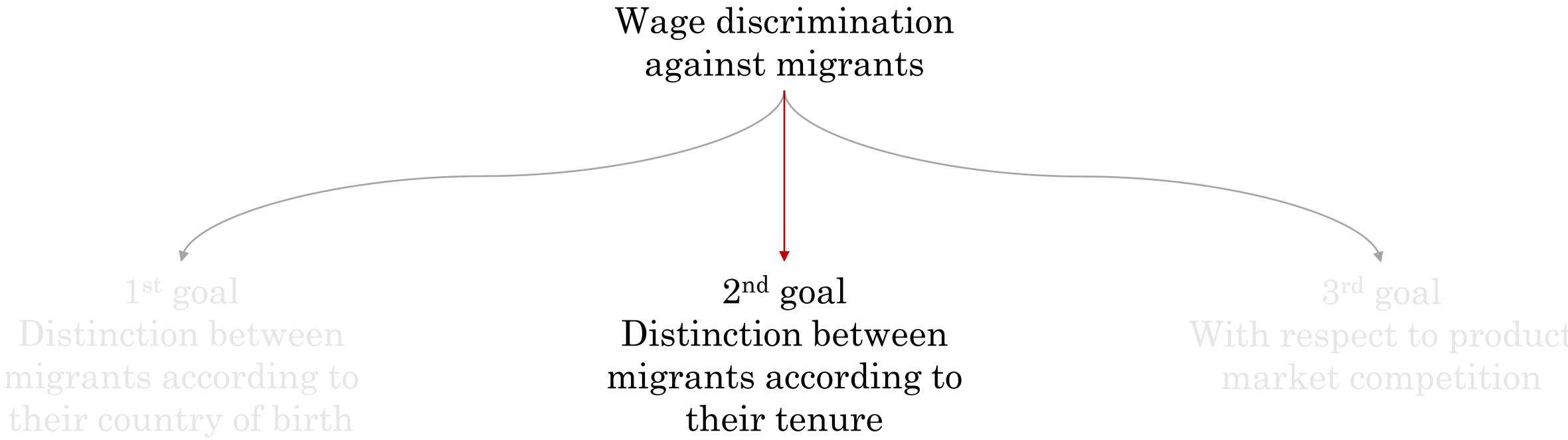
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3rd goal
With respect to product market competition

Results (3)

Wage discrimination estimations against workers born in non-EU15 countries divided by their level of tenure	
Econometric technique	GMM-FD
Dependent variable: Log of hourly wage	
Share of hours worked by workers born in:	
EU15 countries	Ref.
Non-EU15 countries with up to 4 years of tenure	-0.060***
	(0.020)
Non-EU15 countries with 5 to 9 years of tenure	-0.002
	(0.033)
Non-EU15 countries with at least 10 years of tenure	-0.034
	(0.042)
Adjusted R^2	0.650
Number of observations	13,621

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Results (4)

Preferred results for wage discrimination estimated against Non-EU15 workers considered as a whole in different competition situations

Competition estimator	Market share of the 8 largest firms in the sector	Herfindahl-Hirschmann Index	Price Cost Margin	Market share volatility of the 4 largest firms in the sector
Dependent variable: Log of hourly wage				
Workers born in EU15	Ref.	Ref.	Ref.	Ref.
High product market competition				
Workers born outside EU15 countries	-0.060*	-0.018	-0.011	0.012
Number of observations	913	856	842	922
Medium or low product market competition				
Workers born outside EU15 countries	-0.093***	-0.058***	-0.063***	-0.089***
Number of observations	3,513	3,608	3,667	3,351

Data source: SES-SBS-National Register-Agora MMS Project 1999-2010
***, **, * significant at 1, 5 and 10% levels, respectively

Results (4)

Preferred results for wage discrimination estimated against Non-EU15 workers considered as a whole in different competition situations

Competition estimator	Market share of the 8 largest firms in the sector	Herfindahl-Hirschmann Index	Price Cost Margin	Market share volatility of the 4 largest firms in the sector
Dependent variable: Log of hourly wage				
Workers born in EU15	Ref.	Ref.	Ref.	Ref.
High product market competition				
Workers born outside EU15 countries	-0.060*	-0.018	-0.011	0.012
Number of observations	913	856	842	922
Medium or low product market competition				
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Results (4)

Preferred results for wage discrimination estimated against Non-EU15 workers divided in subgroups in different competition situations

Competition estimator	Market share of the 8 largest firms in the sector	Herfindahl-Hirschmann Index	Price cost margin	Market share volatility of the 4 largest firms in the sector
Dependent variable: Log of hourly wage				
Workers born in EU15	Ref.	Ref.	Ref.	Ref.
High product market competition				
Africans	-0.068	-0.097	0.016	0.0001
Asians and Eastern Europeans	-0.076	-0.048	-0.102	0.034
Others	0.126	0.115	0.094	-0.001
Number of observations	913	856	842	922
Medium or low product market competition				
Africans	-0.067**	-0.068**	-0.090***	-0.114***
Asians and Eastern Europeans	-0.069**	-0.095***	-0.052*	-0.092***
Others	-0.022	-0.006	-0.044	-0.049
Number of observations	3,513	3,608	3,667	3,351

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Data source: SES-SBS-National Register-Agora MMS Project 1999-2010
***, **, * significant at 1, 5 and 10% levels, respectively

Conclusion

- Important raw wage gaps between native and migrant workers in host countries
- Those raw wage gaps are explained by :
  - Differences in human capital (mainly),
  - Occupational/sectoral segregation and
  - Wage discrimination estimated at 6.1% against workers born outside EU15 countries
- Identification of workers more subject to wage discrimination
  - Workers born in Asia (17.5%), in Eastern Europe (12%), in Africa (7%) and in South Pacific and other countries (5.9%)
  - Workers with low tenure
  - Workers in firms facing a medium or low product market competition

Thank you for your attention !

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Descriptive statistics (1)

Firm-level descriptive statistics	
Variables	Total
Hourly wage (€, at 2004 value)	**15.5**
Hourly added value (€, at 2004 value)	**62.3**
Share of hours worked in firms by country of birth (%)	
EU15 workers	**91.6**
Belgians	86.3
Western Europeans	5.3
Non-EU15 workers	**8.4**
Africans	3.3
North-Western Asians	1.1
Asians	0.6
Eastern Europeans	1.0
Northern and Latin Americans	0.4
Workers coming from Southern Pacific and Others	2.0
Number of observations	**13,631**

Data source: SES-SBS-National Register 1999-2010

Descriptive statistics (1)

Firm-level descriptive statistics	
Variables	Total
Share of hours worked in firms by workers born in EU15 countries with: (%)	
Up to 4 years of tenure	41.7
5 to 9 years of tenure	19.2
At least 10 years of tenure	30.7
Share of hours worked in firms by workers born outside EU15 countries with: (%)	
Up to 4 years of tenure	5.0
5 to 9 years of tenure	1.8
At least 10 years of tenure	1.6
Number of observations	**13,621**
Competition variables	
Market share of the eight largest firms in the sector (%)	0.34
Herfindahl-Hirschmann Index	0.04
Price cost margin	0.05
Volatility Index of the market share of the four largest firms in the sector	0.21
Number of observations	**7,895**

Data source: SES-SBS-National Register-Agora MMS Project 1999-2010

Hellerstein *et al* technique and the Bartolucci technique

Hellerstein et al. (1999)	Bartolucci (2014)
System of 2 equations: $log(w_{j,t}) = \beta_0 + \beta_1 I_{j,t} + \beta_2 X_{j,t} + \varepsilon_{j,t}$ $log(p_{j,t}) = \beta_0 + \beta_3 I_{j,t} + \beta_4 X_{j,t} + \varepsilon_{j,t}$	1 equation: $log(w_{j,t}) = \beta_0 + \beta_1 I_{j,t} + \beta_2 log(p_{j,t}) + \beta_3 X_{j,t} + \varepsilon_{j,t}$

Why to choose the Bartolucci technique over the Hellerstein *et al*. one? (Bartolucci, 2014)

1. The Bartolucci technique allows us to avoid the specification of the functional form of the prouction function equation
2. It neither assumes perfect competition on the labour market nor a linear relationship between wages and productivity
3. It produces a measure of wage discrimination against foreigners that is robust to labour market segregation