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Economic Analysis of the Refugee Influx to Austria* | Johannes Berger* Ludwig Strohner[±]

Abstract

This paper presents an economic assessment of the current refugee influx to Austria. Conclusions that can be drawn from Swedish experience suggest below average labour force integration of refugees, particularly in the first years after arrival. The skill composition of refugees is taken from surveys. The simulation model PuMA suggests a considerable employment increase, particularly of the unskilled workforce. This rise in employment remains, however, significantly below the number of additional refugees. The unemployment rate rises and is concentrated upon the refugees, but to a smaller extent unskilled residents are affected as well. Furthermore, wage developments of unskilled residents are below average. GDP per capita is negatively affected as a result of below average productivity and employment opportunities of refugees.

Keywords: *General equilibrium model; labour market; macroeconomics; migration; refugees*

Introduction

Since 2014, a significant increase of asylum seekers in Europe can be observed. Dominant countries of origin are Syria, Afghanistan, Iraq, and recently Iran. In relation to the size of the population, important countries of destination in Europe are Sweden, Austria, and Germany. In the following, we analyse the impact of the migration of asylum-seekers on the labour market and the economy in Austria.

There are a few studies which discuss the economic effects of the current migration of refugees. The European Commission (2015) analyses the impact on the EU as a whole and the impact on Germany by applying the QUEST model. They differentiate two scenarios. In the first scenario, it is assumed that the skill-structure of refugees equals the structure in the country of destination (EU, Germany). In the second scenario they assume purely low-skilled migration. The combination of both scenarios allows delimiting upper and lower bounds for the effects of migration as data indicate that refugees on average are less educated than residents but not all of them are low-skilled. The Commission assumes an increase of the population in Germany of 1.1%. The

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simulation of the low-skilled migration scenario (resp. the resident migration scenario) shows that GDP rises by nearly 0.5% (0.7%) in the year 2020 compared to a scenario without refugees, employment by about 1% (in both scenarios). As a result of the higher labour supply, wages develop moderately and stay behind by 0.7% (resp. 0.6%).

Brücker et al. (2015) focus the analysis on Germany as well. They assume that a large share of refugees (about 60%) has no or very low educational qualifications and simulate a moderate level of total migration (300,000 to 500,000) in 2015 and 2016. The authors find that the unemployment rate rises by 0.15 percentage points and wages decline by 0.07% in the short-run compared to the base case without migration of additional refugees. In the long-run, unemployment is 0.07 percentage points higher, wages are unaffected. Ruist (2013) analyses Swedish data and finds crowding out effects between refugees and migrants from developing countries. The native population and migrants from industrialized countries were nearly unaffected. Berger et al. (2016) analyse the impact of refugees on the German economy. They assume an increase of the population up to 2018 by about 740,000 persons. Similar to the European Commission, the authors discuss two scenarios, one in which asylum seekers have the same skill structure as the population and one in which the share of low-skilled refugees is considerable higher. In the year 2020, employment in the low-skilled scenario rises by about 0.5% and unemployment by 0.25 percentage points. The increase of unemployment is concentrated on refugees but there is also a considerable effect on resident low-skilled persons. GDP increases by 0.3 percent, GDP per capita however declines.

To analyse the economic impact of the strong increase of refugees in Austria we apply PuMA, a dynamic general equilibrium model. The model focuses on the labour market and is very well suited for this research question. A general equilibrium model allows for theoretically based assessment taking into account all relevant aspects and interdependencies between the actors in the economy. The model is calibrated for the Austrian economy. General equilibrium models are also applied by e.g. the European Commission and Brücker et al.

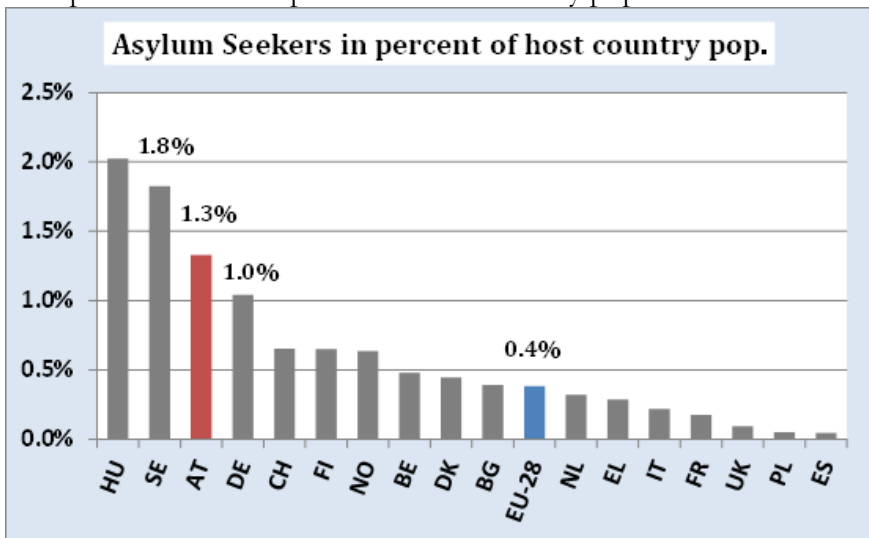
In the next chapter we describe underlying assumptions to simulate the scenario for Austria. This provides an overview on required data input to perform the simulation. Given the disaggregated structure of PuMA, information according to age groups and educational level is necessary. In addition, it is important to define differences of labour market characteristics between refugees and residents. Subsequently, we describe the simulation results and distinguish between the impact on the total and the resident population.

Assumptions and labour market characteristics

The simulation of the current refugee influx requires several assumptions. In addition to the number of asylum seekers, labour market and educational characteristics are important determinants of the economic impact. The

number of asylum seekers in Austria increased significantly in 2015. In the period 2000 to 2013 asylum applications amounted to about 20,100 on average per year with a decreasing tendency. In 2015, applications rose to 88,200. In 2016, 25,600 people applied for asylum until June so that the number of applications totaled to 113,800 in the period January 2015 to June 2016. This amounts to 1.3% of the Austrian population. As can be seen in Figure 1, Austria is among the European Union countries with the highest number of asylum seekers, relative to the host country population. In the considered period, 1.94 mio. people applied for asylum in one of the countries of the European Union, which corresponds to 0.4% of the overall population. As indicated in Figure 1, this share is highest in Sweden (1.8%), Austria (1.3%) and Germany (1%).¹ In absolute numbers, Germany (0.85 mio. applications within 18 months) outstands the other European countries.²

Figure 1. Number of Asylum Seekers January 2015 – June 2016 in European countries in percent of host country population



Source: Eurostat.

In contrast to Europe as a whole, refugees from Syria (24,550 persons) are not the most important group in Austria in 2015. Asylum seekers from Afghanistan are even more important (25,600). In addition, the number of refugees from Iraq (13,600) and Iran (3,400) increased dramatically. In the first months of 2016, the share of Syrian refugees decreased further. From 2016

¹ Hungary is a special case as many people initially applied for asylum there but subsequently migrated to other countries.

² It should be noted, though, that the number of refugees is significantly higher in some non-European countries.

onwards, we assume that the number of asylum applicants corresponds to the upper limit agreed within the government, amounting to 37,500 in 2016 and decreasing to 25,000 in 2019.³ To derive the economic effects, we determine a baseline scenario (without any additional migration). We assume that the number of asylum applicants in this scenario in 2015 and subsequent years amounts to 17,500 persons, the number in 2013.⁴ The number of additional asylum applicants, positive decisions and the increase of the population⁵ are shown in Table 1. To derive the number of positive decisions we assume an average recognition rate of nearly 80%⁶ and a time lag for processing the asylum application. As the population increase reflects yearly averages, the number is lagged compared to the number of positive decisions.

Table 1. Number of additional asylum applicants, positive decisions and yearly increase of population (in thousands and %) – deviations from baseline

	2015	2016	2017	2018	2019	2020
Asylum Applicants	70,840	39,077	22,199	15,857	9,514	-
Positive Decisions	13,089	46,710	38,953	15,710	10,473	3,928
Population						
Increase (annual	4,969	38,072	80,874	103,989	116,862	124,117
avg., cumulative)	0.06%	0.44%	0.94%	1.21%	1.36%	1.45%

Source: own calculations.

The age structure of refugees is of special importance as children (below the age of 15) do not participate in the labour market in the first years. The age-structure is based on information provided by Eurostat for asylum applicants in 2015 and 2016 and is shown in

Table 2. Nearly a quarter of applicants is less than 14 years old and 40% younger than 18. Compared to the resident population, refugees are much younger on average.

Table 2. Age-structure of asylum applicants

Years	< 14	14-17	18-34	35-64	65+
Share	24.7%	15.5%	44.5%	14.9%	0.4%

³ As family reunification is not included in the upper limit, we assume a 34% higher limit for total asylum applications. The number is based on visa grants for family reunification in 2015. Concerning country of origin differences are considerable. Applications from Syria entail 0.5 persons per asylum seeker, from Afghanistan 0.25 persons.

⁴ Since the number of applicants increased already in 2014, we use the year 2013 as baseline scenario.

⁵ To derive the increase in percent of the population we relate the population increase to the population in Austria at the beginning of 2015.

⁶ The number is based on recognition rates in 2016 and includes asylum applications for family reunification after having received a visa for Austria. This implies a rather high recognition rate.

Source: Eurostat.

With respect to the educational attainment of refugees, there is a considerable degree of uncertainty. However, a consensus has emerged that educational attainment is likely to be low. Several sources providing information are shown in Table 3. These sources confirm the very high share of low-skilled refugees. In the simulation we rely on the BAMF publication as it is the most recent publication and it is based on a large sample.⁷ The share of medium- and high-skilled persons is considerably higher than in other sources. However, as indicated in the last line of Table 3 which illustrates educational attainment of the resident population in Austria, average educational attainment of refugees is significantly lower than that of the resident population.

Compared to the resident population, asylum seekers not only have less favourable educational characteristics. Even for the same educational attainment, integration in the labour market is worse. This is reflected in a lower labour market participation, higher unemployment and lower productivity and lower wages respectively. We use the Labour Force Survey as basis for labour market integration and the EU-SILC for wage differentials between the resident population and refugees. As refugees from the Near and Middle East played only a minor role in Austria in the past, the information is based on data about refugees in Sweden, which had a pronounced refugee migration in the last decade (see Ruist). Thus, this information can be seen as a good indicator for labour market integration in Austria. Furthermore, we distinguish participation of refugees being resident in Sweden for less than five years and for more than five years, reflecting that integration takes several years. This implies that participation is considerably lower in the first years of residence. The assumed gaps in labour market participation, unemployment and wages of refugees compared to residents are presented in Table 4.

Table 3. Information about educational attainment

Source	Population	Low	Medium	High
Battisti and Felbermayr (2015)	Syrian Refugees in Turkish Refugee Camps	80%	11%	9
IAB, Brücker (2015)	Employed and unemployed refugees in Germany	71%	8%	8%
BAMF (2016)*	Refugees in Germany	58%	23%	19%
Central Bureau of Statistics Syria	Total population in Syria (2011)	78%	13%	9%
Eurostat	Resident Population in Austria (25-64 years)	17%	62%	21%

Source: different sources, categorization into groups by authors, low: ISCED 0-2, medium: ISCED 3-4, high: ISCED 5+; possible deviation to 100%: no answer; * weighted by country of origin by authors.

⁷ 72.9% of all adult asylum applicants are included.

Table 4. Labour market characteristics based on Swedish data (in percentage points and %) – Gap compared to resident population

	Low	Medium	High
Gap in participation rate (<5 years of residence)	-17.0	-25.7	-23.9
Gap in participation rate (>= 5 years of residence)	-6.3	-9.2	-12.8
Unemployment gap	24.4	14.8	17.9
Wage gap	-11.8%	-21.0%	-26.0%

Source: Labour Force Survey, EU-SILC, own calculations.

Labour market and macroeconomic effects

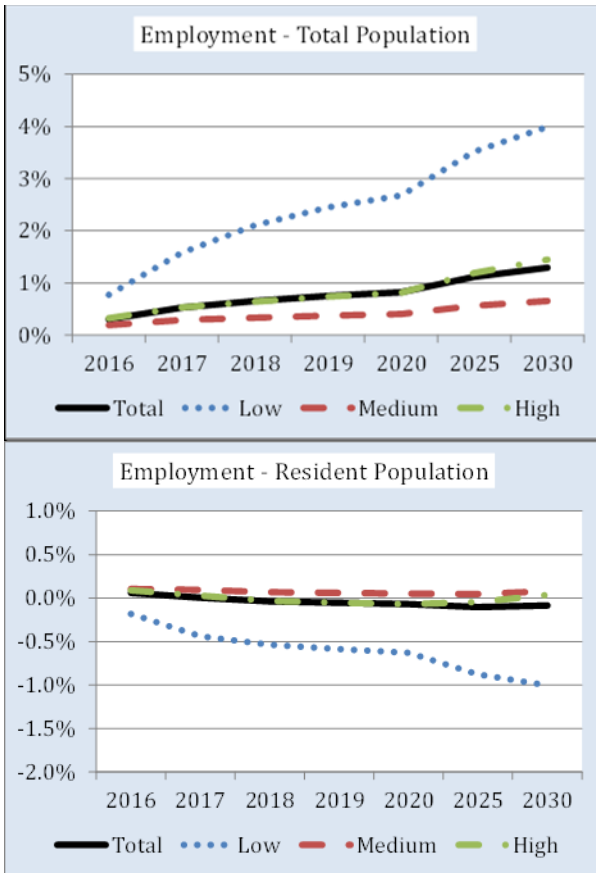
The economic impact of the pronounced increase of refugee migration to Austria is analysed with the dynamic general equilibrium model PuMA, which is the Austrian version of the Labour Market Model of DG EMPL of the European Commission.⁸ The model features a detailed description of the labour market and demographics and is based on an in-depth micro-foundation of the actors involved, namely private households, firms and the public sector. It distinguishes eight different age groups (representing a life-cycle of education, working age and retirement) and three different groups of educational attainment (low-, medium- and high-skilled). The model is calibrated for Austria and is used to estimate how an economy might react to changes in labour market policies, other policy reforms or demographic developments.

The model simulation with the PuMA model indicates a significant increase of employment as a result of the migration of refugees to Austria, reflecting both, a rise of labour supply and public and private demand for goods and services. As shown in Figure 2, total employment rises by more than 0.8% in 2020, compared to the baseline scenario which assumes a ‘usual volume’ of asylum seekers. However, despite the sudden increase of asylum applications in Austria, the employment impact starts only gradually, for several reasons. First, the recognition procedure takes some time. Second, as many refugees are younger than 15 years, they will participate on the labour market several years later after having finished education. Third, following Swedish experience, we assume that labour market integration takes some time. Finally, the economy and the capital stock only gradually adjust to the increased labour supply. Given that roughly 60% of refugees are assumed to be low-skilled, the impact on employment is concentrated on low-skilled individuals with an employment gain of 2.7% in 2020. The increase for medium- and high-skilled employment is much weaker (0.4% and 0.8%, resp.). The simulation results indicate some displacement effects for resident employment, which predominantly affects low-skilled employment. Compared to the baseline, resident low-skilled

⁸ A documentation of the model is available at [www.ec.europa.eu/\[...\]](http://www.ec.europa.eu/[...])

employment decreases by around 0.6% in 2020 while employment of medium- and high-skilled resident individuals is nearly unaffected.

Figure 2. Change of employment in percent (total and resident population)



Source: PuMA simulation.

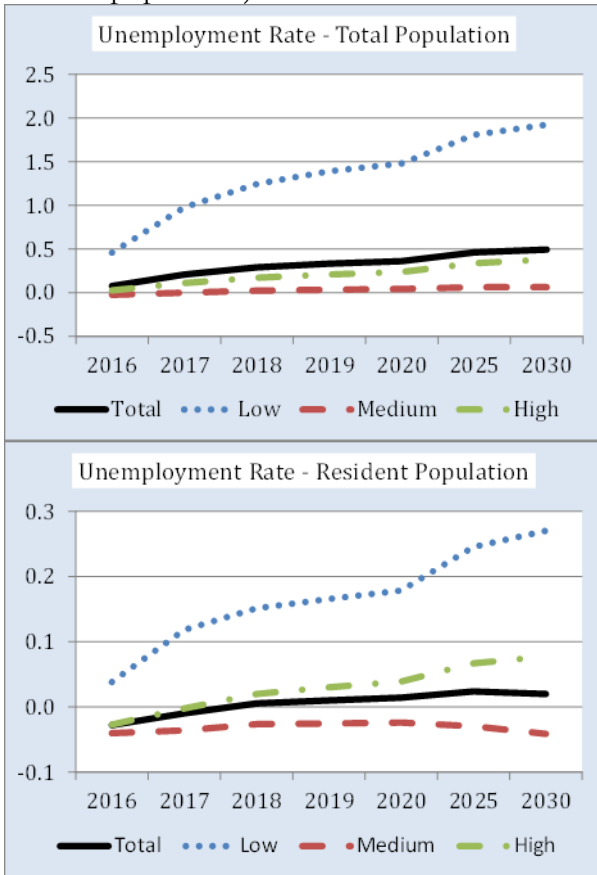
It should be noted that the employment increase is significantly less pronounced than the population increase. This is due to lower participation and higher unemployment rates. Given unfavourable labour market integration of refugees, unemployment significantly increases. As shown in the left part of

Figure 3, the total unemployment rate rises by nearly 0.4 percentage points in 2020. The increase is concentrated on low-skilled individuals with an increase by 1.5 percentage points. In contrast to that, the impact on medium- and high-skilled unemployment is much more moderate. The right part of

Figure 3 shows that this significant impact is primarily caused by refugees being unemployed while the impact for the resident population is considerably

less pronounced. However, there are some displacement effects which are concentrated on the low-skilled resident population.

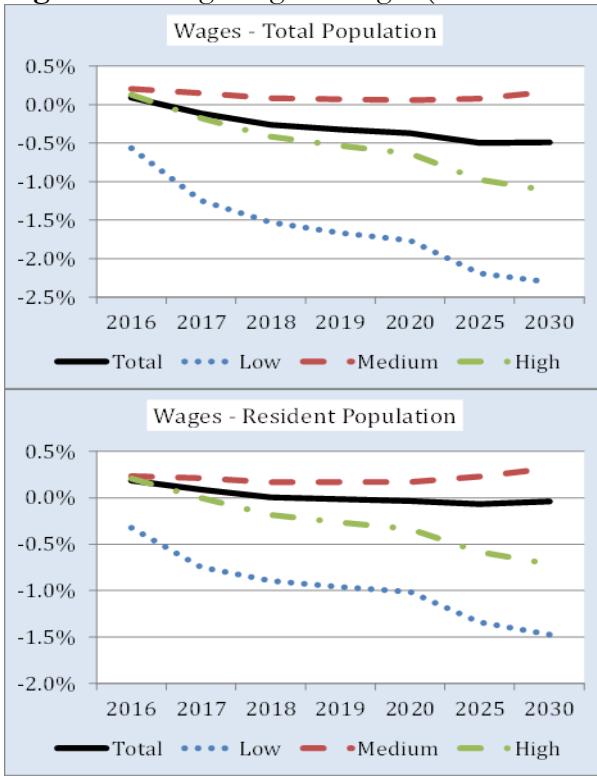
Figure 3. Change of unemployment rate in percentage points (total and resident population)



Source: PuMA simulation.

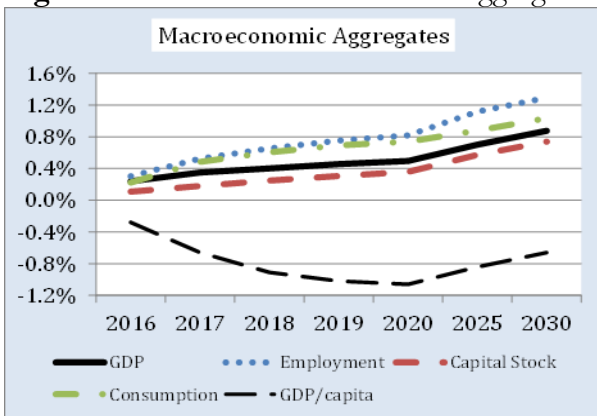
As the economy lacks sufficient productive jobs for the additional, predominantly low-skilled individuals, they have to take up jobs which are less productive and provide less income. As shown in the left part of Figure 4, wages develop more moderate, being on average roughly 0.4% lower than in the baseline scenario in 2020. This wage moderation is concentrated especially on low-skilled individuals. On average, their wages are dampened by 1.8% in 2020. Again, the right part of Figure 4 indicates that the impact for the resident population is less pronounced. While average wages of residents are virtually unaffected there are, however, negative wage effects for low-skilled resident individuals (negative wage impact of 1% in 2020 compared to the baseline).

Figure 4. Change of gross wages (total and resident population)



Source: PuMA simulation.

Figure 5. Effect on macroeconomic aggregates



Source: PuMA simulation.

The evolution of macroeconomic aggregates is illustrated in Figure 5. The boost of employment induces firms to increase investment and the capital stock to restore an optimal capital-labour ratio, implying a catch up of the

productivity of employees. However, the capital stock adjusts to a lesser extent as the level of employment. This is caused by the lower average productivity of refugees compared to the resident population. The impact on GDP reflects employment, productivity and the capital stock and is significantly less pronounced than the impact on employment. In 2020, GDP increases by 0.5% compared to the baseline. However, as the increase of GDP is less distinct than the population increase, GDP per capita declines compared to a baseline scenario. The increase of the population implies additional private consumption. As average labour income of refugees is lower than for residents, the impact on consumption is less pronounced than the employment increase.

Conclusion

Recently, the number of refugees increased significantly in Europe. Austria was among the European countries with the largest inflow of refugees in 2015. In this paper we analyse the economic effects of the additional inward migration, especially the consequences for the labour market, using the dynamic general equilibrium model PuMA.

As a considerable number of people from the Near and Middle East migrated to Sweden in previous decades, some conclusions can be drawn from Swedish experience. These suggest below average labour market integration of refugees, in the long-run and even more so in the first years after arrival. Available evidence suggests that average educational attainment of refugees is lower than that of the resident population.

The simulation results demonstrate a pronounced impact of the recent migration of refugees to Austria on labour markets and the economy. Adverse labour market effects are mostly concentrated on refugees as a consequence of their unfavourable labour market integration. There are, however, displacement effects of low-skilled residents in terms of unfavourable employment and wage outcomes. As a result of the increased number of refugees, macroeconomic aggregates such as GDP and private consumption rise. However, as a result of lower productivity growth and below average employment opportunities of refugees, GDP per capita is lower than in the baseline scenario.

Table 5. Simulation results

	2016	2017	2018	2019	2020	2025	2030
GDP	0.24%	0.35%	0.40%	0.46%	0.50%	0.70%	0.87%
Investment	1.27%	1.26%	1.18%	1.16%	1.14%	1.18%	1.18%
Consumption	0.22%	0.48%	0.61%	0.69%	0.74%	0.88%	1.04%
Total Population	2016	2017	2018	2019	2020	2025	2030
Gross wage rate	0.09%	-0.11%	-0.26%	-0.32%	-0.37%	-0.50%	-0.49%
-low	-0.57%	-1.25%	-1.53%	-1.67%	-1.76%	-2.19%	-2.31%
-medium	0.20%	0.15%	0.08%	0.07%	0.06%	0.08%	0.17%
-high	0.13%	-0.17%	-0.42%	-0.54%	-0.64%	-0.98%	-1.12%
Employment	0.30%	0.53%	0.65%	0.75%	0.82%	1.12%	1.29%
-low	0.77%	1.58%	2.10%	2.45%	2.68%	3.52%	3.99%
-medium	0.19%	0.29%	0.33%	0.37%	0.40%	0.56%	0.65%
-high	0.32%	0.53%	0.64%	0.74%	0.81%	1.19%	1.44%
Unemployment rate (p.p.)	0.08	0.21	0.29	0.33	0.36	0.46	0.49
-low	0.46	0.98	1.25	1.39	1.48	1.81	1.92
-medium	-0.02	0.00	0.02	0.03	0.04	0.06	0.06
-high	0.03	0.11	0.17	0.21	0.24	0.34	0.38
Resident Population	2016	2017	2018	2019	2020	2025	2030
Gross wage rate	0.19%	0.09%	0.01%	-0.02%	-0.04%	-0.07%	-0.04%
-low	-0.32%	-0.75%	-0.90%	-0.96%	-1.01%	-1.34%	-1.47%
-medium	0.23%	0.21%	0.17%	0.17%	0.17%	0.23%	0.32%
-high	0.21%	0.00%	-0.18%	-0.27%	-0.34%	-0.58%	-0.71%
Employment	0.06%	0.00%	-0.04%	-0.05%	-0.07%	-0.10%	-0.09%
-low	-0.18%	-0.44%	-0.54%	-0.59%	-0.63%	-0.88%	-1.00%
-medium	0.11%	0.09%	0.07%	0.06%	0.05%	0.05%	0.08%
-high	0.09%	0.03%	-0.03%	-0.05%	-0.07%	-0.05%	0.04%
Unemployment rate (p.p.)	-0.03	-0.01	0.01	0.01	0.01	0.02	0.02
-low	0.04	0.12	0.15	0.17	0.18	0.25	0.27
-medium	-0.04	-0.04	-0.03	-0.03	-0.02	-0.03	-0.04
-high	-0.03	0.00	0.02	0.03	0.04	0.07	0.08

Source: PuMA simulation.

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12 *Economic Analysis of the Refugee Influx to Austria*

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