

# **INCOME DISTRIBUTION AMONG TURKISH IMMIGRANTS IN GERMANY AND DENMARK**

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# Income Distribution among Turkish Immigrants in Germany and Denmark<sup>1</sup>

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## **Keywords:**

immigrants, inequality decomposition, inequality in Europe, quantile regression, Turks in Europe

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## **Abstract**

Inequality has been increasing in nearly all OECD countries. We investigate the trend in inequality for five special groups (immigrants from Turkey in two European countries, Denmark and Germany, along with natives in the two host countries and in Turkey). The motivation is to see whether immigrant inequality adapts over time to the inequality among natives or not, respectively changes relative to the country of origin. We find, first, that immigrants are concentrated in the lower deciles of the population-wide income distribution. Secondly, when native and immigrant distributions are considered separately, in every decile average income among natives is significantly higher than that among immigrants. Thirdly, quantile regression results show us that immigrants from Turkey mostly have lower incomes than natives with the same background factors, indicating lower returns for them to education and to being married. The child penalty on household disposable income is much smaller for immigrants than for natives. Moreover, among immigrants, the penalty is larger in Denmark than in Germany. Fourth, inequality decompositions show us that during the great recession inequality in Denmark grew faster among immigrants than among natives. In Germany, inequality among natives somewhat increased, while it remained the same among immigrants. Therefore, we do not observe a convergence in inequality. In both countries, between 2007 and 2013, the rising inequality among natives is the most important factor to explain the rise in overall inequality. Finally, compared to Turks in Turkey, immigrants in both countries have significantly higher incomes, distributed much more equally.

## **1. Introduction and background**

The focus in the present paper is on two main points. The first is to examine whether income distribution among immigrants from Turkey to two European countries, Denmark and Germany, follows the universal pattern of increasing inequality in the most recent decades. The second main point is to examine whether there seems to be adaptation in the distribution of income in the two groups of immigrants to the distribution in the two host countries. Finally, we consider how inequality in the two groups of immigrants develop relative to the situation in the country of origin, Turkey.

Our approach differs from most of the contributions in the literature, where focus is mostly on the impact from immigration on the distribution of wages among natives or on the overall inequality in the host country. A survey is found in Card (2009) where the overall conclusion is a very small impact on wages among natives from immigration. Dustman et al. (2013) focus on the impact along the distribution of UK wages and find an overall slightly positive impact on native wages, however with a negative impact on native wages below the 20<sup>th</sup> percentile in the distribution. Hibbs and Hong (2015) use US metropolitan area data on Gini coefficients in 1990 and 2000 and find that immigration explains about a quarter of the increase in inequality between the two years. Xu, Garand, and Zhu (2016) work with the US national level Gini coefficients for the years 1996 to 2008, calculated excluding and including immigrants, to find that overall, the Gini coefficients are higher when immigrants are included. The increase in inequality from immigration measured in this way is however small. Another recent study uses Danish longitudinal data on individual workers and find the counterintuitive result that a specific wave of refugee immigration led to a positive impact for less skilled native workers by creating upwards mobility (Foged and Peri 2016). Finally, Deding et al. (2010) use Danish and German data to analyze the impact from immigration on

overall inequality in the host countries. Here, we focus instead on inequality among immigrants from the same country of origin resident in two different host countries.

The two host countries represent different welfare state types in the terminology of Esping-Andersen (1990): Denmark representing the so-called Scandinavian or Social Democratic welfare state and Germany representing the so-called Continental welfare state type. Several structural differences motivate a study of immigrant groups from the same country of origin being resident in two different host countries. Denmark represents a welfare state type with comprehensive eligibility to many policy programs with a dominance of flat rate benefits, financed mostly from general tax revenues. Germany, on the other hand, represents a welfare state where programs are built on employment-related contributions and where eligibility and benefits correspondingly correlates with contributions. For both countries, these characteristics are the fundamentals with many necessary modifications towards a full picture.

Another difference, relevant in the present setting is found in the structure of wages. While average wage rates may not differ much between Denmark and Germany, the actual minimum pay is lower in Germany than in Denmark. The threshold for entering the labor market is thus lower in Germany with an eventual impact on immigrant employment rates and through that with an impact on contribution related eligibility and benefits in a number of programs. As our focus is mostly on disposable income, the impact on comparative inequality is complex, i.e. an immigrant in Denmark who does not find a job in a setting with a higher minimum pay may receive unemployment or welfare benefits to be compared with the low earnings for his or her counterpart in Germany.

Another structural difference is found regarding labor force participation among women. Among natives in the two host countries, the difference was very big in 1984, the first year in our study, with participation rates about 25 percentage points higher among women in Denmark. In



2013, the last year in our study, labor force participation among women in Germany was at about the same level as in Denmark with possible implications for the change in inequality.

In the following, Section 2 describes briefly the historical background regarding the flow of immigrants from Turkey to Denmark and Germany. In both countries immigrants from Turkey are the most numerous immigrant group. Section 3 describes data, the income concepts we use and the methodological approaches in the paper (which consist of quantile regressions and two types of decompositions to determine whether specific subgroups or specific categories of income are of special importance explaining the level and trend in inequality). Section 4 presents descriptive evidence regarding inequality in the 5 population groups (natives in the three countries and immigrants from Turkey in the two host countries) using Gini coefficients and 90/10 ratios along with other distributional indicators. Section 5 report the analytical results from the regressions and the decompositions. Finally, Section 6 summarizes and concludes the study.

## **2. Migrants from Turkey – residents in Denmark and Germany**

Turkish immigration to Europe began after World War II, but the country began to export labor to Western Europe on a significant scale only after an official agreement was negotiated with the Federal Republic of Germany in 1961 (Fassmann and İçduygu 2013). A social security agreement was signed with Denmark in 1970 (Abadan-Unat 2011). When the first guest worker agreement was signed between Turkey and Germany in 1961, there were 6.700 Turks in Germany corresponding to 1% of the foreign population. The bilateral agreement of Turkey with Germany, and later with other European countries, were in fact built on the principle of rotation. Workers sent abroad would be trained for a year, during which they would gain knowledge and expertise. The expectation was that they would return to Turkey to make their expertise available to the development of the country. However, from the beginning, ‘guest workers’ showed an inclination to stay longer. Migration

peaked during the years 1971-1973, when more than half a million Turkish workers arrived in Europe. Germany received great numbers of Turkish workers between 1961 and 1973 and became the country that had the largest number of Turkish immigrants in Europe, with more than 600 thousand workers in 1973.

In response to the recession following the first oil price shock, both Germany and Denmark ended the guest worker program in 1973. Other countries such as France, Belgium and the Netherlands followed Germany and Denmark in 1974 by ending guest worker agreements (Abadan-Unat 2011). The termination of the guest worker program made it obvious to the labor migrants of the 1960s that leaving the host country would mean never returning. Those who wanted to stay decided to switch from a temporary and short-term migration to a more long-lasting settlement. The first groups of immigrants who arrived to Germany in the period 1961-1973 mainly consisted of male workers. In the following years, the female population increased through family reunification and, later, family formation when the children of the first-generation immigrants married a spouse coming from Turkey. In Denmark, immigration from Turkey began later than in Germany. Here, the gender ratio reached a balance somewhat later than in Germany.

The 1990s were characterized by a considerable slowdown in migration flows from Turkey to Europe. This decline was partly due to the restrictive immigration policies of the European receiving countries and, in addition, to the positive economic, social and political developments in Turkey itself. Meanwhile, the fall of the Iron Curtain was accompanied by opening a large reservoir of qualified but unemployed or underemployed workers from Poland, Romania, Hungary and other former communist countries who became the first choice for recruitment in Western Europe. Today, the inflow of Turkish citizens is decreasing, the net migration nearly zero or negative and the stock of the Turkish immigrant community declining (Fassmann and İçduygu 2013). People with Turkish origin or background are however still the biggest non-EU group in both Germany and Denmark.

The main question in this paper is whether the income distribution among Turkish immigrants adapts to the distribution in the host countries or whether it stays closer to the distribution in the home country, Turkey.

### **3. Data and methods**

#### ***Data***

This study uses nationally representative survey data from Turkey and Germany, and administrative based register data from Denmark. For all three countries, the datasets that we use are the best available sources of data for household income. The Turkish data are collected by the Turkish Statistical Institute (TURKSTAT) via the Survey of Income and Living Conditions (SILC). Since 2006, the data have the structure of four-year rotating and overlapping panels (2006-2009 and 2010-2013), where the selected households are interviewed for four consecutive years. Each year, about a quarter of the households are dropped from the sample and replaced by new households. Following data entry, income data collected by the survey are compared against administrative income, tax, and social security data, which are obtained based on the person's National Identification Number.

The German data come from the German Socio-Economic Panel (GSOEP), a big and unique survey-based panel dataset, which oversamples immigrants. We use data from the years 1984-2013. In 1984, guest worker families from Turkey were over-sampled. Between 1984 and 1994, new immigrants were included only if they moved into one of the pre-sampled households. In 1994 and later, new samples of immigrants were added to the GSOEP. Therefore, the immigrant population is better represented after 1994 than in the years 1984-1994. In 1990, the Eastern states of Germany were added to the GSOEP; however, for consistency we only consider the Western part of Germany. Throughout the analysis, we apply the survey sample weights. The GSOEP data are

collected under a survey rule censoring the disposable income within the 0-5 million Euros. (More detailed description of the GSOEP is available from (Burkhauser, Kreyenfeld, and Wagner 1997)).

The Danish data are panel data based on comprehensive administrative registers, compiled by Statistics Denmark, that cover the whole population of natives and immigrants. Data from such administrative registers have been used extensively in economic research (Roed and Raaum 2003) and are generally considered to be of very high quality. Individual data from a number of registers are merged using a unique person identifier. In the Danish data, disposable income figures are affected by administrative or tax law rules that result in a small number of people having deductions from earlier years that appear in the current year, thereby leading to a number of observations in a given year (about 1-2% of all) with non-positive disposable incomes.

In the GSOEP and the Danish register data, three types of individuals can be identified: natives, immigrants, and descendants of immigrants. As in Deding et al. (2010), in this paper the group of immigrants also includes individuals who have obtained citizenship in the two host countries. In the Danish data, individuals belong to one of the three main types of households: singles; married or cohabitating couples; or children younger than 18 years not living with their parents. Children living with their parents are included in the parents' household regardless of age, unless the children themselves are married, cohabiting or have their own children (in which case they are defined as a new household). In the German data, a household can include spouses, life-partners, children, foster children, siblings, parents, in-laws, grandchildren, other relatives, and unrelated persons.

## **Methods and concepts**

In our study, we examine and compare five groups: Natives in the three countries (Germany, Denmark, and Turkey) and Turkish immigrants in the two host countries, Germany and Denmark.

Our income concept is household disposable income. We adopt the OECD definition of household disposable income (Burniaux et al. 1998). Therefore, we include all types of income (earnings, capital income, social security transfers) minus income taxes and mandatory contributions. Although the household is the economic unit, all analyses are based on individuals. In the Danish case, tax register information is the basis for income calculations, whereas in the Turkish and German data self-reported income is used.

Equivalent household disposable income is defined in the usual way by dividing total household disposable income by an equivalence scale. The scale that we adopt assigns a weight to each member of the household; a weight of 1 to the household head, 0.7 to all other individuals older than 14 and 0.5 to all individuals 14 or younger (known as the “OECD scale”). Equivalent household disposable income is assigned to everyone in the household.

We calculate and present Gini coefficients and 90/10 ratios (the relative income difference between the 90<sup>th</sup> and the 10<sup>th</sup> percentiles of the distribution) in all five groups for as much of the post-1980 period as possible. These measures have easy interpretations and are widely used. In addition, as in (Deding et al. 2010), we use two other inequality measures that are members of the Generalized Entropy (GE) class of measures that are defined as

$$I_{\beta}(y) = \frac{1}{\beta^2 - \beta} \left( \frac{1}{n} \sum_{i=1}^n \left( \frac{y_i}{\mu} \right)^{\beta} - 1 \right) \quad (1)$$

where  $\beta$  is an ethical parameter that represents the weight assigned to distances between incomes at different parts of the income distribution and  $\mu$  is the mean income. The lower the  $\beta$ , the more weight is given to the lower tail of the distribution, and vice versa. The GE measure with  $\beta = 0$  is known as the mean log deviation. It assigns more weight to the lower tail of the distribution.

$$I_0(y) = \frac{1}{n} \sum_{i=1}^n \ln \frac{\mu}{y_i} \quad (2)$$

The GE measure with  $\beta = 1$  is known as the Theil index. It applies equal weight across the distribution (see, for example, (Foster and Shneyerov 2000)).

$$I_1(y) = \frac{1}{n} \sum_{i=1}^n \frac{y_i}{\mu} \ln \frac{y_i}{\mu} \quad (3)$$

We refer to these measures as GE(0) and GE(1).

The GE class of measures have the advantage of being decomposable. At a given point in time, aggregate inequality can be decomposed into the sum of inequalities within different population subgroups (weighted by the population shares of the subgroups) and the inequality between the subgroups. Let  $I_\beta(y^j)$  be the inequality measure for subgroup  $j$  that has a population share  $w_j$ . Then, aggregate inequality can be written as the sum of the contributions of within-group inequality (the first sum in equation (4)) and between-group inequality (the second sum equation (4))

$$I_\beta(y) = \sum_{j=1}^k w_j \left(\frac{\mu_j}{\mu}\right)^\beta I_\beta(y^j) + \sum_{j=1}^k \frac{w_j}{\beta(\beta-1)} \left(\left(\frac{\mu_j}{\mu}\right)^\beta - 1\right) \quad (4)$$

We can also decompose changes in inequality over time. With  $k$  subgroups, the change in aggregate inequality can be expressed as the sum of the effects of three terms: the change in subgroup inequalities, the change in subgroup shares, and the change in inter-group inequality.

$$\Delta I_t = I_t - I_{t-1} = \sum_{j=1}^k w_{t-1}^j \Delta I_t^j + \sum_{j=1}^k I_t^j \Delta w_t^j + \Delta I_t^{Inter} \quad (5)$$

Defining the subgroups as natives and immigrants (“nat” and “immig”), we can rewrite the above as

$$\Delta I_t = (w_{t-1}^{nat} \Delta I_t^{nat} + w_{t-1}^{immig} \Delta I_t^{immig}) + (I_t^{nat} \Delta w_t^{nat} + I_t^{immig} \Delta w_t^{immig}) + \Delta I_t^{Inter}. \quad (6)$$

Our decomposition analyses rely on the Stata command “ineqdeco”<sup>2</sup>, which provides us with aggregate and subgroup-specific inequality measures as well as population shares of subgroups.

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<sup>2</sup> <https://www.stata.com/stb/stb48/sg104/ineqdeco.hlp>

As another analytical tool, we use quantile regressions. In analyses of the distribution of incomes the impact on individual incomes from covariates may differ between various quantiles in the distribution. To capture this, we use quantile regressions

$$y_i = x_i' \beta_q + e_i, \tag{7}$$

where  $\beta_q$  is the vector of unknown parameters associated with the  $q^{th}$  quantile. This makes it possible to study the dependence between income and covariates in different quantiles of the income distribution as alternative to assuming the same dependence for instance to age or education over the whole distribution. Furthermore, quantile regression is more robust to outliers. In the Danish and German data, we define an immigrant dummy which is interacted with different population subgroups to see whether specific types of households are of special significance regarding the difference in inequality between natives and immigrants from Turkey.

#### **4. Descriptive analyses**

The five population groups included in the study differ in many dimensions. This is for instance so by age, where the immigrant groups on average are younger than the native population and by propensity to live in marriage, which is higher among the immigrants. The average number of children is also higher in the immigrant group while the average level of education is significantly lower than among natives. One area of special importance regarding the level and stability of income is labor force participation. Over time, from 1980/84 to 2013 the trend for the 18-64 years old are shown in Figures 1 and 2, respectively for men and women in Denmark and Germany.

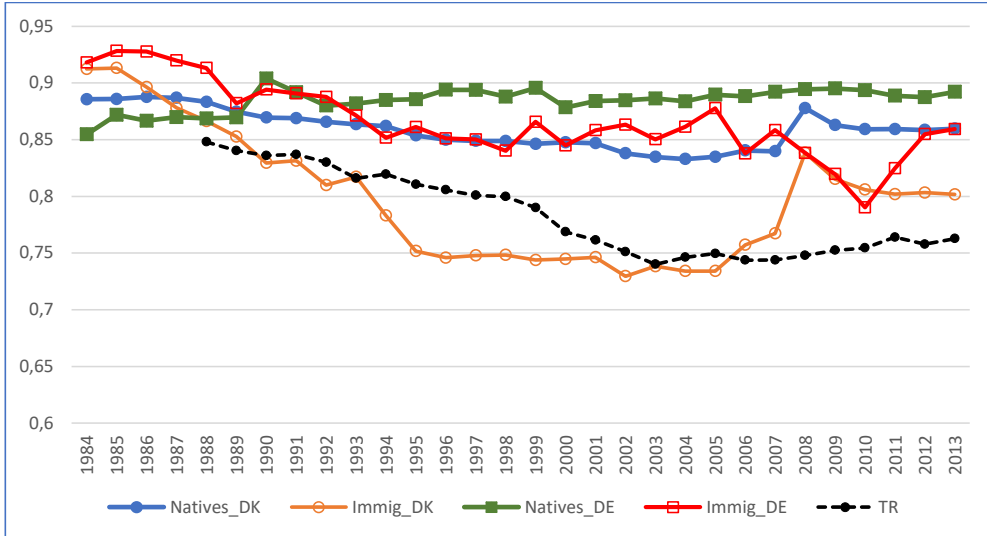
Considering only income from work, the U-shaped profile for immigrant men in Denmark in Figure 1 points to increasing inequality in the group until the mid-1990s followed by decreasing inequality during a brief cyclical upswing up to the beginning of the Great Recession in 2008. In Figure 2 we find the same U-shaped profile for immigrant women as for men in Denmark with the

same expectation of increasing followed by decreasing inequality considering only the expected income from work. For immigrant women in Germany the prior expectation is decreasing inequality since the turn of the century.

Next, we consider the Gini coefficients and the 90/10 ratios in the distribution of equivalence scale adjusted disposable income for as much of the post-1980 period as possible for the 5 population groups. The expectations concerning inequality looking only at expected income from work based on Figures 1 and 2 are not supported when we examine the distributional indicators regarding disposable income in Figures 3 and 4. Obviously, the public sector has a dominant impact on distribution in both host countries. Gini coefficients and 90/10 ratios are stationary until the mid-1990s when an increase in inequality is found for both natives and immigrants in the two host countries. As expected, Germany has higher inequality than Denmark. In both host countries, Turkish immigrants have lower inequality compared to natives, but in Denmark the inequality gap between natives and immigrants appears to be closing. Comparable observations are available for Turkey only from 2006 onwards. It seems that the Great Recession had less impact on distribution in Turkey. Further, compared with the Turkish data, there is a clear adaptation among immigrants to the much lower inequality among the rest of the population in the host countries.

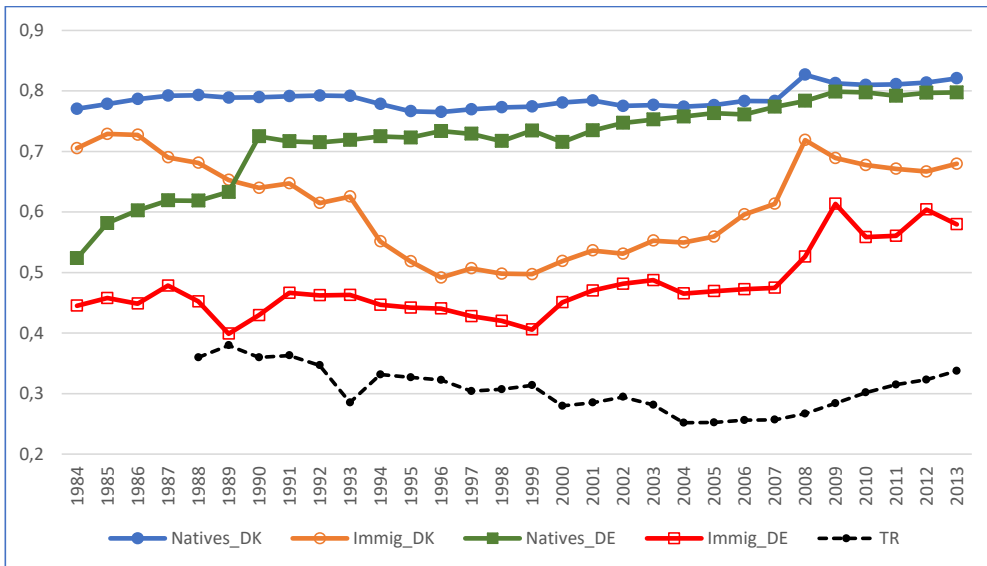
Another descriptive approach is to distribute the population groups on deciles of the income distribution for the entire population (Saunders 1994). This allows us to see the disparities between natives and immigrants, especially in the bottom and the top deciles. The results are shown in Tables 1 and 2 for 2007, the last year before the Great Recession, and for 2013, the most recent year in the data.





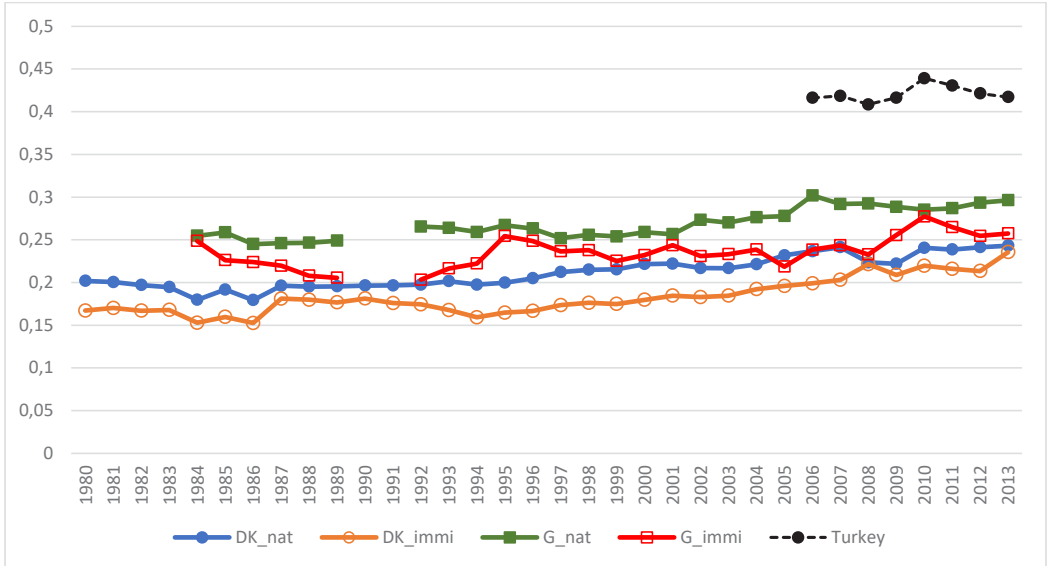
**Figure 1. Labor force participation rates for the five groups (Men).**

Notes: Turkish rates are for ages 15-64 (OECD 2014). Danish and German rates are for ages 18-64.



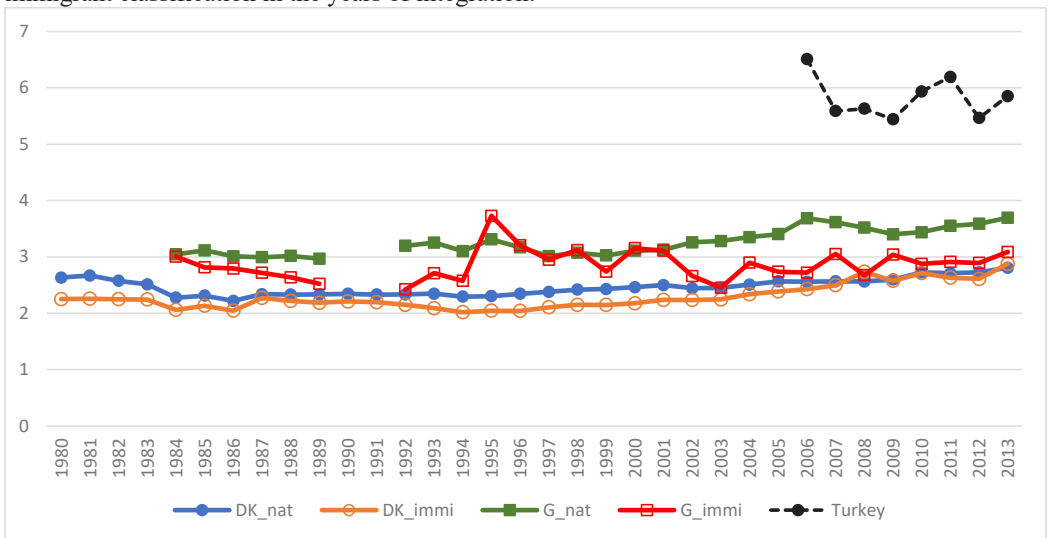
**Figure 2. Labor force participation rates for the five groups (Women).**

Notes: Turkish rates are for ages 15-64 (OECD 2014). Danish and German rates are for ages 18-64.



**Figure 3. The Gini coefficient in the five groups.**

Note: All in ages 18-64. Years 1990-1991 are skipped in the German data because of problems with immigrant classification in the years of integration.



**Figure 4. The 90/10 ratio in the five groups.**

Note: See notes to Figure 3.

Table 1 shows the percentage distribution of individuals on deciles in the overall income distribution and in the overall earnings distribution in a country. Clearly, in both host countries, the majority of Turkish immigrants (78-81% in 2007 and 73-78% in 2013) are in the lowest 4 income deciles. A very small share of immigrants (about 1-2%) are in the highest income decile, as opposed to 10-11% of natives. We repeat the same exercise for the deciles of the earnings distribution and find again that the majority of immigrants (70-76% in 2007 and 70-71% in 2013) are in the lowest 4 deciles.

In Table 1, part of the difference between Denmark on the one hand and Turkey and Germany on the other is due to the origin of the Danish data in administrative registers. Due to tax rules or administrative or legal decisions, there is, as mentioned above, a small number of people in Denmark with non-positive registered disposable incomes. This, however is hardly relevant for most immigrants. Looking at the distribution of immigrants on deciles, we find some interesting differences between Denmark and Germany when we compare the experience over the great recession. Looking at income deciles, the share in Denmark in the four bottom deciles is higher than in Germany in 2007 while the opposite is found for 2013. Further, the share fell in Denmark between 2007 and 2013 (from 81% to 73%) while it remained about the same (78%) in Germany. Our interpretation is that public sector programs probably, regarding income, protected the majority of immigrants better in Denmark than in Germany during the big recession. Looking at earnings deciles, we find a higher share in Denmark in the bottom four deciles in 2007 (76% versus 70% in Germany). In Denmark the share declines between 2007 and 2013 (from 76 to 70%) while it remains nearly constant in Germany. Our interpretation is that this reflects the more widespread use of a low minimum wage in Germany also in the form of the so-called mini-jobs.

Finally, looking at the share of immigrants in the top two deciles, we find an increasing share in Denmark, both using income deciles (2 to 4%) and earnings deciles (2.9 to 4.7%) from 2007 to

2013. The shares are also increasing in Germany (2.4 to 2.5% for income and 1.3 to 3.2% for earnings deciles) but not to the same degree. For both countries, then, we find a slightly more favorable position of immigrants in the income and earnings distributions in relation to natives over the years of the great recession.

**Table 1. Population shares in income and earnings deciles in Turkey, Denmark, and Germany**

2007	Population shares in income deciles					Population shares in earnings deciles			
	Turkey	Denmark		Germany		Denmark		Germany	
		Natives	Immig	Natives	Immig	Natives	Immig	Natives	Immig
<b>1</b>	10.0	7.9	31.7	7.6	24.0	10.4	14.3	9.8	17.3
<b>2</b>	10.0	9.2	26.6	8.8	26.3	7.8	24.0	7.2	10.9
<b>3</b>	10.0	9.9	14.0	9.1	13.9	9.4	24.1	9.9	18.6
<b>4</b>	10.0	10.2	9.2	9.2	13.9	9.9	13.7	9.7	23.1
<b>5</b>	10.0	10.3	6.5	9.7	9.4	10.2	8.7	9.7	10.9
<b>6</b>	10.0	10.4	4.7	10.0	4.7	10.3	5.8	9.7	8.4
<b>7</b>	10.0	10.5	3.2	10.5	4.3	10.4	3.9	10.6	5.8
<b>8</b>	10.0	10.5	2.1	10.5	1.1	10.5	2.6	10.8	3.6
<b>9</b>	10.0	10.6	1.3	11.1	0.4	10.6	1.8	10.9	1.1
<b>10</b>	10.0	10.6	0.7	13.7	1.9	10.5	1.2	11.7	0.2

2013	Population shares in income deciles					Population shares in earnings deciles			
	Turkey	Denmark		Germany		Denmark		Germany	
		Natives	Immig	Natives	Immig	Natives	Immig	Natives	Immig
<b>1</b>	10.0	7.8	25.8	9.4	29.3	9.0	16.0	8.7	11.4
<b>2</b>	10.0	9.2	22.5	9.8	24.6	8.9	23.3	9.6	21.6
<b>3</b>	10.0	9.8	14.5	9.8	15.6	9.5	18.1	10.3	18.8
<b>4</b>	10.0	10.1	10.7	10.1	8.8	9.9	12.8	10.8	19.6
<b>5</b>	10.0	10.3	8.1	9.8	7.6	10.2	9.1	10.0	10.8
<b>6</b>	10.0	10.4	6.5	10.5	6.4	10.3	7.0	10.1	7.1
<b>7</b>	10.0	10.5	4.6	9.9	1.7	10.5	5.0	10.3	5.4
<b>8</b>	10.0	10.6	3.4	9.8	3.4	10.5	3.9	10.0	2.1
<b>9</b>	10.0	10.6	2.5	10.3	1.5	10.6	2.8	9.8	2.9
<b>10</b>	10.0	10.6	1.5	10.7	1.0	10.5	1.9	10.3	0.3

Notes: Deciles are calculated for equivalent household disposable income and for equivalent household earnings in the entire population of each country. Includes individuals in ages 18-64.

Sources: Own calculations from Turkish and German survey data, and from Danish register data.

**Table 2. Mean income and mean earnings in deciles calculated for each of the five groups separately (current euros)**

2007 Deciles	Mean income in deciles										Mean earnings in deciles									
	Denmark					Germany					Denmark					Germany				
	Turkey	Natives	Immig	Ratio	Natives	Immig	Ratio	Natives	Immig	Ratio	Natives	Immig	Ratio	Natives	Immig	Ratio	Natives	Immig	Ratio	
<b>1</b>	719	8846	6138	1.44	6321	4155	1.52	0	0	0	0	0	0	0	0	0	0	0	0	
<b>2</b>	1191	16192	10798	1.50	9598	6427	1.49	4235	388	10.90	1846	0	0	0	0	0	0	0	0	
<b>3</b>	1550	18841	12405	1.52	11584	7492	1.55	15330	2948	5.20	6788	1225	5.54	1225	5.54	1225	5.54	1225	5.54	
<b>4</b>	1941	20975	13741	1.53	13308	8592	1.55	22475	6896	3.26	11786	3639	3.24	3639	3.24	3639	3.24	3639	3.24	
<b>5</b>	2366	23074	15071	1.53	15049	9821	1.53	27855	10641	2.62	15250	7074	2.16	7074	2.16	7074	2.16	7074	2.16	
<b>6</b>	2840	25268	16443	1.54	17029	10819	1.57	32614	14566	2.24	18544	9110	2.04	9110	2.04	9110	2.04	9110	2.04	
<b>7</b>	3448	27747	17937	1.55	19297	12199	1.58	37462	18749	2.00	22489	11189	2.01	11189	2.01	11189	2.01	11189	2.01	
<b>8</b>	4232	30795	19864	1.55	22087	13596	1.62	42854	23448	1.83	27678	14143	1.96	14143	1.96	14143	1.96	14143	1.96	
<b>9</b>	5617	35325	22610	1.56	26656	15544	1.71	49874	29488	1.69	34904	18432	1.89	18432	1.89	18432	1.89	18432	1.89	
<b>10</b>	12246	59116	29679	1.99	43996	22501	1.96	71316	43279	1.65	55719	26592	2.10	26592	2.10	26592	2.10	26592	2.10	
<b>10 / 1</b>	17.03	6.68	4.84		6.96	5.42														
<b>2013 Deciles</b>																				
<b>1</b>	845	10713	7504	1.43	7119	5071	1.40	112	112	1.40	112	0	0	0	0	0	0	0	0	
<b>2</b>	1499	19458	13023	1.49	10627	7172	1.48	8510	738	11.53	2909	1103	2.64	1103	2.64	1103	2.64	1103	2.64	
<b>3</b>	1966	23281	15431	1.51	13042	8649	1.51	19718	4703	4.19	8873	3337	2.66	3337	2.66	3337	2.66	3337	2.66	
<b>4</b>	2398	26512	17507	1.51	15130	9753	1.55	27523	10340	2.66	13894	6518	2.13	6518	2.13	6518	2.13	6518	2.13	
<b>5</b>	2856	29562	19676	1.50	17090	10906	1.57	34023	15458	2.20	18067	9204	1.96	9204	1.96	9204	1.96	9204	1.96	
<b>6</b>	3394	32717	21946	1.49	19434	12102	1.61	40066	20654	1.94	21926	11973	1.83	11973	1.83	11973	1.83	11973	1.83	
<b>7</b>	4037	36283	24516	1.48	22044	13673	1.61	46264	26157	1.77	26401	14523	1.82	14523	1.82	14523	1.82	14523	1.82	
<b>8</b>	4916	40803	27658	1.48	25227	15765	1.60	53407	32383	1.65	31902	17542	1.82	17542	1.82	17542	1.82	17542	1.82	
<b>9</b>	6512	47787	31977	1.49	30431	17959	1.69	63507	40609	1.56	40344	21889	1.84	21889	1.84	21889	1.84	21889	1.84	
<b>10</b>	13526	83286	44679	1.86	50662	26391	1.92	102611	61801	1.66	67168	31413	2.14	31413	2.14	31413	2.14	31413	2.14	
<b>10 / 1</b>	16.01	7.77	5.95		7.12	5.20														

Notes: Deciles are calculated for equivalent household disposable income and for equivalent household earnings, separately for natives and immigrants in the two host countries. Includes individuals in ages 18-64. The column titled "Ratio" shows the ratio of natives' income to immigrants' income in the particular decile.

Sources: Own calculations from Turkish and German survey data, and from Danish register data.

In Table 2, the mean income and mean earnings are reported for each of the five groups, by deciles. Here, we follow a different approach and treat the distributions of natives and immigrants separately, which allows us to compare the mean income in a given decile among natives to the mean income in the same decile among immigrants in the same country. In the table, we also show the “Ratio” of mean income among natives to the mean income among immigrants. The ratio varies from 1.40 to almost 2 across the deciles. We observe that in both host countries and in both years the mean income among the poorest natives is about 1.40-1.5 times the mean income among the poorest immigrants. Comparing earnings ratios in the bottom of the distribution, the ratios are extremely high in a few cases probably reflecting low annual earnings as a result of higher unemployment and more part-time, part-year employment among the immigrants. In the top deciles, it is noteworthy that in both host countries the mean income among the richest natives is almost twice the mean income among the richest immigrants. Further, in both years the ratio is higher in Germany than in Denmark in the three top deciles, presumably reflecting the more compressed distribution of wages in Denmark. Finally, as expected, in all deciles mean income in Turkey is much lower than that of Turkish immigrants.

Comparing the distributions over time, we observe that in Denmark, the ratios of mean incomes have declined a bit between 2007 and 2013, across all income deciles corresponding with the observation from Table 1 of a small upward shift of the distribution among immigrants relative to natives during the great recession. In Germany, there is no uniform pattern across the deciles.

In Table 2 we also present “10 / 1”, which is the ratio of the mean income in the top decile to the mean income in the lowest decile. Among immigrants in Denmark, this ratio went up from 4.84 to 5.95, whereas among immigrants in Germany it changed from 5.42 to 5.20. Therefore, there is evidence that in Denmark inequality among immigrants increased along with the overall increase in inequality, but in Germany inequality among immigrants did not increase. The ratios at the bottom

and the top can be affected by censoring in the German data at 0 in the bottom and at 5 million Euros at the top while there is no censoring in the Danish data. The Danish data are affected at the bottom by a small number of people with negative incomes for administrative reasons.

## 5. Analyses

### *a. Quantile regressions*

First, we estimate quantile regressions at different percentiles (10%, 25%, 50%, 75%, and 90%) of the equivalent household disposable income (EHDI) distribution. For brevity, we present only the results from 2013, the last year of analysis. Here, the aim is to discover how EHDI differs between immigrants and natives across different percentiles of the income distribution. We add an “immigrant” dummy variable and also interact household characteristics (such as the number of children) with the “immigrant” dummy. We are mainly interested in the coefficient estimates of the interaction terms, which tell us whether, within a specific demographic group, the income of immigrants is on average the same as the income of natives. The results are shown in Tables 3 and 4.

Table 3 shows that in Denmark,<sup>3</sup> more children in the household means lower EHDI both for natives and immigrants, but the negative effect of children is much smaller in magnitude among immigrants. Comparing immigrants to natives by marital status, we find that among those who are married or widowed, immigrants have lower income than natives in general. However, interestingly and unexpectedly, among those who are divorced, immigrants have higher income than natives. This may be explained by the fact that divorce is less common among Turks. (According to the OECD 2012 data, the rate is 1.6 per 1000 people in Turkey versus 2.2 in Germany and 2.8 in Denmark (OECD 2018). The cultural and economic reasons behind the decision to divorce may be

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<sup>3</sup> In Denmark, almost all the estimated effects are statistically significant because of the high number of observations in the register data.

different for immigrants and natives. Immigrants who divorce their spouses may be a selected group in that they may be those who have sufficient income and the freedom to make the choice.

In Table 3, we see that in almost all regressions, comparing by age groups, immigrants have lower income than natives in the same age group. Among those who are in the labor force, immigrants have lower income than natives in all regressions. Comparing immigrants to natives by education, we find that immigrants have lower income than natives with the same years of education in most regressions.

Table 4 shows that in Germany, in all regressions, as in the Danish data, more children in the household means lower EHDI both for natives and immigrants, but the negative effect of children is much smaller in magnitude among immigrants. Adding up the coefficient estimates of the “number of children” variable and the “number of children\*immigrant” interaction term, we observe that for immigrants the income penalty of having children is larger in Denmark than in Germany (when all figures are expressed in euros). This might reflect that child family benefits in Germany are progressive in the number of children, but in Denmark they are proportional to the number of children (see Clasen (2005)).

In Table 4, comparing immigrants to natives by marital status, we do not observe any native-immigrant gaps that are persistent across deciles. Comparing by age groups, we observe some negative effect for immigrants in 2013 at the 10<sup>th</sup> percentile and at the median. Looking at those who are in the labor force, we do not observe a difference between natives and immigrants. Comparing immigrants to natives by education, as in the Danish data, we find that immigrants have lower income than natives with the same years of education in most regressions. This finding may trigger several explanations such as the importance of language and social skills in the labor market, or the non-transferability of skills (factors that we cannot control for in our regressions), both of which may work against immigrants.



In general, quantile regression results from Denmark tell us that in almost all parts of the countrywide income distributions, immigrants have lower income than natives who have the same observable characteristics. In Germany, most of the interaction terms are negative, but in some of these estimates the level of statistical significance is low due to the small number of immigrants in some cells. This adds to our earlier results in Tables 1 and 2 that the majority of immigrants are in the lower deciles of the countrywide income distribution and that the income distributions of immigrants and natives are quite different, which yields large relative income differences between the two groups (i.e., the poorest natives are 1.40-1.5 times richer than the poorest immigrants; the richest natives are almost 2 times richer than the richest immigrants). Another interesting result is that in both countries, the negative effect of children on EHDI is much smaller in magnitude among immigrants than natives and, comparing immigrants across countries, the income penalty of having children is larger in Denmark than in Germany (when all figures are expressed in euros).

**Table 3. Quantile regressions of equivalent household disposable income (EHDI) in 2013 (Denmark)**

Quantile:	10		25		50		75		90	
	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p
Immigrant	-394	0.29	3868	0.00	-7254	0.00	-21761	0.00	-37549	0.00
No. of children	-8375	0.00	-11885	0.00	-15218	0.00	-18797	0.00	-21918	0.00
No. of children*Immig	4215	0.00	4233	0.00	3873	0.00	3791	0.00	3699	0.00
Married	28337	0.00	24543	0.00	26024	0.00	32914	0.00	41674	0.00
Married*Immig	33	0.97	-132	0.90	-5671	0.00	-11854	0.00	-25823	0.00
Widowed	30880	0.00	28674	0.00	21072	0.00	21909	0.00	25333	0.00
Widowed*Immig	-15926	0.00	-17048	0.00	-8807	0.00	-1628	0.38	-11924	0.00
Divorced	10258	0.00	7119	0.00	4526	0.00	2523	0.00	1852	0.00
Divorced*Immig	11452	0.00	11417	0.00	10173	0.00	14080	0.00	5843	0.00
Male	-2071	0.00	1293	0.00	5923	0.00	12320	0.00	20325	0.00
Male*Immig	-5336	0.00	-6451	0.00	-6870	0.00	-8296	0.00	-13995	0.00
Age25_34	18468	0.00	27047	0.00	18388	0.00	4878	0.00	-6543	0.00
Age25_34*Immig	-15136	0.00	-14172	0.00	596	0.62	17846	0.00	39952	0.00
Age35_44	37436	0.00	45886	0.00	37827	0.00	30381	0.00	30335	0.00
Age35_44*Immig	-38300	0.00	-39559	0.00	-27621	0.00	-17599	0.00	-3460	0.10
Age45_54	41259	0.00	51872	0.00	47747	0.00	47056	0.00	60159	0.00
Age45_54*Immig	-37673	0.00	-45028	0.00	-40151	0.00	-41711	0.00	-46425	0.00
Age55_59	58202	0.00	69730	0.00	68087	0.00	69997	0.00	85563	0.00
Age55_59*Immig	-43877	0.00	-55786	0.00	-56160	0.00	-67841	0.00	-77119	0.00
Age60_64	55566	0.00	63771	0.00	60039	0.00	62663	0.00	82924	0.00
Age60_64*Immig	-40356	0.00	-51622	0.00	-57248	0.00	-77536	0.00	-99943	0.00
Age>65	36869	0.00	37052	0.00	21917	0.00	5352	0.00	8580	0.00
Age>65*Immig	-36796	0.00	-40160	0.00	-37671	0.00	-44624	0.00	-63767	0.00
InLaborForce	41492	0.00	55064	0.00	64724	0.00	71816	0.00	79591	0.00
InLaborForce*Immig	-18651	0.00	-24813	0.00	-23927	0.00	-25094	0.00	-28794	0.00
Vocational	11061	0.00	13337	0.00	14879	0.00	14268	0.00	9107	0.00
Vocational*Immig	-315	0.46	1157	0.13	4093	0.00	8949	0.00	18359	0.00
MediumLong	25621	0.00	37007	0.00	50680	0.00	63005	0.00	75036	0.00
MediumLong*Immig	-8468	0.00	-4884	0.01	-1973	0.11	-1076	0.58	-3237	0.00
LongTheoretical	67012	0.00	92513	0.00	129237	0.00	183282	0.00	276586	0.00
LongTheoretical*Immig	-31083	0.00	-30580	0.00	-17707	0.00	-29711	0.00	-60627	0.00
Intercept	59561	0.00	77531	0.00	117918	0.00	168182	0.00	223269	0.00
N	5590224		5590224		5590224		5590224		5590224	
Pseudo-R2	0.1395		0.1558		0.1767		0.1737		0.1545	

Notes: Includes individuals in ages 18-64. All explanatory variables are interacted with the immigrant dummy. The omitted categories are never married, ages 18-24, not in labor force, and less than vocational school education.

Source: Own calculations from Danish register data.

**Table 4. Quantile regressions of equivalent household disposable income (EHDI) in 2013 (Germany)**

Quantile:	10		25		50		75		90	
	Coef	P	Coef	P	Coef	p	Coef	p	Coef	p
Immigrant	2882	0.02	2662	0.41	2768	0.15	2779	0.26	6967	0.36
No. of children	-1238	0.00	-1993	0.00	-2702	0.00	-3429	0.00	-4135	0.00
No. of children*Immig	916	0.00	1240	0.00	1961	0.00	2785	0.00	2649	0.00
Married	2594	0.00	2207	0.00	1387	0.00	1611	0.00	1749	0.03
Married*Immig	-1315	0.03	46	0.98	-458	0.69	-2030	0.00	-4918	0.45
Separated	-478	0.70	-194	0.79	119	0.80	1458	0.29	3511	0.00
Separated*Immig	-1526	0.80	-3709	0.09	-5278	0.00	-9245	0.00	-10206	0.72
Widowed	2329	0.00	2384	0.00	2240	0.00	2354	0.00	3002	0.00
Widowed*Immig	-3782	0.05	-2046	0.68	-1126	0.78	-4556	0.04	-12029	0.30
Divorced	-167	0.58	-294	0.43	-329	0.51	439	0.44	1433	0.19
Divorced*Immig	726	0.77	2064	0.33	379	0.79	920	0.85	2125	0.85
Male	-42	0.76	86	0.54	400	0.02	663	0.01	940	0.04
Male*Immig	-1350	0.00	-570	0.45	-624	0.19	-157	0.80	-299	0.85
Age25_34	-180	0.58	172	0.67	527	0.19	42	0.93	-166	0.88
Age25_34*Immig	-2212	0.02	-1832	0.27	-1362	0.21	-812	0.43	2509	0.68
Age35_44	1802	0.00	1808	0.00	2213	0.00	2416	0.00	3513	0.00
Age35_44*Immig	-3522	0.00	-2922	0.13	-2912	0.01	-2170	0.05	3628	0.60
Age45_54	1380	0.00	1797	0.00	2761	0.00	3302	0.00	3769	0.00
Age45_54*Immig	-1730	0.08	-1959	0.35	-2190	0.05	-1588	0.14	2191	0.79
Age55_59	809	0.08	1379	0.01	3062	0.00	3667	0.00	4680	0.00
Age55_59*Immig	-134	0.92	-616	0.80	208	0.95	1786	0.18	2913	0.75
Age60_64	679	0.06	1444	0.01	2461	0.00	2269	0.00	3053	0.04
Age60_64*Immig	-609	0.76	-2428	0.47	-3371	0.00	-3190	0.11	698	0.94
Age>65	1756	0.00	1269	0.00	1553	0.00	1003	0.06	1539	0.19
Age>65*Immig	-1646	0.26	-2057	0.32	261	0.86	7064	0.13	8160	-
InLaborForce	2153	0.00	2773	0.00	3351	0.00	3637	0.00	4400	0.00
InLaborForce*Immig	424	0.31	202	0.78	-213	0.64	965	0.36	-1161	0.65
Years of Educ	761	0.00	1063	0.00	1487	0.00	1996	0.00	2746	0.00
Years of Educ*Immig	-172	0.04	-298	0.32	-362	0.02	-562	0.00	-1005	0.24
Intercept	-2201	0.00	-2687	0.00	-3840	0.00	-4658	0.00	-7954	0.00
N	20324		20324		20324		20324		20324	
Pseudo-R2	0.0844		0.111		0.1418		0.168		0.175	

Notes: Includes individuals in ages 18-64. All explanatory variables are interacted with the immigrant dummy. Sample weights are used. The omitted categories are never married, ages 18-24, and not in labor force. Because of the small sample size, the p-value for “Age>65\*Immig” cannot be estimated.

Source: Own calculations from the GSOEP data.

### *b. Decomposition Analyses*

In Table 5, we present the results of inequality decompositions in the two host countries as in equation (4), where aggregate inequality is written as the sum of the contributions from within-group and between-group inequality.

According to the GE(0) measure, which assigns more weight to the lower part of the distribution, inequality is lower in Denmark than it is in Germany, in both years and for both subgroups. Furthermore, inequality among Danish natives increased between 2007 and 2013 to reach the same level of inequality as among German natives by 2013. According to the GE(1) measure (which applies equal weight across the distribution), however, the two countries had the same level of inequality in 2007, but Denmark registered a larger increase in inequality over time compared to Germany.

By both measures, inequality rose in Denmark (from 0.121 to 0.146 (by 16.9%) according to the GE(0) measure and from 0.162 to 0.197 (by 18.0%) according to the GE(1) measure). For comparison, in Germany, a smaller increase in inequality is observed (4.3% increase in the GE(0) measure and 6.0% increase in the GE(1) measure). The estimates of within-group inequality show us that in Denmark, inequality among Turkish immigrants increased faster than inequality among natives (24.6% versus 17.0% by the GE(0) measure, or 31.7% versus 18.0% by the GE(1) measure). Such a finding is compatible with the decline over time in ratios of mean native-to-immigrant incomes across all deciles, as reported in Table 2 for Denmark. In Germany, in contrast, inequality among Turkish immigrants remained the same, whereas inequality among natives increased slightly.

Following equation (6), we decompose in Table 6 the change in aggregate inequality measured by the two indices, GE(0) and GE(1), taking 2007 as the first year and 2013 as the last year. The change in total inequality is decomposed into the contributions of each of the five terms in

equation (6): The change in the population share of natives ( $I_t^{nat} \Delta w_t^{nat}$ ), the change in inequality among natives ( $w_{t-1}^{nat} \Delta I_t^{nat}$ ), the change in the population share of immigrants ( $I_t^{immig} \Delta w_t^{immig}$ ), the change in inequality among immigrants ( $w_{t-1}^{immig} \Delta I_t^{immig}$ ), and the change in the between-group inequality ( $\Delta I_t^{inter}$ ). A term may contribute positively or negatively to the overall change.

A major difference that we observe between the two countries is in demographic change. In Germany, the share of Turkish immigrants increased from 3% to 3.3%, whereas in Denmark only from 1.1% to 1.2%. The larger increase in Germany translates into a larger contribution of the change in population share of immigrants in that country (5.87-3.79% versus 0.33-0.22% in Denmark). On the other side of the coin, we observe a larger drop in the contribution of the change in population share of natives in Germany (-7.87 to -5.69%) than in Denmark (-0.45 to -0.42%). Regardless, in both countries, the factor that has contributed the most to the change in overall inequality is the rise in inequality among natives (98.93 to 99.08% in Denmark and 96.10 to 96.53% in Germany). The contribution of the change in immigrant inequality is small in both countries, but higher in Denmark than in Germany. In Denmark, the change in immigrant inequality contributed by 1.21 to 1.01%, but in Germany it contributed only by -0.07 to 0.44%.

**Table 5. Decomposition of inequality; level and change, 2007 to 2013**

	Denmark				Germany			
	Natives	Immig.	Inter-group	All	Natives	Immig.	Inter-group	All
<b>GE(0)</b>								
<i>Inequality within group</i>								
2007	0.121	0.083		0.122	0.142	0.111		0.144
2013	0.146	0.110		0.147	0.148	0.111		0.150
Absolute change	0.025	0.027		0.025	0.006	0.000		0.006
Relative change %	17.02	24.56		16.94	4.32	-0.14		4.31
<i>Contribution to inequality</i>								
2007	0.120	0.001	0.001	0.122	0.137	0.003	0.003	0.144
2013	0.145	0.001	0.001	0.147	0.143	0.004	0.003	0.150
<i>Contribution to inequality %</i>								
2007	98.38	0.76	0.87	100	95.80	2.32	1.88	100
2013	98.39	0.89	0.72	100	95.47	2.47	2.06	100
<b>GE(1)</b>								
<i>Inequality within group</i>								
2007	0.162	0.069		0.162	0.160	0.112		0.162
2013	0.197	0.102		0.197	0.171	0.114		0.172
Absolute change	0.036	0.032		0.035	0.010	0.002		0.010
Relative change %	18.03	31.71		17.98	6.00	1.34		5.98
<i>Contribution to inequality</i>								
2007	0.160	0.001	0.001	0.162	0.156	0.003	0.003	0.162
2013	0.195	0.001	0.001	0.197	0.165	0.004	0.003	0.172
<i>Contribution to inequality %</i>								
2007	98.73	0.48	0.79	100	96.15	2.08	1.77	100
2013	98.71	0.61	0.67	100	95.83	2.21	1.96	100

Notes: Contributions to inequality are calculated by using the decomposition in equation (4). Data includes individuals in ages 18-64. Sample weights are used in the German data.

Source: Own calculations from the GSOEP and Danish register data.

**Table 6. Population share and inequality levels and changes, 2007 and 2013**

	Natives weight	Natives inequality	Immig weight	Immig inequality	Inter- group inequality	Total inequality
<b>Denmark</b>						
<b>GE(0)</b>						
2007	0.989	0.121	0.011	0.083	0.001	0.122
2013	0.988	0.146	0.012	0.110	0.001	0.147
Change	-0.001	0.025	0.001	0.027	0.000	0.025
% Change	-0.08	17.02	6.39	24.56	0.00	16.94
Decomposition	0.000	0.025	0.000	0.000	0.000	0.025
% Contribution	-0.45	98.93	0.33	1.21	0.00	100.00
<b>GE(1)</b>						
2007	0.989	0.162	0.011	0.069	0.001	0.162
2013	0.988	0.197	0.012	0.102	0.001	0.197
Change	-0.001	0.036	0.001	0.032	0.000	0.035
% Change	-0.08	18.03	6.39	31.71	0.00	17.98
Decomposition	0.000	0.035	0.000	0.000	0.000	0.035
% Contribution	-0.42	99.08	0.22	1.01	0.00	100.00
<b>Germany</b>						
<b>GE(0)</b>						
2007	0.970	0.142	0.030	0.111	0.003	0.144
2013	0.967	0.148	0.033	0.111	0.003	0.150
Change	-0.003	0.006	0.003	0.000	0.000	0.006
% Change	-0.35	4.32	10.25	-0.14	12.30	4.31
Decomposition	-0.001	0.006	0.000	0.000	0.000	0.006
% Contribution	-7.87	96.10	5.87	-0.07	5.88	100.00
<b>GE(1)</b>						
2007	0.970	0.160	0.030	0.112	0.002	0.162
2013	0.967	0.171	0.033	0.114	0.003	0.172
Change	-0.003	0.010	0.003	0.002	0.000	0.010
% Change	-0.35	6.00	10.25	1.34	12.36	5.98
Decomposition	-0.001	0.010	0.000	0.000	0.000	0.010
% Contribution	-5.69	96.53	3.79	0.44	3.21	100.00

Notes: Change in overall inequality over time is decomposed according to equation (6). Data includes individuals in ages 18-64. Sample weights are used in the German data.

Source: Own calculations from the GSOEP and Danish register data.

## **6. Discussion and conclusions**

We analyze trends in inequality for five population groups: immigrants from Turkey in two European countries, Turkish citizens in the home country and natives in the two host countries. All five groups have followed the nearly universal pattern of rising inequality in recent decades. Inequality measured by Gini coefficients and 90/10 ratios in the distribution of adjusted disposable incomes follow a pattern where inequality is higher in Germany than in Denmark, both for natives and for Turkish immigrants. In both host countries inequality is higher among natives than among immigrants. For both groups of immigrants inequality in the distribution of disposable incomes is much lower than that among natives back home in Turkey.

The differences between the distributions in Germany and Denmark and between the two host countries and Turkey reflects the impact from ambitious, but different, welfare states in Denmark and Germany, and the impact from differences in labor market integration and wage distributions between the two host countries. Overall, the descriptive part of the analyses points to a small, but positive, shift of the distribution among Turkish immigrants in Denmark towards the distribution among natives.

Further comparisons, distributing disposable income and earnings on deciles, overall for the whole population in the two countries, and separately by deciles for natives and immigrants show large differences across the two groups. This is illustrated by the concentration of immigrants in the lower deciles when we distribute by deciles for the whole population. Further, distributing on deciles separately for immigrants and natives, the mean income among natives is significantly higher than among immigrants over the whole distribution.

In the analyses, quantile regressions were estimated using an immigrant dummy and a comprehensive range of background variables interacted with an immigrant dummy variable. The general result from the interaction terms is that immigrants from Turkey have lower incomes than



natives with the same background factors. This can be interpreted as lower returns to education and to being married. Comparing immigrants across countries, we find that the income penalty of having children is larger in Denmark than in Germany, which can be linked to the difference in the rules followed in child family benefit programs where the German program is progressive in the number of children while the Danish program is proportional. A potential counteracting factor is the huge supply of highly subsidized child care in Denmark making labor market participation easier for women. We find the expected impact from this on female labor force participation among women from Turkey in Denmark but not sufficiently strong to neutralize the negative effect.

In our final set of analyses, we decompose inequality in two different ways. First, we decompose aggregate inequality into the contributions from within-group and between-group inequality. We find that inequality in Denmark during the great recession grew faster among immigrants from Turkey than among natives. In Germany, inequality among natives went up slightly while it remained the same among immigrants. Therefore, we do not observe a convergence of immigrant inequality to native inequality. Next, we decompose the change in inequality over time, between 2007 and 2013. The increasing inequality among natives is the most important factor in both countries to explain the rise in overall inequality. Finally, compared to natives back home in Turkey, immigrants in both host countries have significantly higher incomes, distributed much more equally.

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