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Competitiveness of Germany and the Labour Market: A Migration Perspective

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Abstract

The current paper contributes to the existing literature on migration by explaining the emigration pattern from Denmark, Finland and Sweden to Germany. We have tried to discover the reason why people migrate from high-income European Union (EU) member states to Germany, which for a long time has hosted the highest number of migrants when compared to other EU member states. We have employed gravity models using fixed effects and ordinary least squares estimation for 1998 – 2019. Our results have indicated that Germany, compared to other EU member states, is more competitive in terms of its labour market efficiency. Germany is an attractive destination for migrants from Denmark, Finland and Sweden in terms of its employment rate, wages and effective government support of its labour force programmes. The current research provides insights into enhancing German competitiveness in terms of labour market factors, which is important for both the migrant and native populations. The results show that if wisely managed, the labour market attracts the labour force, which can address critical social issues Europe is currently facing. In particular, competition issues for high-skilled workers, an aging population, and a low birth rate. The study indicates that the long-term attractiveness of Germany for migrants is based on the efficient participation of the government in labour management-related decisions.

Keywords: competitiveness, labour market, Nordic region, migration
JEL Classification: F22, J08, F62

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1. INTRODUCTION

Emigration has been an essential feature of population movement in the Nordic countries for centuries. Before the mid-19th century, however, the migrant population was mainly small. Emigrants at that time aimed to establish themselves in one of the Nordic kingdoms' colonial settlements, such as the Danish West Indies or New Sweden in North America (Midtbøen et al., 2018). Massive emigration began in 1830 and continued until World War II. At that time, about 1.3 million Swedes, 300,000 Finns and an equal number of Danes, about 800,000 Norwegians,

and more than 15,000 Icelanders emigrated to European countries, North America, South America, Australia and elsewhere. About one-fifth of these migrants finally returned to their former homes (Lowell, 2021; Janta et al., 2021). The causes of that reverse emigration were push factors, which included restricted cultural opportunities, the comparatively slow growth of non-agriculture jobs, low wages, the pressure created by extraordinary population growth, restrictions on religious freedom, prejudice, dissatisfaction with the hierarchical aspect of societies, dissatisfaction with undemocratic political systems and finally, military service obligations. Pull factors included cheap or free land, better job opportunities, higher wages, religious freedom, and more favourable social and political conditions (Kawashima, 2021; Horvath et al., 2021; Pekerşen & Tugay, 2020, Gavurova & Kubak, 2021). This massive migration from the Nordic countries has been brought to an end due to democratisation, industrial development and urbanisation in the Nordic region, the restrictive measures of immigration legislation set by the hosting countries, the Great Depression and World War II (Heleniak, 2018).

The current paper focuses on investigating the factors that determine Germany's competitiveness as an EU member state in attracting the migrating population from other EU member states. In particular, we aimed at identifying the factors affecting emigration flows from the Nordic region to Germany during the time range 1998 – 2019 based on the availability of annual data on migration.

We should note that the Nordic countries and especially Denmark, Finland and Sweden, are high-income countries characterised by a sound economic and political system. Germany, on the other hand, is also a highly competitive country. However, in terms of being a destination country, for many years, it has hosted the highest number of migrants in comparison to all the other EU countries. According to the United Nations (2020a) data, Germany ranked third in terms of its number of migrants after the United States and the Russian Federation in 2000. It ranked second after the United States in 2019. Migration trends from Denmark and Sweden to Germany have positive dynamics. However, Sweden is characterised by lower migration numbers and continued migration (Eurostat, 2021a).

According to the Global Competitiveness Index 2019 (Schwab, 2019), Germany ranked 7th, Sweden – 8th, Denmark – 10th and Finland – 11th. There is not such a wide gap between the countries regarding competitiveness; however, migration flows from the three mentioned Nordic countries to Germany, as shown in the section below, are stable and increasing. The current article aims to ascertain the factors affecting migration from high-income EU member states to Germany. The latter will contribute to a better understanding of migration and the competitiveness of these countries.

This paper is structured as follows: In Section 2, we have presented findings from the literature on the factors affecting the decision to migrate, focusing on those that reflect the country's competitiveness. Section 3 includes a description of the data and method we have used to explain migration from Denmark, Finland and Sweden to Germany. In section 4, we have discussed the results that have been obtained. Section 5 contributes by stating the most important conclusions related to the explanation of Germany's competitiveness in attracting migrants from other EU member states.

2. THEORETICAL BACKGROUND

Reasons why populations decide to migrate to a specific region are driven by different economic, non-economic and social factors. In the current research, we have tried to answer the question: Why is there growing migration from high-income Nordic countries to Germany? We have considered findings from the literature on the well-established determinants of migration, such as distance, and the determinants, which can be attributed to specific factors of competitiveness of Germany attracting the population from other EU member states.

Considering the non-economic factors affecting migration flows, distance is an essential factor as it is much easier to migrate from one country to another if the distance is short. As distance is used as a proxy for migration costs, it is negatively associated with migration flows (Berlepsch & Rodríguez-Pose, 2021; World Bank, 2018). Identifying whether the distance is a significant factor affecting migration is also important in our research, taking into account that the distances between the considered Nordic countries and Germany vary.

Another important economic factor that attracts migrants from one country to move to another is the level of economic development of the destined country. The GDP levels and rates are indicators of a country's competitiveness (Gavurova et al., 2020c; Simionescu et al., 2021; Gavurova et al., 2021; Pereira-Moliner et al., 2021), and they are often used in empirical research papers when analysing migration flows (Portes, 2019; Simpson, 2017; Testaverde et al., 2017). In a source country, the lower GDP level will be a push factor for migrants, and the higher GDP level in a destined country will be a pull factor (European Commission, 2018a; Paul, 2020; Stefancik et al., 2021). When researching spatial patterns and global/local determinants of the recent emigration of young Italians, Staniscia & Benassi (2018) concluded that the regions with high GDP levels show high levels of both immigration and emigration, driven by the dynamism of the labour market.

The low unemployment rate in a destination country is an important factor determining the efficiency of the labour market and as a result, reflects the level of competitiveness and attractiveness of the country for migrants (Cristea et al., 2020; Dvorsky et al., 2021a; Gavurova et al., 2020a). High unemployment rates in a source country push the population to migrate to those countries where unemployment rates are lower (Matouskova, 2020; Ik & Azeez, 2020). When researching the determinants of international migration in European countries, Mihi-Ramírez et al. (2017) concluded that unemployment is the most influential and important variable affecting migration, and regardless of the model specification, the regression coefficients remain unchanged, which indicates the push nature of this indicator as a factor of migration. When researching the determinants of migration following the EU enlargement, Franc et al. (2019) concluded that the emigration rate responds relatively quickly to the changes in GDP and unemployment rates among youth. Moreover, the leading destination country for most of the EU countries in the sample was Germany (Drazenovic et al., 2018; Kabir, 2021). The most influential factors affecting migration were GDP, labour market indicators, and population characteristics. Research by the European Commission on the determinants of migration to the EU (European Commission, 2017) has also shown that the size of the population is a significant factor influencing migration. Population growth in the country of origin is negatively associated with migration movements of all groups, except

for the humanitarian one. However, another study by Bertoli & Rapoport (2017) states that more populated countries send more emigrants.

An essential determinant of the competitiveness of a country is the wage level, as it reflects the country's labour market efficiency and the employment rate (Villamil et al., 2020; Dvorsky et al., 2021b; Pitukhina & Urbański, 2021; Dudu & Rojo, 2021). The wage level is positively associated with migration as higher wages in the destination countries attract more migrants (European Commission, 2018b; United Nations, 2020b; Rauhut, 2021). At the same time, higher wages in the source country encourage the population to stay.

The conditions of the labour market are extremely important for the immigrant population, and the destination countries are less attractive and competitive for the native population in the case of poor labour market programmes (Galik et al., 2020; Kálmán & Tóth, 2021; Franic, 2020). Along with the wage level, the labour market conditions of a destination country are critical for different groups of migrants: refugees and asylum seekers and highly-skilled individuals. The research findings on migration between European countries (Vosko, 2022; Wrobel, 2021; Žufan et al., 2020; Pimonenko et al., 2021; Mojsovska, 2021) indicate that the integration policy is a significant factor in attracting migrants. Tani (2020) highlighted that the migration policy, by itself, may not be effective enough to efficiently make use of the foreign labour force in the labour market. Coordination with the employment policy is vital to address this problem.

Recent research findings concerning gender differences in labour force participation rates have indicated that, on average, women, including migrants and non-migrants, account for a higher share of the working-age labour force than men throughout all the countries. On average, the share of women among the total number of workers is lower compared to men (Amo-Agyei, 2020; Ćosić, 2020; Gavurova et al., 2020). In terms of distribution by sex, male migrants appear to have higher labour force participation rates than their non-migrant counterparts. Migrant women seem to have lower labour force participation rates than non-migrant women. According to other research (Kreyenfeld et al., 2021; Kurar, 2021; Popov-Momčinović, 2020; Şerban, 2021), in many European countries, female migrants' employment rates, mainly from non-EU countries of origin, lag behind the employment rates of native women. Migrant women are often disadvantaged because, in many European countries, labour market segmentation limits them to the lower segments of the labour market without offering many job opportunities. The research results on immigration integration in the labour force participation projection in the EU28 (Marois et al., 2020; Virglerova et al., 2020; Vukliš, 2020) have demonstrated that it is crucial to consider the gender difference when considering the population's labour force participation in terms of immigration. According to the authors, participation rates are lower for immigrants, especially for immigrant women. Other research findings have also emphasised the significance of gender differences when analysing migration in Europe (Afolabi et al., 2021; Vorobeva & Dana, 2021). Based on this finding, the female participation rate has also been considered a possible significant factor in migrating the population from the Nordic countries to Germany. Based on the statement mentioned above, we assume that migration will be negatively associated with the female participation rate in the countries of origin and positively associated with the female participation rate in Germany.

In our paper, we have considered the migration flows from the Nordic countries to Germany, and the role of pricing among the countries is established. Price levels are attributed to the cost of living, which varies considerably among the EU member states. Findings from the literature have demonstrated a non-linear relationship between housing prices and the concentration of migrants. The evidence of this relationship has been indicated by Kalantaryan & Alessandrini (2020) when researching housing prices and the residential settlement of migrants in Italy. The cost of living in a destination country often appears as a factor of migration, especially for highly skilled individuals, as potential migrants may be unwilling to migrate to a host country with the high level of prices (European Commission, 2018a; Malc et al., 2021; Gavurova et al., 2020b). However, other research results have indicated that highly skilled migrants tend to locate closer to the city centre, demonstrating their adaptation to the increase in average housing prices as opposed to low-skilled migrants that tend to locate further away (Althobaiti et al., 2021). Oliinyk et al. (2021) argue that the migration of high-skilled people significantly contributes to the competitiveness of the countries and boosts economic development. Moreover, according to Khalid & Urbański (2021), educated people are more mobile and are increasingly attracted to such pool factors as the availability of jobs and high wages in other countries.

In the current paper, we have not distinguished between high-skilled and low-skilled migrants. We have assumed that, in terms of our research, there is a positive connection between housing prices and migration from the original countries and, respectively, a negative connection between housing prices in Germany and migration.

3 RESEARCH OBJECTIVE, METHODOLOGY AND DATA

3.1 Research aim

The current paper aims to identify the factors that determine the competitiveness of Germany as an EU member state in terms of attracting the population from other EU member states. In particular, we aimed at detecting what factors affected emigration flows from the three Nordic countries – Denmark, Finland and Sweden – to Germany during 1998-to 2019.

As mentioned above, there are many factors affecting migration decisions of the population, making it difficult to develop one comprehensive theoretical model for measuring the causality between migration and those factors. Therefore, in this research, we have assessed the effect of factors on migration in the three Nordic countries taking into account their membership and their partner country – Germany – membership in the EU. The research hypothesis is that the labour market conditions and government regulation are strong factors for Germany's attractiveness. Germany has been selected as a host country because it has been a host country for a large number of migrants for many years (Figure 1 and 2).

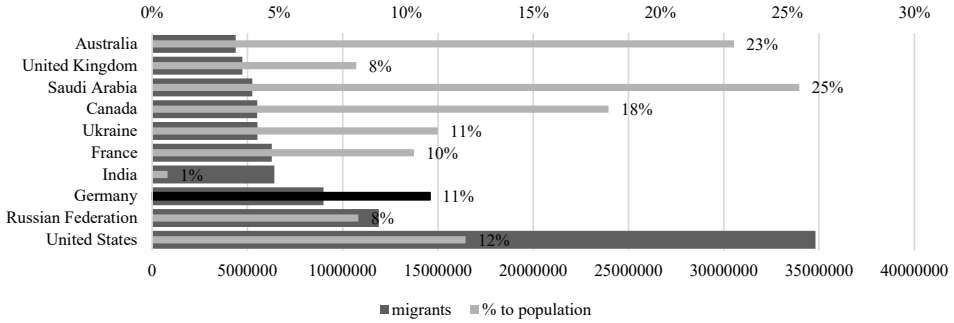

Fig. 1 – International migrant stock, country of destination, number, 2000. Source: United Nations (2020a)

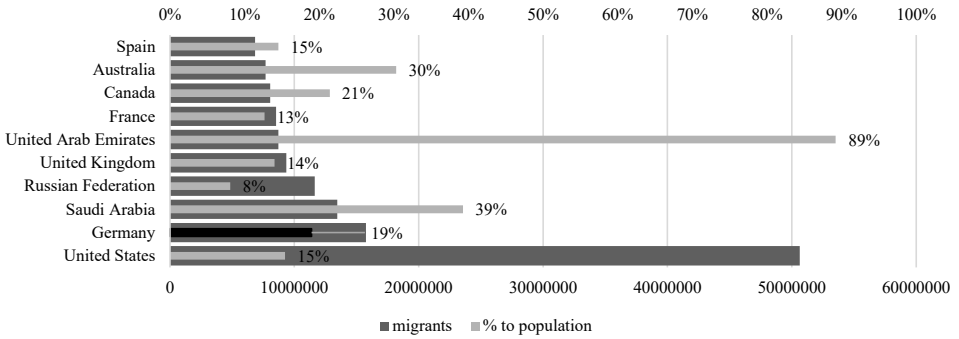

Fig. 2 – International migrant stock, country of destination, number, 2019. Source: United Nations (2020a)

In Figure 3 below, it can be seen that emigration from Denmark and Sweden to Germany has a positive trend. Sweden is characterised by lower migration numbers, however, also stable migration.

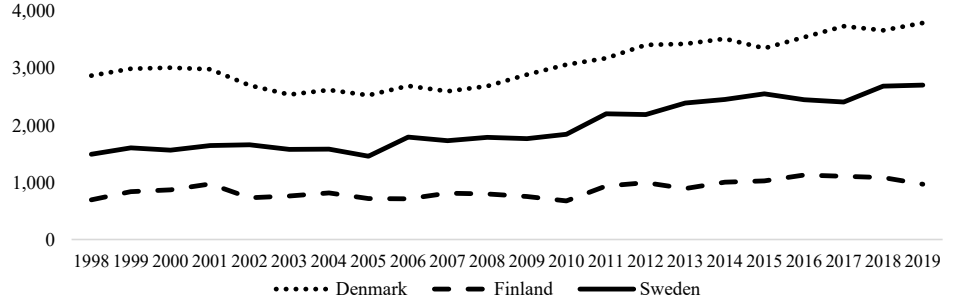

Fig. 3 – Emigration flows to Germany. Source: United Nations (2020a)

3.2 Methodology

To research the factors that shape the competitive advantages of Germany compared to other EU member states and that attract the population from Denmark, Finland and Sweden to move to the country, we have applied a well-established approach based on the use of augmented gravity models, providing multiple perspectives on international migration flows. The advantage of augmented gravity models is that they allow evaluating both the effects of push and pull factors. However, the use of these models is connected to some limitations. First, the method requires country pairs with detailed data, which is not always available. Second, the interpretation of a gravity model resulting from a policy perspective is often challenging due to other factors, which may influence migration flows. The most commonly applied form of the gravity model of emigration is as follows:

$$M_{ij}=G\frac{P_i^{\alpha}\times P_j^{\beta}}{D_{ij}^{\gamma}} \quad (1)$$

Where Mij is the number of the population resident in area j who before resided in area i; Pi (Pj) is the number of the population of i (j) usually measured at the beginning of the period over which migration is measured; Dij is the measure of distance between i and j; α, β and γ are parameters to be estimated; G is a proportionality constant, which depends on the dimension of time, geographical and other factors. The advantage of this model is that it can be estimated by ordinary least squares (OLS) (Jacques et al., 2016).

Based on the literature findings mentioned above, we developed the model (2):

$$Migration = const + \ln\_Distance + GDP\_origin\_\% + GDP\_G\_\% + Unempl\_origin\_\% + Unempl\_G\_\% + \ln\_Wage\_origin + \ln\_Wage\_G + \ln Population\_origin + \ln\_Population\_G + LFP\_origin + LFP\_G + Female\_particip\_origin + Female\_partcip\_G + Rent\_prices\_origin + Rentprices\_G + \varepsilon_{oGt} \quad (2)$$

A description of the data is presented in Section 3.3.

Our research question is to identify the direction of the influence of the factors presented in Table 1 on migration from the three Nordic countries – Denmark, Finland and Sweden – to Germany. Our primary hypothesis is that an increase in distance, GDP, wages, public expenditure on labour market programmes, female labour force participation rate in the origin country, as well as an increase in the unemployment rate, population and rent prices in Germany are negatively associated with migration from the Nordic countries to Germany and vice versa.

3.3 Data

The description of all the variables in Model (2) is presented in Table 1.

Tab. 1 – Description of variables. Source: own research

Variable	Description	Source	Exp
Emigration dependent variable	Emigration flow from the origin country to Germany, number	Eurostat (2021a)	
l_Distance	Log of the distance between the capitals of origin country and Germany, kilometres	CEPII (2021)	-

GDP_origin_%	Annual percentage growth rate of GDP at market prices in origin countries, %	World Bank (2021a)	-
GDP_G_%	Annual percentage growth rate of GDP at market prices in Germany, %	World Bank (2021a)	+
Unempl_origin_%	Unemployment rate from 15 to 74 years in origin countries, percentage in total population, %	Eurostat (2021c)	+
Unempl_G_%	Unemployment rate from 15 to 74 years in origin countries, percentage in total population, %	Eurostat (2021c)	-
l_Wage_origin	Log of average annual wages in origin countries, in 2020 constant prices at 2020 USD PPPs, US dollar	OECD (2021b)	-
l_Wage_G	Log of average annual wages in Germany, in 2020 constant prices at 2020 USD PPPs, US dollar	OECD (2021b)	+
l_Population_origin	Log of a total number of population in the origin country, number	Eurostat (2021b)	+
l_Polulation_G	Log of a total number of population in Germany, number	Eurostat (2021b)	-
LFP_origin	Public expenditure on labour market programmes in origin countries, % of GDP	OECD (2021c)	-
LFP_G	Public expenditure on labour market programmes in Germany, % of GDP	OECD (2021c)	+
Female_particip_origin	Female labour force participation rate in origin countries, % of female population ages 15+	World Bank (2021b)	-
Female_particip_G	Female labour force participation rate in Germany, % of female population ages 15+	World Bank (2021b)	+
Rent_prices_origin	Rent prices in origin countries, index	OECD (2021a)	+
Rent_prices_G	Rent prices in Germany, index	OECD (2021a)	-

Exp=Expected sign of the influence on emigration flow

4. RESULTS AND DISCUSSION

We have employed fixed effects and pooled OLS estimation methods. Table 2 provides summary statistics on the variables included in the regression analysis. Table 3 offers the regression results of fixed effects estimation and pooled OLS. The differing group intercepts test, the White test for heteroskedasticity, and the normality of the residual test are presented in Table 4. The collinearity test is shown in Table 5.

The differing group intercepts test (Table 4) has specified no fixed effects in the researched sample countries, and pooled OLS is a proper estimation method in our research. Hence, the following tests were done based on the pooled OLS method (Model 2 in Table 3). A collinearity problem was identified in the basic gravity model OLS (Model 2), according to the collinearity test (Table 5), as the general rule is that the variance inflation factors should not be higher than 10.0. To avoid the collinearity problem, Model 2 was modified three times. In Model 3, two factors included in the primary model were excluded - Rent_prices_origin and Rent_prices_G.

The OLS basic model has been modified several times to address this problem. However, the collinearity was again detected according to the variance inflation factors presented in Table 5. During the following stage, another three factors were eliminated – l_Wage_origin, l_Population_origin, Female_particip_G, and Model 4 was estimated. The variance inflation factors for Model 4 indicate that the collinearity problem has not been solved. Model 5 also excluded the following factor: GDP_G_%. Table 5 shows that the last model does not have a collinearity problem. Hence it was selected as the final model for further estimations.

Tab. 2 – Summary Statistics. Source: own research

Variable	Mean	Median	Min	Max
Emigration	1979.2	1791.0	676.00	3794.0
l_Distance	6.5236	6.6975	5.8664	7.0069
GDP_origin_%	2.0001	2.3232	-8.0744	5.9521
GDP_G_%	1.4037	1.5867	-5.6938	4.1799
Unempl_origin_%	4.8424	5.0000	2.6000	7.4000
Unempl_G_%	4.6273	4.9500	2.2000	7.2000
l_Wage_origin	10.710	10.719	10.394	10.968
l_Wage_G	10.780	10.750	10.708	10.898
l_Population_origin	15.686	15.523	15.454	16.141
l_Polulation_G	18.222	18.225	18.200	18.235
LFP_origin	2.8106	2.7300	1.3600	4.5300
LFP_G	2.3562	2.1900	1.3900	3.3900
Female_particip_origin	58.239	58.445	54.950	61.190
Female_particip_G	52.159	52.315	48.510	55.640
Rent_prices_origin	86.735	85.791	65.635	108.49
Rent_prices_G	92.843	92.205	82.268	105.56
Variable	Std. Dev.	C.V.	Skewness	Ex. kurtosis
Emigration	971.05	0.49062	0.19568	-1.2774
l_Distance	0.48525	0.074383	-0.49457	-1.5000
GDP_origin_%	2.4079	1.2039	-1.5707	4.2620
GDP_G_%	2.0245	1.4423	-1.7479	4.5726
Unempl_origin_%	1.0478	0.21638	-0.15079	-0.53289
Unempl_G_%	1.4691	0.31749	-0.032628	-1.1178
l_Wage_origin	0.14556	0.013591	-0.060796	-0.54391
l_Wage_G	0.055610	0.0051585	0.80434	-0.69408
l_Population_origin	0.26034	0.016597	0.71083	-1.4030
l_Polulation_G	0.0097539	0.00053529	-1.0646	-0.10858
LFP_origin	0.80141	0.28513	0.30086	-0.77007
LFP_G	0.76482	0.32460	0.14467	-1.6444
Female_particip_origin	1.8380	0.031560	-0.11794	-1.2047
Female_particip_G	2.3003	0.044101	-0.11388	-1.4210

Rent_prices_origin	12.153	0.14011	0.049388	-1.2647
Rent_prices_G	6.9994	0.075389	0.21662	-1.1262
Variable	5% Perc.	95% Perc.	IQ range	Missing obs.
Emigration	713.10	3622.3	1712.8	0
l_Distance	5.8664	7.0069	1.1405	0
GDP_origin_%	-3.3100	5.4019	2.3670	0
GDP_G_%	-3.9460	4.0907	2.0465	0
Unempl_origin_%	2.9750	6.3950	1.7000	0
Unempl_G_%	2.2700	7.0600	2.2000	0
l_Wage_origin	10.450	10.955	0.19034	0
l_Wage_G	10.713	10.892	0.075576	0
l_Population_origin	15.459	16.113	0.51434	0
l_Polulation_G	18.201	18.234	0.0085037	0
LFP_origin	1.6520	4.2860	1.2200	3
LFP_G	1.3960	3.3860	1.4500	3
Female_particip_origin	55.256	61.104	3.1975	0
Female_particip_G	48.695	55.496	4.5300	0
Rent_prices_origin	67.623	104.86	23.304	0
Rent_prices_G	82.533	105.03	11.754	0

Tab. 3 – Regression results. Source: own research

Variables	Model 1 basic gravity model Fixed effects	Model 2 basic gravity model OLS	Model 3 modified basic gravity model OLS	Model 4 modified basic gravity model OLS	Model 5 modified basic gravity model OLS
Dependent variable: Emigration					
constant	−121431	−95397.1	50181.2	149786***	137780**
	(83889.9)	(70680.3)	(48737.6)	(51596.7)	(51670.9)
l_Distance		−1423.34***	−1635.24***	−2039.36***	−2087.9***
		(249.35)	(214.98)	(107.7)	(104.36)
GDP_origin_%	23.17	24.4	30.76*	56.79***	30.41***
	(17.63)	(17.15)	(17.41)	(18.94)	(8.3)
GDP_G_%	−22.98	−24.52	−22.96	−34.54	
	(19.59)	(18.95)	(18.95)	(22.36)	
Unempl_origin_%	51.36	57.21*	66.33**	90.66***	106.4***
	(36.54)	(32.62)	(32.36)	(30.64)	(29.28)
Unempl_G_%	−120.88***	−128.19***	−131.78***	−183.15***	−181.3***
	(40.9)	(35.46)	(35.76)	(32.6)	32.99
l_Wage_origin	3484.83**	3781.48***	2366.4**		
	(1468.07)	(1216.74)	(987.89)		
l_Wage_G	9055.24***	9356.03***	3855.21**	3157.49***	3837***
	(2621.02)	(2467.88)	(1494.09)	(1073.39)	(991.85)
l_Population_origin	3533.47	1889.42***	1343.15***		
	(4477.35)	(410.66)	(368.12)		
l_Polulation_G	−2989.25	−2870.88	−6345.49**	−9483.23***	−9208.00***
	(2939.47)	(2894.91)	(2808.82)	(3061.90)	(3096.44)
LFP_origin	−58.2	−49.63	−75.53	−249.74***	−285.15***
	(69.53)	(64.92)	(68.54)	(60.98)	(57.24)
LFP_G	−24.84	−35.4	−57.72	248.8**	335.41***
	(150.07)	(145.95)	(132.49)	(94.77)	(77.4)
Female_particip_origin	−42.57	−36.2	−2.26	81.1177***	77.69***
	(30.97)	(25.47)	(24.12)	(17.73)	(17.82)
Female_particip_G	44.84	39.59	−175.39***		
	(97.92)	(95.98)	(64.74)		

Observations	63	63	63	63	63
Number of countries	3	3	3	3	3
Time series length	21	21	21	21	21
LSDV R-squared	0.98				
Within R-squared	0.98				
R-squared		0.98	0.98	0.97	0.97
Adjusted R-squared		0.98	0.98	0.97	0.96

Note: l Distance has been omitted due to exact collinearity when calculating the fixed effects estimation. Standard errors in parentheses. *p < 0.10; **p < 0.05; ***p < 0.01.

Tab. 4 – Differing group intercepts test, White test for heteroskedasticity, test for normality of residuals. Source: own research

Tests/Models	Model 1 basic gravity model Fixed effects	Model 2 basic gravity model OLS	Model 3 modified basic gravity model OLS	Model 4 modified basic gravity model OLS	Model 5 modified basic gravity model OLS
Test for differing group intercepts	0.14 (0.71)				
Test statistic for White test for heteroskedasticity		34.44 (0.26)	28.15 (0.35)	21.53 (0.4)	56.51 (0.38)
Test statistic for normality of residual test		2.46 (0.29)	1.52 (0.46)	2.57 (0.36)	2.79 (0.25)

Note: p-values are in parentheses.

Tab.5 – Collinearity test: variance inflation factors. Source: own research

Variables/Models	Model 2 basic gravity model OLS	Model 3 modified basic gravity model OLS	Model 4 modified basic gravity model OLS	Model 5 modified basic gravity model OLS
l_Distance	65.35	42.62	7.54	6.89
GDP_origin_%	7.94	7.18	5.98	1.12
GDP_G_%	6.83	5.99	5.87	
Unempl_origin_%	5.31	4.59	2.9	2.58
Unempl_G_%	11.02	9.83	5.75	5.75
l_Wage_origin	139.16	80.48		
l_Wage_G	69.14	22.23	8.08	6.73
l_Population_origin	50.46	35.58		
l_Polulation_G	3.4	2.81	2.35	2.35
LFP_origin	12.07	11.81	6.58	5.65
LFP_G	55.58	40.18	14.48	9.42
Female_particip_origin	9.54	7.51	2.86	2.81

Female_particip_G	202.73	80.93		
Rent_prices_origin	120.7			
Rent_prices_G	597.65			

Our results have indicated neither heteroskedasticity nor residual distribution problems. The collinearity problem, as mentioned above, has been addressed by removing the variables. As expected, the distance between the origin countries and Germany has appeared to be a significant variable, which is negatively associated with migration in all OLS models. After the collinearity problem had been addressed, our results indicated the significance of a GDP growth rate in origin countries. We have assumed that GDP growth is negatively associated with migration as we expected that a higher rate of economic growth in the origin country motivates the population to stay. Our results are in line with the results obtained by Staniscia & Benassi (2018). They concluded that a higher level of GDP shows higher levels of both immigration and emigration, reflecting the dynamism of the labour market. We have assumed that with the increase in the GDP growth rate in Germany, migration to the country will be higher. However, this variable appeared insignificant and was removed from the model.

It should be noted that GDP growth rates also impact migration. According to research on the economic impact of potential migration policies in the UK after Brexit (Valverde & Latorre, 2019), migration can affect economic activity in the UK profoundly. The more restrictive immigration policies are, the greater losses in terms of GDP and welfare are. Thus, when analysing the influence of GDP growth rates on migration, there should also be considered the adverse impact of migration on GDP. Therefore, the influence of GDP on migration is confusing, and to some extent, it is hard to distinguish any separate influence of GDP on migration.

Our expectations regarding the significance and sign of the unemployment rate influence have been confirmed by the results obtained. Indeed, the unemployment rate is a significant indicator indicating the sufficiency of the labour market in both the origin and host countries and, therefore, their competitiveness. The results show that the higher the unemployment rate in Denmark, Finland and Sweden, the higher the migration rate from these countries to Germany is. The higher the unemployment rate is in Germany, the lower the migration level is observed.

Due to high collinearity, the level of a wage variable has been removed for origin countries and appeared to be significant in regard to Germany. The results have indicated that higher wages in Germany attract more migrants from Denmark, Finland and Sweden. That is in line with our assumptions. However, it should be noted that an increase in wage levels in the origin country does not always mean an increase in wage levels for migrants. In many European countries, migrants earn lower wages than the native population. However, existing wage levels often appear to be attractive also for migrants, as shown by Bryson and White's research (2019) on migrants and low-paid employment in Britain.

The variable on population size in the origin countries has been removed due to high collinearity. However, the population size in Germany is a significant variable that is negatively associated with migration flows to the country, which is in line with our expectations.

Our expectations regarding the significance and sign of the variable on the public expenditures on labour force programmes in both origin countries and Germany are supported by the results obtained. Higher public spending on labour force programmes encourages the labour to stay

in their home country. At the same time, the higher these expenditures in Germany, the more migrants are willing to migrate to the country. According to literature findings on the role of the labour market integration concerning migrants' decisions about family reunification in Norway, Sweden, and the UK, government assistance in families' reunification is also essential. Therefore, labour force programmes should be understood from a broader perspective and include the family reunification aspect (Ryndyk, 2020).

With a higher female participation rate in origin countries, people tend to migrate more, which is not in line with our assumptions. A possible explanation of this evidence is that in Europe, the female population is becoming more competitive and equal than the male population regarding job opportunities and wages. Thus, the female population may be willing to find better employment and wages in Germany. The male population, at the same time, based on increases in female participation, is also trying to be occupied in more practical terms and connect more strongly their ties to Germany. The indicator of the female participation rate in Germany, as well as rent prices in both origin countries and Germany, have been removed from the model due to a collinearity problem.

5. CONCLUSION

The current research aimed at determining the competitiveness of Germany as an EU member state in terms of attracting the population from other EU member states. We have identified what factors affected emigration flows from the three Nordic countries – the EU member states – Denmark, Finland and Sweden – to Germany from 1998 to 2019 based on the availability of annual data on migration. We have employed the fixed effects in our research and pooled the OLS estimation method. The estimation has shown that there are no fixed effects and the pooled OLS method appeared to be a correct estimation method.

We have evaluated the influence of fifteen variables on migration flows from the countries mentioned above to Germany, including economic and non-economic factors. We have expected that an increase in distance, GDP, wages, public expenditure on labour market programmes, female labour force participation rate in the origin country, as well as an increase in the unemployment rate, population and rent prices in Germany is negatively associated with migration from the Nordic countries to Germany. However, a GDP increase in Germany, unemployment rate increase in origin countries, wage increase in Germany, population increase in origin countries, increase in public expenditure on labour market programmes in Germany, an increase in female labour force participation rate in Germany, and in rent prices in origin countries push the population from the sample Nordic countries to move to Germany and therefore, is positively associated with migration flows to the country.

The research findings indicate that significant driving forces of migration from researched Nordic countries to Germany are distance, which is negatively associated with migration, GDP growth rates in origin countries, unemployment rates in origin countries, which are positively associated with migration, the unemployment rate in Germany, which negatively influences migration, as well as population growth in the country and public expenditures on labour force programmes in origin countries. At the same time, higher wages and spending on labour force programmes in Germany and an increase in the female participation rate in origin countries encourage the population to migrate to Germany.

This paper leaves at least two vital avenues for further investigation mainly due to its limitations related to the country coverage, as only the Nordic region was studied. Further research can be devoted to researching the factors affecting migration from the other EU member states to Germany as well as focusing more on gender differences in migration flows and characteristics explaining motives to migrate for both the female and male population.

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