# The Effect of Migration on Wages in Sending Locations

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## Motivation and Contribution

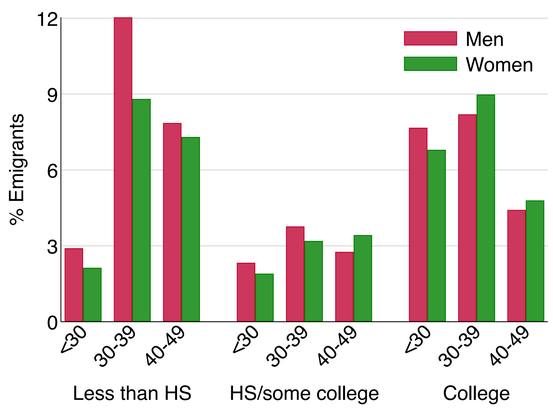
- 258 million migrants worldwide in 2017, many from developing countries
- Large emigration waves may negatively affect economic development in sending locations
- Expected earnings are a significant push factor in migration decisions, but the effect of emigration on wages in sending locations has been understudied
- **Contribution:** I explore the short-run general equilibrium effects of large outmigration on wages of non-migrants across education, age, and gender groups in 10 Eastern European countries, with a novel focus on the gender wage gap.

## Data

- **EU Structure of Earnings Survey:** Earnings aggregated at the education-age-gender level
- **EU Labor Force Survey:** Number of employees aggregated at the education-age-gender level
- **OECD, Eurostat, NSOs:** Number of emigrants by education, age and gender (author's calculations/imputations using combined sources).

**Final sample:** 10 countries (Bulgaria, Czech Rep., Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia), 4 years (2002, 2006, 2010, and 2014), 30 education-age-gender groups, 1200 observations (960 excluding oldest cohort).

## Emigration Rates after EU Accession




Emigration rates are calculated as the change in emigrant stock as share of pre-EU working age domestic population, $m_{ijk} = \frac{M_{ijk}^{post-EU} - M_{ijk}^{pre-EU}}{N_{ijk}^{pre-EU}}$, using data from 2002 and 2006 for 2004 entrants, and 2006 and 2010 for 2007 entrants.

## Research Summary

### Question

How does migration affect wages across education, experience, and gender groups in sending locations?

### Approach

I use a factor demand model and the large emigration waves after the 2004 and 2007 EU enlargements as labor supply shocks to estimate the short-run net effects of emigration on wages of non-migrants.

### Results

Relatively young and highly educated workers in sending locations see higher short-run wage growth due to emigration. Female non-migrants see slightly higher net wage gains on average, implying that emigration may improve the gender wage gap.

## Model and Empirical Implementation

I use a factor demand model with a nested CES production function that allows me to estimate how wages change due to labor supply shocks both to one's own worker type and to all other types. Under perfect competition, the model reduces to:

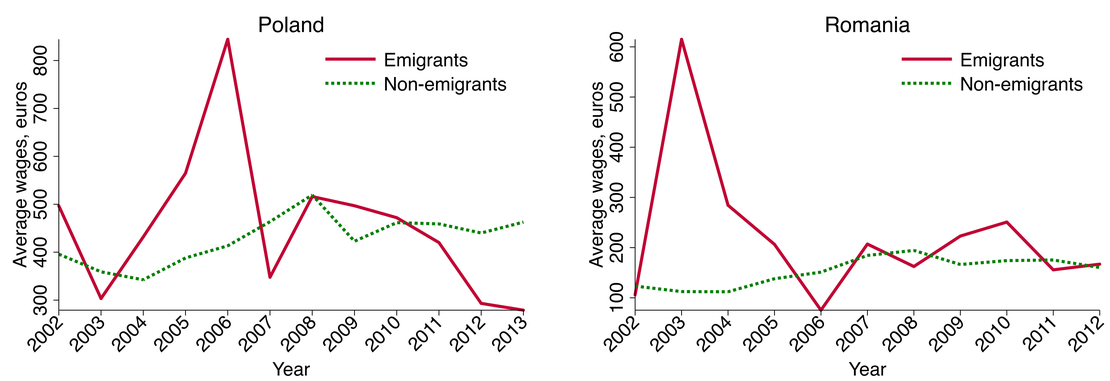
$$\log w_{ijkt} = \delta_{ijt} + \delta_{ikt} - \frac{1}{\sigma_{SEX}} \log L_{ijkt} + \epsilon_{ijkt}$$

$$\log w_{ijt} = \delta_{it} + \delta_{ij} - \frac{1}{\sigma_{AGE}} \log L_{ijt} + \epsilon_{ijt} \qquad \log w_{it} = log\theta_{it} - \frac{1}{\sigma_{EDU}} \log L_{it} + \epsilon_{it}$$

where

- $i$, $j$ and $k$ denote education, age, and gender
- $\log w$ and $L$ are group-specific log real wages and labor
- $\sigma_{EDU}$, $\sigma_{AGE}$, $\sigma_{SEX}$ are elasticities of substitution between workers with the same education, age, and gender, respectively
- $\delta_x$ denotes fixed effects at the $x$-level.
- $L$ is instrumented with foreign emigration rates to alleviate the endogeneity bias.

## Is There Self-Selection on Wages?




This figure compares the wages of non-migrants with the pre-emigration wages of emigrants. The pre-emigration wages of emigrants come from the German Socio-Economic Panel (author's calculations).

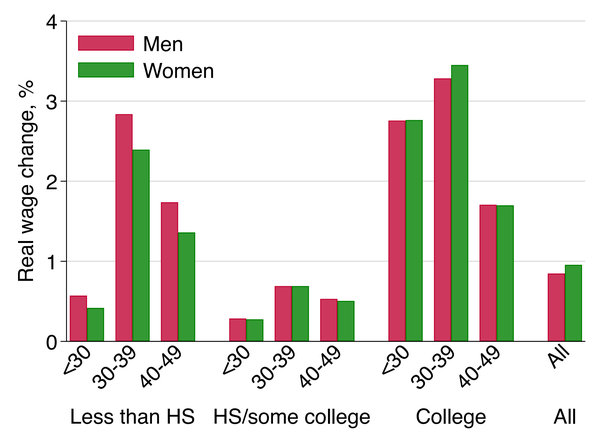
## Results

### Elasticities of Substitution

| | Gender | Age | Education |
|---|---|---|---|
| Labor supply | $-0.17^{**}$ | $-0.44^{**}$ | $-0.52^{**}$ |
| | (0.07) | (0.20) | (0.20) |
| Elasticity of substitution | 6.01 | 2.25 | 1.92 |
| Obs. | 949 | 480 | 120 |

All regressions include country fixed effects. Clustered standard errors at the country-education level are in parentheses. $^{***},^{**},^{*}$ indicate statistical significance at a 1, 5, and 10 percent levels, respectively.

### Wage Gains Due to Emigration




$\Delta \log w_{ijk} = \epsilon_{ijk,ijk} m_{ijk} + \Sigma_{k' \neq k} \epsilon_{ijk,ijk'} m_{ijk'} + \Sigma_{j' \neq j} \Sigma_{k'} \epsilon_{ijk,ij'k'} m_{ij'k'} + \Sigma_{i' \neq i} \Sigma_{j'} \Sigma_{k'} \epsilon_{ijk,i'j'k'} m_{i'j'k'}$, where $\epsilon_{xyz,x'y'z'}$ is own or cross-group factor price elasticity. Emigration rates are calculated between 2002 and 2006 for countries entering the EU in 2004, and 2006 and 2010 for 2007 entrants.

## Conclusion

- Emigration—4.4% of working age population across countries—has increased wages by 0.9% on average
- Highly educated young workers gain the most, up to 3.5%, implying increasing college wage premia
- Highly educated women gained slightly more than men
- By increasing wages and college wage premia in the short-run, emigration may induce higher investment in human capital in sending locations
- It is unclear whether these wage gains persist in the long run—possible future work.

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