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Narodowy Bank Polski

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The Contribution of Immigration from Ukraine to Economic Growth in Poland

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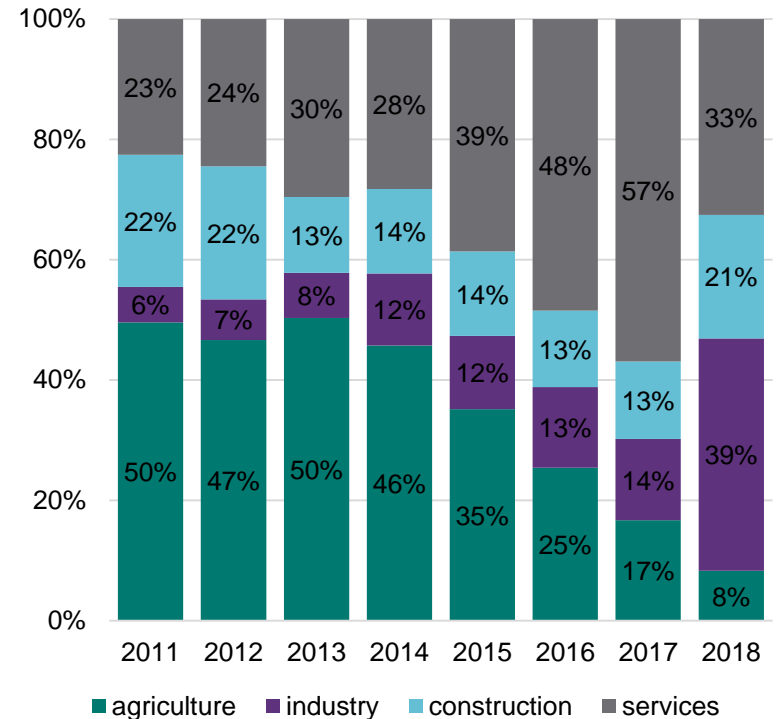
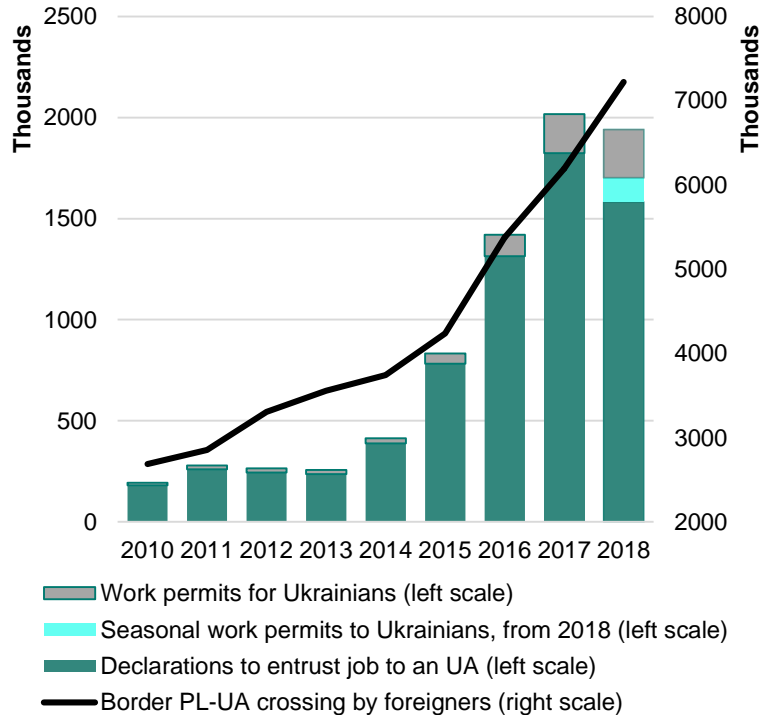


Outline

- 1 Motivation
- 2 Available data sources and necessary estimates
- 3 Method and scenarios
- 4 Decompositions of GDP growth
- 5 Conclusions, further research

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The rapid increase of the size and changes of the structure of Ukrainian immigrants in Poland



Motivation and aim of the analysis

Motivation

- LFS data show immigration to minor extend due to:
 - **Definition** – LFS sample covers only persons present in Poland for one year or more.
 - **Response rate** – immigrants are very reluctant to participate in surveys even if they meet the definition of resident
- Important implications for the growth accounting in Poland
 - Underestimation of the labour input
 - Overestimation of TFP

The aim of research

- Estimation of the true value of the labour input in Polish economy:
 - **Extensive margin**: number of working immigrants.
 - **Intensive margin**: average number of hours worked, factors influencing productivity: characteristics of persons (age, sex, educational attainment) and their workplaces (occupation, sector) – possible due to special NBP survey data.
- Method of decomposition: follow up of the Gradzewicz et al.(2018)

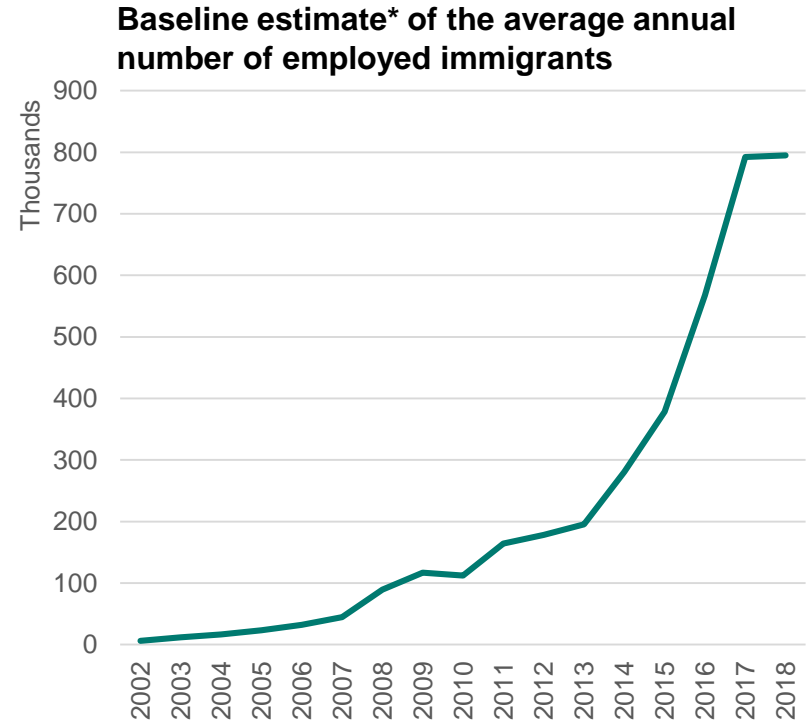
The estimate of the number of immigrant workers in Poland

■ Method of estimation:

- not total immigration but average annual employment of immigrants
- measuring effective time spent in Poland
- without illegal immigrants

■ Short history:

- 2007-2013: seasonal work in Polish agriculture open to immigrants from 6 countries
- 2014-2017: Russian aggression and economic crisis in Ukraine.
- 2018-2019: stabilisation or lower growth of immigrants



*the estimate is still preliminary and may change in the final version of the paper

Hours worked and productivity of immigrants

Theoretical background:

- Contribution of immigrants to growth:
 - positive for volume, negative *per capita* but less negative than natural increase: *Barro, Sala-i-Martin, (1995); Dolado(1994)*
- Small positive medium and long term effects (OLG):
 - In Spain due to higher employment rate of migrants but lower productivity: *Izquierdo et al.(2010)*
- Immigrants have usually lower productivity than native workers:
 - Lower or underutilised human capital,
 - Problems with search and matching
 - Temporary contracts and migration strategies
- Temporary economic migrants have long working hours

Data sources:

- Limited information about heterogeneity of immigrants and their productivity in official statistics.
- Recent NBP surveys of immigrants:
 - immigrants in four Polish cities (N=1900 in 2014-2018)
 - Respondent Driven Sampling (RDS)
 - Surveys carried out by specialists from Warsaw University
 - Questions about labour activity, wages, remittances etc.

Economic growth decomposition

Decomposition of capital:

$$\hat{Y} = \alpha \hat{K} + (1 - \alpha) \hat{L} + \widehat{Util} + \hat{A}$$

Capital as heterogenous factor:

$$\hat{K} = c_1^K \hat{K}_1 + c_2^K \hat{K}_2 + \dots + c_n^K \hat{K}_n$$

Quantity and composition components of capital:

$$\hat{K} = \widehat{K_{raw}} + \widehat{Q_K},$$

$$\text{where: } K_{raw} = K_1 + K_2 + \dots + K_n$$

Labour input of **natives** and **immigrants**

$$\hat{L} = c_1^L \hat{L}_1 + \dots + c_j^L \hat{L}_j \\ + c_{j+1}^L \hat{L}_{j+1} + \dots + c_m^L \hat{L}_m$$

Quantity and composition components of labour input:

$$\hat{L} = \widehat{L_{raw}^{PL}} + \widehat{L_{raw}^{UA}} + \widehat{Q_L^{PL}} + \widehat{Q_L^{UA}},$$

$$\text{where: } L_{raw}^{PL} = L_1 + \dots + L_j,$$

$$L_{raw}^{UA} = L_{j+1} + \dots + L_n$$

- Fernald (2012)
- Gradzewicz et al. (2018)

Data sources

- **Capital** (Eurostat & Polish CSO)
 - non-residential buildings and structures,
 - transport equipment,
 - other machinery and equipment,
 - intangible fixed assets,
 - computer hardware and computer software

- **Labour** – features of persons and their workplaces: (PLFS for natives)
 - Educational attainment (4 groups)
 - Age (4 groups)
 - Sex (2 groups)
 - Occupations (3 groups)
 - Sector (3 groups)

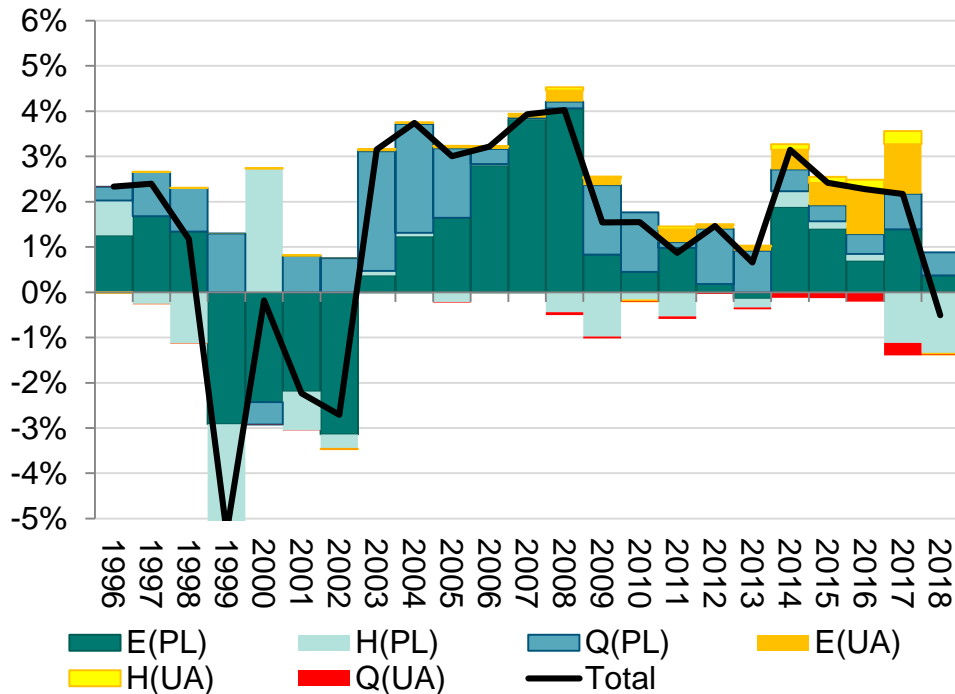
- **Capacity utilisation**
 - NBP Quick Monitoring Survey (*business survey*)

- **Labour input of Ukrainian workers**
 - Number of immigrants (own estimates)
 - Hours worked, features of persons and their workplaces, wages – NBP immigrant surveys.

- Jorgenson i Griliches (1967)
- Bell, Burriel-Llombart i Jones (2005)
- Gradzewicz et al. (2018)

Total labour input (L) – the role of „quality” and quantity of workforce

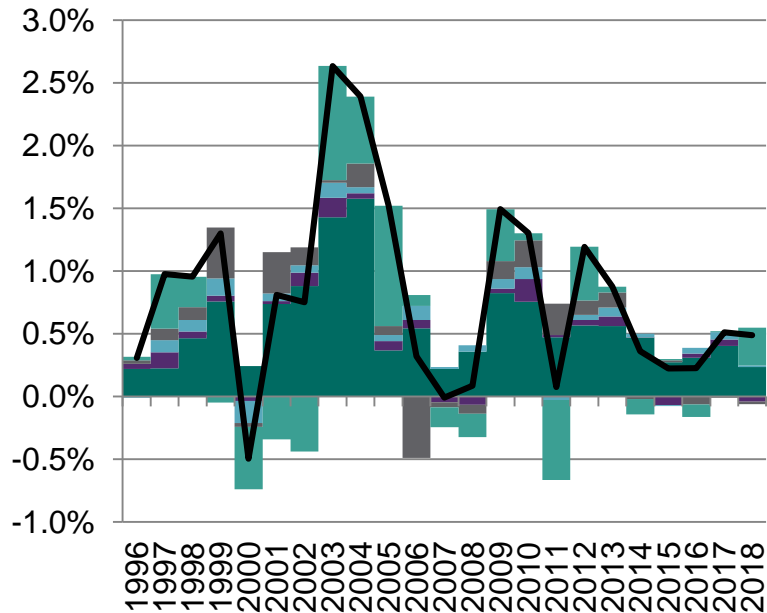
Decomposition of annual growth rate of total labour input



- Positive contribution of **improving composition of Polish workers** in the last 23 years
- **Recently:** declining employment growth of Polish citizens despite economic boom (limited labour supply)
- In the years 2014-2017 **immigration mitigated the decline in labour input of native workers** (by 0.3-1.1 pp.)
- **Contributions of immigrants:**
 - Employment (+0.3pp. to +1.1pp.)
 - Hours (+0.1pp. to +0.3pp.)
 - Composition effects (-0.1pp. to -0.3pp.)

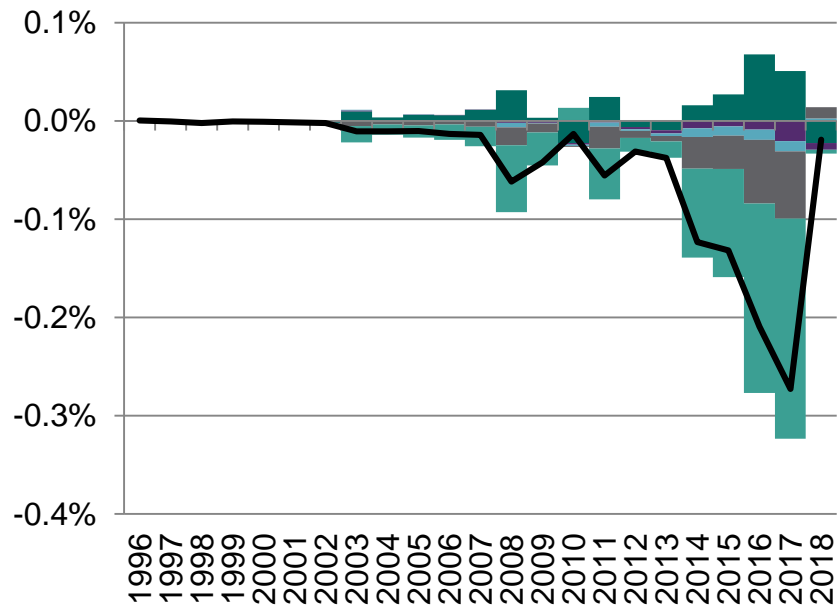
What is important in composition component („quality”) ?

Total „quality” adjustment (Q_L^{PL+UA})



education sex sector
age occupation — Total Q

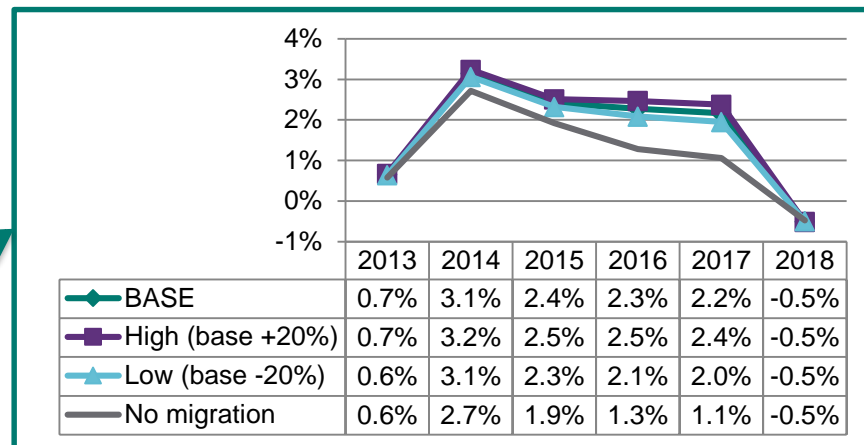
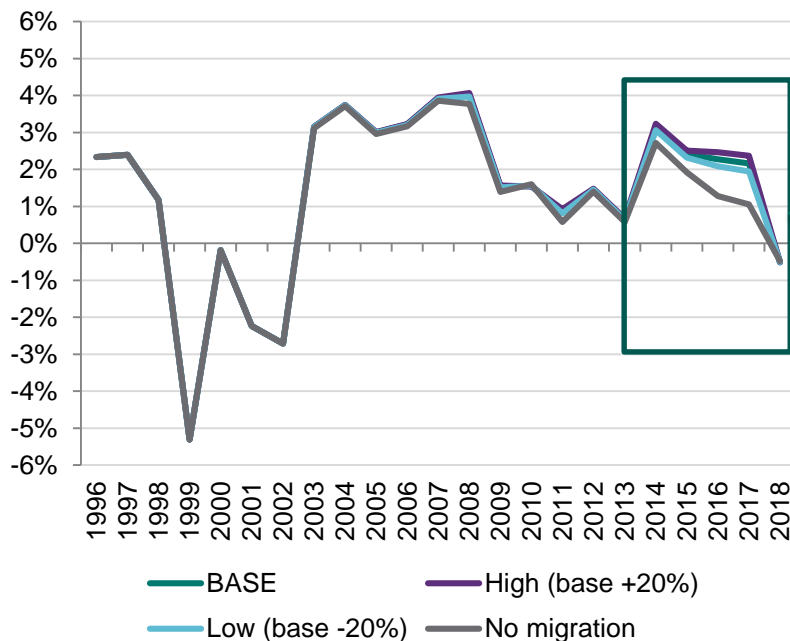
Immigrant workers „quality” adjustment (Q_L^{UA})



education sex sector
age occupation — Total Q

Robustness of labour input estimates

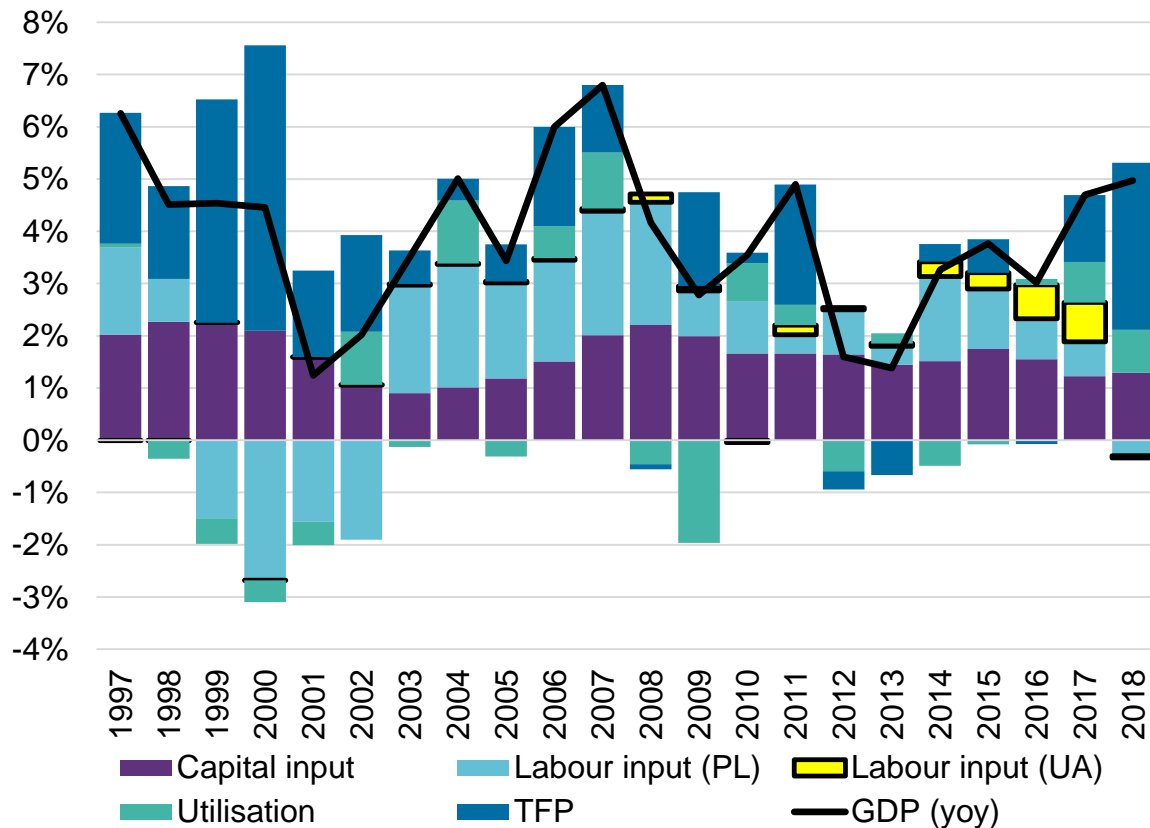
Labour input: sensitivity tests for the quantity of immigrants



Average number of employed immigrants in 2018 (in thousands):

- Baseline ~ 800
- High scenario (+20%) ~ 960
- Low scenario (-20%) ~ 640

The decomposition of GDP growth (yoy)

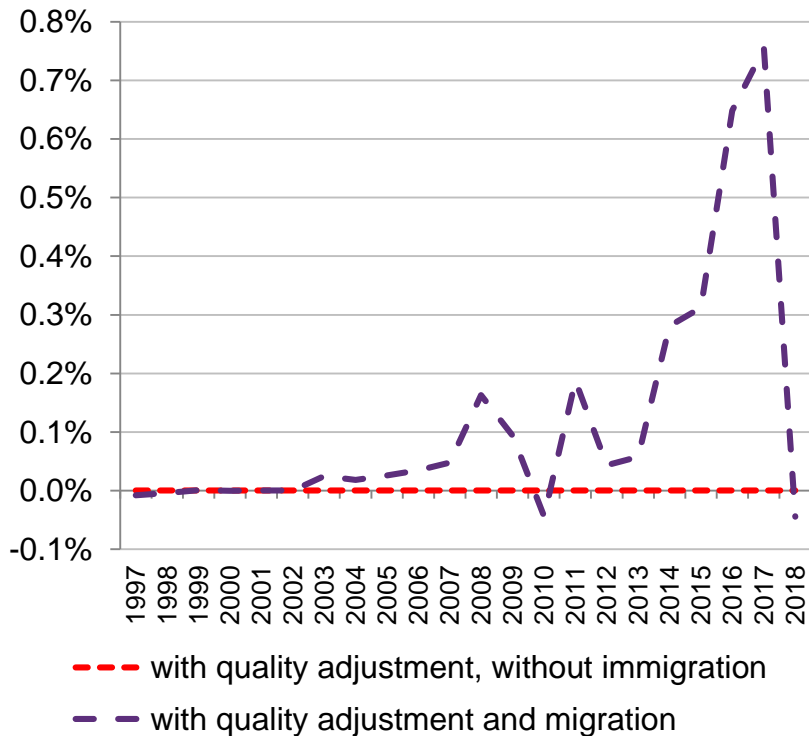


GDP growth composition (sum=100%)

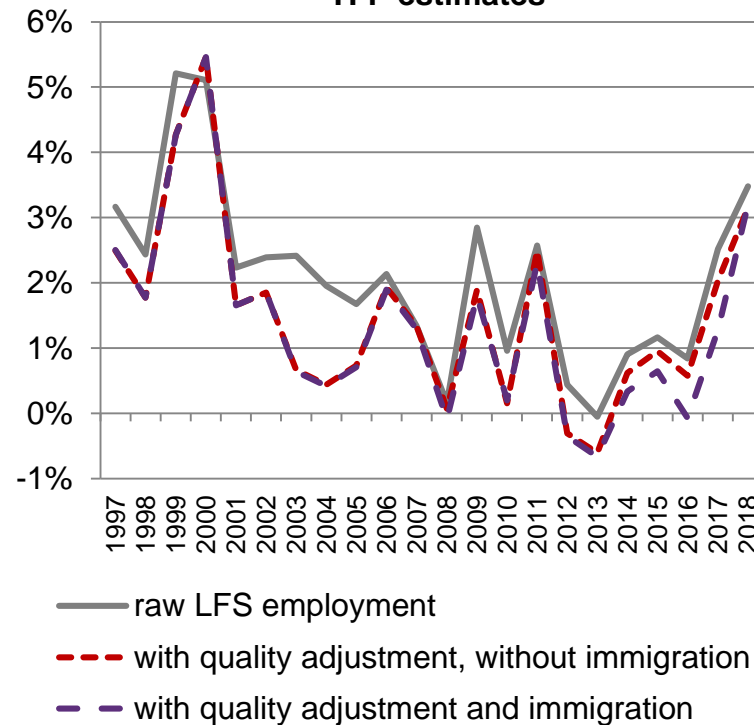
	1996-2018		2014-2018	
	only LFS	with migration	only LFS	with migration
K	41.8%	41.8%	35.5%	35.5%
L (PL)	17.6%	17.6%	13.9%	13.9%
L (UA)	0.0%	3.0%	0.0%	10.2%
Util	1.5%	1.5%	9.9%	9.9%
TFP	39.2%	36.2%	40.8%	30.7%

Importance of including immigrants in growth accounting

Labour input of immigrants to GDP (pp.)



TFP estimates



Conclusions

- After 2014 Poland became country with positive net migration. **The contribution of immigration to Polish GDP** in the years 2014-2018 amounted to 10%. In the peak in 2017 immigrant labour contributed to about 0.7pp. of the GDP growth.
- Quick changes in migration flows have major effect on BoP (**determinants of remittances**)
- Potential for further migration growth from Ukraine is limited (improving Ukrainian economy, **shrinking working age population**).
- Many similarities between Ukrainian immigration to Poland and Polish emigration to Great Britain and Germany. With time immigration transform from temporary to permanent and native-immigrant **wage gap should decline**.

We protect the value of money