Trends in ethnic inequality in the attainment of vocational degrees: a cohort study in Germany

Karin Schuller

Munich Center for the Economics of Aging (MEA), Max-Planck-Institute for Social Law and Social Policy, Munich, Germany

ABSTRACT
The present article analyzes the development of the ethnic gap—with respect to the attainment of vocational degrees—over the immigration cohorts 1960–2001 by examining how social integration indicators and general secondary school education may help to explain the trend. It was found that the gap between natives and migrants increased. Above all, the large increase in the gap over cohorts between Germans and Turks is alarming. In contrast to that the gap and its increase between the group of immigrants from Central-/Eastern-/Southeastern European countries as well as from other former recruitment countries and German natives is comparably small and can to a large extent be explained by a growing gap regarding the level of general secondary education among the newer immigration cohorts and native Germans due to educational expansion and to a growing impact of the secondary school education for the achievement of vocational education. The effect of social integration plays a smaller role compared to general secondary school education and it even decreases over immigration cohorts.

1. Introduction
With growing relevance for more and more European countries, questions about immigrant integration are generating increasing interest in empirical research. A key requirement for the integration of migrants into the society of a receiving country is their attainment of educational certificates (Esser 2001). Therefore, the findings of current studies are alarming: migrants more often do not have a vocational degree (38%) compared with their German peers who do not hold a vocational degree (11%) (Autorengruppe Bildungsberichterstattung 2014). Researchers have explored ethnic inequality in the attainment of vocational degrees to a much lower degree than inequality in the achievement of general secondary school education (for example, Alba, Handl, and Müller 1994; Diefenbach 2010). Since a vocational degree is an entry requirement for most jobs – especially in countries with standardized educational systems like Germany (Müller and Gangl 2003) – and hence is a crucial...
achievement in one’s life course, research into this educational step within an educational career is needed.

Existing research on ethnic inequality in the vocational education system usually focuses on the level of inequality at a specific point in time (Beicht and Granato 2011; Diehl, Friedrich, and Hall 2009; Helland and Støren 2006; Hunkler 2010; Laganà, Chevillard, and Gauthier 2014; Roth 2014; Urban 2012). These studies have shown that the inequality between migrants and natives with respect to their participation in tertiary or vocational education can be explained, in part, by the lower level of general secondary education achieved by migrants and their lack of a social network. However, the focus of the previous literature on the causes of ethnic inequality at a specific point in time is a weakness because at least two historical developments have made it necessary to compare the results of different time contexts if we want to fully understand the processes of this inequality and how we arrived at the current situation.

First, migration flows have changed over time with respect to the diversity of their ethnic groups and the causes of the migrations. Most research has focused on people from former recruitment countries (Beicht and Granato 2011; Diehl, Friedrich, and Hall 2009; Hunkler 2010), and only a few studies have described the integration processes for newer migration populations (Tjaden 2014). Since these current migration groups constitute an increasing share of the foreign population in Germany, it is important to analyse how the integration processes for these groups are different from those of migrants from former recruitment countries so to better anticipate what to expect in the future regarding the potential degree of ethnic inequality.

Second, the shift from a manufacturing to a service-sector economy and educational expansion have changed opportunity structures. Therefore, older studies on the ethnic inequality in the attainment of vocational degrees cannot be compared with newer studies on this topic. Existing studies that have analysed the development of ethnic inequality in the attainment of vocational degrees (Seibert 2005; Siegert 2009; Wagner 2005) are limited by a rather short time period and do not explain adequately why they have found certain trends operating.

This present study contributes to the current research in two main ways. First, it shows the trend – over a longer period of time (1996–2011) – in migrants’ (who belong to different immigration cohorts) attainment of vocational degrees. Thus, migrants from former recruitment countries are contrasted with migrants from recent migration flows. Second, the present study shows how differences in the level of general secondary education and social segregation are correlated with the level of ethnic inequality in the attainment of vocational degrees in the different cohorts. The comparison of the results between different immigration cohorts aims at disentangling the possible causes of the trend in ethnic inequality, and increases the understanding of the impact that differences in the individual characteristics have on changing the economic structure of Europe.

2. The German vocational education system in a nutshell

After general education in secondary schools, two paths are available for obtaining a vocational degree:

- The first is the tertiary sector (International Standard Classification of Education [ISCED] Levels 5–8), which is comprised of the different types of higher education institutions.
• The second is the vocational education and training system at the upper-secondary and post-secondary non-tertiary level Levels 3 and 4) (UNESCO Institute for Statistics 2012). Within the vocational education and training system, vocational degrees can be obtained through the following:
  ◦ apprenticeships (combining vocational training in a company and a vocational school), and
  ◦ full-time vocational schools.

While the federal states are responsible for vocational schools (Secretary General of the Standing Conference of the Ministers of Education and Cultural Affairs 2013), companies are responsible for the practical training of apprenticeships. Applicants for an apprenticeship apply directly to a company, which is comparable with the application process for a job.

The prerequisites for secondary school leaving certificates for these different paths vary. For the tertiary sector, a higher secondary school degree (Abitur) is required. Full-time vocational schools mostly require intermediate skills (Mittlere Reife). The formal requirements for apprenticeships are the lowest. In theory, people without a secondary school leaving degree or those with a low secondary school leaving certificate (Hauptschulabschluss) can apply for an apprenticeship. However, when apprenticeships are scarce, the trend is for companies to hire people with higher level secondary school leaving degrees because the choice of applicants is greater.

As a reaction to the decline of apprenticeship positions over the last years, a so-called ‘transition system’ has evolved. This system is comprised of different publicly financed preparatory or substitute training measures for graduates of general secondary schools who did not manage to enter the vocational educational system. It consists of an educational programme lasting one year with an aim to provide the qualifications needed to enter the vocational educational system or make up for a general education degree. Furthermore, this transition system is an alternative to fulfil compulsory schooling that ends when a student reaches legal age (Vossenkuhl 2010). Programmes in the transition system do not provide their graduates with a full qualifying vocational degree. Since the year 2000, about 40% of new entrants into the vocational educational system enter the transition system, almost as many as the young people entering apprenticeships. Although, in general, these programmes have been created for disadvantaged adolescents, young people who have a foreign nationality are over-represented (Baethge 2008).

3. Ethnic inequality in the attainment of vocational degrees in a changing historical context

The attainment of vocational degrees is determined by individual and structural resources. With respect to these structural resources, group size, composition of the migrant population, and structure of the vocational education system play crucial roles. The results of Kogan and Kalter’s (2006) empirical analysis suggest that the chances for migrant groups to be successfully integrated into the labour market decreases as their group size increases. This factor changes the ‘expected utility’ of integrating into the host society, since the alternative of staying in ethnic niches becomes more attractive with a growing homogeneous migrant group. Larger ethnic niches increase the possibilities of becoming employed in the ethnic labour market segment without the need to obtain a vocational degree.
The larger the size of the immigrant group, the greater the possibility of a perceived threat to the native population (Esser 2008). This perceived threat plays a role in gaining access to apprenticeships, since the application process largely depends on the preferences of employers. Regarding attitudes held towards migrants, we know from current research that a preference seems to exist for culturally similar groups (Czymara and Schmidt-Catran 2016). Negative public attention is most often directed towards Turkish migrants – one of the largest migrant groups in Germany – and their alleged failure to integrate (Diehl and Liebau 2015). Thus, it is not surprising that Turks apparently more often feel discriminated against than immigrants from other countries (Hans 2010). The negative attitudes held by ethnic Germans against certain ethnic minority groups also may reduce these migrants’ interests in integrating into German society (Schaeffer and Bukenya 2014). Thus, it may seem easier for ethnic groups to stay in an ethnic labour market niche rather than attain a vocational degree to participate in the labour market of a receiving country (Portes and Zhou 1993).

With respect to the impact of the vocational education system, the current literature suggests that the composition of this system may influence the degree of ethnic inequality. When the number of apprenticeships is low or the number of full-time vocational schools is high, ethnic inequality seems to be higher (for example, Seibert, Hupka, and Imdorf 2009).

Regarding individual resources, the existing research on ethnic inequality in the vocational educational system found that inequality between migrants and natives in the vocational education sector is due mainly to the lower levels of general secondary education achieved by migrants (Beicht and Granato 2011; Diehl, Friedrich, and Hall 2009; Hunkler 2010) or to a lack of a social network (Roth 2014). However, some historical developments can determine the availability of structural resources, which in turn may impact the importance of individual resources with respect to the attainment of vocational degrees. For example, group size, the composition of immigrant groups, the attitudes of a native population towards migration, and opportunity structures within the vocational education system itself evolve over time and help to produce varying conditions for different immigration cohorts.

With respect to the composition of a migrant group, immigration to Germany over time has increased in diversity, especially since the 1990s (Heckmann 2015). After the Second World War, immigration to Germany was dominated by refugees from former German territories in the east. By 1961, a total of 13.3 million refugees had immigrated to Germany. With the recruitment of workers beginning in the late 1950s from Greece, Italy, the former Yugoslavia, Portugal, Spain, Turkey, Morocco, and Tunisia to fill low-skilled jobs, the new migration flow into Germany reached its maximum in 1973 with 2.6 million foreigners living in the country. In the 1970s and 1980s, mostly the families of recruited guest workers came to Germany. Their descendants and people from the former recruitment countries still make up a large share of the population (about 30%) with a migrant background living in Germany today (Heckmann 2015).

The 1990s marked the beginning of another major wave of immigration to Germany composed of ethnic German repatriates from the former Soviet Union, Poland, and Romania. Moreover, asylum seekers, war refugees, quota refugees, Jewish immigrants from the former Soviet Union, immigrants from other EU member states – since the expansion of the European Union in 2004, the financial crisis of 2008, and Eastern European expansion – and temporary labour migrants are growing groups of migrants to Germany (BAMF 2013). In 2012, immigration from Europe totalled 77.5% of all immigrants coming to Germany.
Poland (17%), Romania (11%), and Bulgaria (5%) were the main countries of origin (BAMF 2013, 17–18).

In contrast to the immigrants from former recruitment countries who often stayed permanently in Germany after their immigration, new migration flows – especially since the 1990s – have been characterized increasingly by a multiple-migration experience at the individual level, which includes emigration or remigration after some years. In 2012, about one million people immigrated to Germany and about 700,000 emigrated in the same year (BAMF 2013, 19–20). This fact is important when analysing the integration processes of immigrants since the 1990s because remigration plans decrease the attractiveness of attaining a vocational degree in a receiving country.

Policy has reflected an increasing openness to immigration through its efforts to establish language courses, an increasing acceptance of foreign educational certificates, and, above all, the 2000 reform of the citizenship law, which makes naturalization easier (Heckmann 2015). However, the general acceptance of the German people of some minority groups, like Turkish migrants and their children, seems to have decreased when compared with other ethnic minorities (Blohm and Wasmer 2008).

Another important development was changes in the prevalent economic sector. As deindustrialization began in the late twentieth century, employment was restructured by the growing service sector and globalized information technologies. As a consequence, the number of jobs for unskilled or lower skilled workers has diminished, whereas the demand for highly qualified employees has increased. These developments in the labour market have also had an impact on the organization of the vocational education system (Miller Idriss 2002). Traditionally, the industrial sector has offered the largest share of apprenticeships in the dual system through taking the majority of graduates from lower secondary school. With the decline of this sector, this group of graduates has a diminished chance of securing a place in the vocational education system (Kupfer 2010). Over the decades, more and more full-time vocational schools have evolved, both in response to the changing needs of the economy and in an effort to create additional opportunities for young people who were not successful in obtaining an apprenticeship. However, the educational requirements to attend a full-time vocational school are higher than those for an apprenticeship (Baethge, Solga, and Wieck 2007). In addition, Germany, like many other countries, has experienced an educational expansion with an increasing number of people holding higher secondary school leaving certificates. These developments have led to a rise in the qualification level needed to obtain an apprenticeship: first, because employers can choose from this better educated pool and increasingly prefer applicants with higher secondary school degrees even if this skill level is not required for the job; and second, because skill levels for some jobs may increase over time, which suggests that young people with lower secondary school leaving degrees or without school leaving certificates will be challenged by their better educated competition in the workforce (Solga 2005).

Crul et al. (2012) have shown that if a native group has difficulties in certain educational phases, a ‘multiplier effect’ exists for immigrants – they will have more difficulties than natives during the same phase. In addition, incoming migrants may have benefitted less from an educational expansion in their home countries than native Germans did in Germany, which may increase the gap between incoming migrants and native Germans with respect to their secondary school leaving degrees (Riphan 2005). Thus, it can be assumed that migrants will suffer more from certain developments than natives.
The existing research that has analysed the development of ethnic inequality is not clear about how these developments regarding the composition of immigrants impact on integration processes in Germany. Empirical studies have shown that the overall chances of foreigners to obtain a vocational degree increase within the cohorts from 1960 to 1971 (Seibert 2005). However, this result seems to vary with respect to different migrant groups. For example, Siegert’s (2009) study that examined the period 2000–2006 found that participation in vocational education and training decreased, especially for young people with a Serbian, Montenegrin, or Turkish nationality; however, in contrast to these results, Siegert’s study also found that young immigrants from Russia had a higher rate of participation in vocational education. When considering the gap between migrants and natives with respect to the attainment of vocational degrees, it is a different story. For example, Wagner (2005) found that young people from migrant families who did not obtain a vocational degree increased in the cohorts born between 1959 and 1975. Overall, although the participation numbers of non-nationals in vocational education seems to be increasing, the gap that separates their numbers from the numbers of native Germans who participate in vocational education also seems to be growing. However, the current literature has analysed rather short time periods, and also does not attempt to explain these trends.

All of the developments described may have had a rather negative impact on the non-nationals/native gap in the attainment of vocational degrees. The increasing number of migrants from former recruitment countries to Germany may have a lower chance of integrating into German society because their ethnic niches have become more attractive. This phenomenon may be especially true for ethnic minority groups – for example, those from Turkey – who are confronted with negative attitudes from the receiving society. However, for newer migration flows, this negative effect may not yet have occurred.

The structural changes regarding the shift to the service sector have undermined many job opportunities and vocational education positions that were typically occupied by migrants from former recruitment countries. Also, the educational expansion that increased the ability of employers to choose from many more applicants with higher secondary school leaving certificates, plus a growing need for more sophisticated skills, have amplified the competition for jobs and thus negatively impacted migrants who, on average, have a lower secondary school education than natives, and who have profited less from an educational expansion than German natives. This state of affairs leads to the following hypothesis:

The gap between non-nationals and Germans with respect to the attainment of vocational degrees is larger for newer immigration cohorts than for earlier immigration cohorts (H1a). However, this trend may not be as severe for newer migration flow groups (H1b).

Since educational expansion and structural changes have increased the educational requirements for participating in vocational education, achieving a higher school leaving certificate is increasing in importance for the transition into the vocational education system. Also, since a migrants/native gap exists in the achievement of higher school leaving certificates, which could have increased due to educational expansion in Germany, the following can be hypothesized:

Having a low general secondary education increases in importance with respect to explaining the ethnic gap in the attainment of vocational degrees for newer immigration cohorts in comparison to earlier immigration cohorts (H2).
With the follow-up migration from former recruitment countries to Germany, the demand for and also the supply of ethnic resources and services have increased (Esser 2008). For example, migrants now can obtain an apprenticeship at an organization whose owners also have a migrant background, and thus these new migrants may be less dependent on a German social network. This development should be especially true for migrants from former recruitment countries because their migration cohort started much earlier. For newer migration flow groups, the German social network should still have an important function, since the migration history of these new groups is much shorter, and thus they are not able to depend on ethnic niches for job training and employment opportunities. Therefore, I hypothesize the following:

As the support from ethnic groups grows, the impact of contact with native Germans on the attainment of vocational degrees decreases for newer immigration cohorts in comparison with earlier immigration cohorts (H3a). This trend should be stronger for migration groups from former recruitment countries (H3b).

The next section describes the data and methods used to test these hypotheses.

4. Data and methods

The analyses of the present article are based on pooled German microcensus data from 1996 to 2011 (German Labour Force Survey). The German microcensus is the official representative survey of the population and the labour market by which 1% of all households in Germany are surveyed annually. The size of the sample and the high response rate due to the fact that participation in the microcensus is compulsory – also for individuals with a foreign nationality – are two of the advantages of these data, which makes it possible to separate the foreign population into generations and nationality groups. Scientific Use Files available from 1973 make it possible to analyse patterns of ethnic inequality using a trend design. Nevertheless, this trend analysis begins with the survey year of 1996, since from this year onwards vocational degrees that are fully qualifying can be distinguished from not fully qualifying degrees (e.g. semi-skilled training) in a more precise way.

The analyses of the present study compare the attainment of vocational degrees by immigrants of the first generation who immigrated to Germany before the age of 15 with the attainment of vocational degrees by natives (the age range of both groups is 28–35). Students in general secondary school or vocational education programmes are not included in the sample. Ethnic inequality is compared for different immigration cohorts – migrants who moved to Germany between 1960 and 1975, between 1976 and 1989, or between 1990 and 2001. These immigration cohorts are then compared with Germans. Since Germans did

| Table 1. Sample composition. |
|--------------------------------|
| Nationality/Immigration cohort | 1960–1975 | 1976–1989 | 1990–1901 | Total |
| Turkey                         | 2089      | 5048      | 556       | 7693  |
| Former recruitment countries   | 1511      | 1775      | 698       | 3984  |
| Central/Eastern/Southeastern European countries | 83 | 410 | 129 | 622 |
| Non-European countries         | 68        | 558       | 243       | 869   |

| Nationality/Birth cohort       | 1960–1967 | 1968–1975 | 1977–1983 | Total |
| German                        | 238,329   | 315,145   | 131,229   | 684,703 |

Note: Students in general secondary school or vocational education programmes are not included in the sample. Source: Author’s own calculations based on Microcensus 1996–2011.
not immigrate and therefore cannot be differentiated by immigration cohorts, this group is differentiated by birth cohorts – Germans who were born between 1960 and 1967, between 1968 and 1975, or between 1976 and 1983 (for an overview of the sample by nationality and immigration/birth cohort, see Table 1). The subdivision of the birth cohorts for Germans was created according to the mean birth date of the immigration cohorts so to enable a comparison. Thus, the birth date groups of Germans are calculated according to the mean birth date of the immigration cohorts of migrants. This procedure made the immigration groups of migrants and birth cohort groups of Germans comparable in terms of age. All of the following tables show the date of immigration for migrants and the date of birth for Germans.

To control for the differences in demographic characteristics between the cohorts, binary logistic regressions were calculated. The outcome variable describes the existence or non-existence of a vocational degree. All models control for nationality groups, age, federal state, sex, and year of the survey. Regarding the second research question that asks about the impact of the differences in the endowment of human and social capital, two additional models were calculated, including the general school leaving degree and the immigrant-specific assimilation indicators, such as Germans in the household or the percentage of non-nationals living in the neighbourhood.

The groups of immigrants and natives were distinguished by nationality. Individuals who only held a German citizenship were defined as ‘German nationals’. The ‘immigrant population’ was defined as having a foreign nationality. Because the information about the naturalization of migrants was only available since the survey year of 2005, naturalized migrants as well as German repatriates could not be identified in the data.

The definition of ‘vocational degree’ includes apprenticeships, full-time vocational schools, and university/university of applied science degrees.

Since the microcensus is a household survey, information about other household members was available. This information was used to create the variable ‘only non-national in the household’, which was coded by three categories. The first includes foreigners who live with Germans in one household. The second category is defined by individuals who have a foreign nationality and who live with at least one other non-national person in one household. The third category distinguishes single households from the other two categories.

To indicate the ‘percentage of non-nationals living in the neighbourhood’, the information about the primary sampling unit the individual belonged to was used. Primary sampling units are units from which the sample was drawn for the microcensus. From the 1990s forwards, the primary sampling units have included, on average, nine dwellings (six dwellings in the Scientific Use Files). The indicator was calculated by counting the number of foreigners in the neighbourhood and then setting this number in a ratio with the total number of people living in the neighbourhood. The household in which an individual was living was excluded.

5. Results

This section first describes the distribution of the characteristics of nationality and the cohort groups. Then, it describes the development of ethnic inequality over cohorts and the impact of education and social integration on the attainment of vocational degrees.
5.1. Descriptive results

An overview of the distribution of general school education and social integration indicators describes some important differences between nationality and cohort groups that is important to the interpretation of the results (Table 2). On average, native Germans reached higher secondary school leaving certificates than the immigrant groups, and more often lived in neighbourhoods with, on average, a lower percentage of non-nationals. Within the non-nationals group, individuals with a Turkish nationality have, on average, the lowest general

Table 2. Explanatory variables by nationality and cohort.

| Explanatory variable (immigration cohort for migrants/birth cohort for Germans) | Germany | Turkey | Former recruitment countries | Central/Eastern/Southeastern European countries | Non-European countries |
|---|---|---|---|---|---|
| Vocational degree available | | | | | |
| 1960–1975/1960–1967 | Mean 0.89 | 0.44 | 0.62 | 0.65 | 0.61 |
| SD 0.32 | 0.50 | 0.49 | 0.48 | 0.49 |
| 1976–1989/1968–1975 | Mean 0.88 | 0.35 | 0.59 | 0.63 | 0.38 |
| SD 0.32 | 0.48 | 0.49 | 0.49 | 0.49 |
| 1990–1901/1976–1983 | Mean 0.88 | 0.22 | 0.53 | 0.54 | 0.32 |
| SD 0.33 | 0.42 | 0.50 | 0.50 | 0.47 |
| General school leaving degree | | | | | |
| Low | | | | | |
| 1960–1975/1960–1967 | Mean 0.32 | 0.79 | 0.65 | 0.60 | 0.54 |
| SD 0.47 | 0.41 | 0.48 | 0.49 | 0.50 |
| 1976–1989/1968–1975 | Mean 0.27 | 0.86 | 0.69 | 0.53 | 0.69 |
| SD 0.45 | 0.34 | 0.46 | 0.50 | 0.46 |
| 1990–1901/1976–1983 | Mean 0.24 | 0.87 | 0.80 | 0.64 | 0.67 |
| SD 0.43 | 0.33 | 0.40 | 0.48 | 0.47 |
| Medium | | | | | |
| 1960–1975/1960–1967 | Mean 0.42 | 0.16 | 0.25 | 0.28 | 0.23 |
| SD 0.49 | 0.37 | 0.43 | 0.45 | 0.42 |
| 1976–1989/1968–1975 | Mean 0.42 | 0.12 | 0.23 | 0.26 | 0.18 |
| SD 0.49 | 0.32 | 0.42 | 0.44 | 0.38 |
| 1990–1901/1976–1983 | Mean 0.38 | 0.14 | 0.17 | 0.24 | 0.28 |
| SD 0.43 | 0.35 | 0.38 | 0.43 | 0.45 |
| High | | | | | |
| 1960–1975/1960–1967 | Mean 0.27 | 0.07 | 0.12 | 0.14 | 0.28 |
| SD 0.44 | 0.25 | 0.32 | 0.35 | 0.45 |
| 1976–1989/1968–1975 | Mean 0.32 | 0.04 | 0.12 | 0.26 | 0.21 |
| SD 0.47 | 0.20 | 0.32 | 0.44 | 0.41 |
| 1990–1901/1976–1983 | Mean 0.39 | 0.04 | 0.07 | 0.18 | 0.16 |
| SD 0.49 | 0.20 | 0.26 | 0.39 | 0.37 |
| Percentage of non-nationals in neighbourhood | | | | | |
| 1960–1975/1960–1967 | Mean 5.55 | 29.66 | 21.62 | 21.40 | 16.22 |
| SD 14.14 | 31.94 | 28.76 | 29.83 | 19.87 |
| 1976–1989/1968–1975 | Mean 6.39 | 32.05 | 24.01 | 19.55 | 24.08 |
| SD 14.97 | 31.63 | 28.64 | 25.41 | 28.98 |
| 1990–1901/1976–1983 | Mean 7.84 | 29.55 | 23.09 | 15.62 | 21.82 |
| SD 16.22 | 28.84 | 27.07 | 23.11 | 26.17 |
| Only non-nationals in household | | | | | |
| 1960–1975/1960–1967 | Mean 0.00 | 0.71 | 0.52 | 0.49 | 0.49 |
| SD 0.00 | 0.45 | 0.50 | 0.50 | 0.50 |
| 1976–1989/1968–1975 | Mean 0.00 | 0.72 | 0.54 | 0.39 | 0.41 |
| SD 0.00 | 0.45 | 0.50 | 0.49 | 0.49 |
| 1990–1901/1976–1983 | Mean 0.00 | 0.44 | 0.41 | 0.25 | 0.37 |
| SD 0.00 | 0.49 | 0.49 | 0.43 | 0.48 |

Note: Students in general secondary school or vocational education programmes are not included in the sample.
Source: Author’s own calculations based on Microcensus 1996–2011.
school education, whereas non-nationals from Central/Eastern/Southeastern Europe and other non-European countries have the highest general school education. However, differences exist between the immigration cohorts – the non-national newer immigration cohorts have a slightly lower or about the same general school education on average than the older non-national immigration cohorts. This finding has to be interpreted with caution. Migrants and non-migrants are distinguished by nationality. Since naturalization laws have changed over time, and naturalization has become more common, migrants who did not naturalize may be a negative selection of the migrant group (see Gresch and Kristen 2011). However, this finding still shows that the gap between Germans and non-nationals grew over immigration cohorts, since Germans profited more from educational expansion than non-nationals.

Regarding the composition of the neighbourhood and of the household, again non-nationals from Turkey are more segregated from natives, and non-nationals from Central/Eastern/Southeastern European countries are less segregated from natives than other nationality groups.

Over cohorts, the social segregation of non-nationals seems to decline. Non-national younger cohorts less often live only with non-nationals in a household or in neighbourhoods with a high percentage of foreigners, with one exception – no clear change exists in the composition of neighbourhoods for the first generation of non-national immigration cohorts from former recruitment countries.

The multivariate analysis in the following section analyses the effects of these differences and developments on the level of ethnic inequality with respect to the attainment of vocational degrees.

5.2. The development of ethnic inequality over cohorts

The results presented in Table 3 show that the opportunities for non-nationals to obtain a vocational degree are lower than those for nationals for all immigration cohorts (Model 1). However, differences exist between various nationalities. For example, non-nationals from Turkey or other non-European countries are amongst those groups with the largest differences to natives with respect to the attainment of vocational degrees. The gap with natives is comparably smaller for individuals from Central/Eastern/Southeastern European countries and from other former recruitment countries. Those individuals with a Turkish nationality who migrated to Germany between 1960 and 1975 have a 42 percentage point lower chance of obtaining a vocational degree compared with Germans, whereas the gap for individuals with a nationality from a Central/Eastern/Southeastern European country who migrated to Germany between 1960 and 1975 is only 22 percentage points lower (Table 3, Model 1).

When comparing the attainment of vocational degrees over the diverse range of immigration cohorts, the gap between first-generation non-nationals and natives widens, which supports H1a. Non-nationals from Turkey represent the largest shift, since the gap between them and natives – with respect to the attainment of vocational degrees – grows from 42 percentage points for those who immigrated to Germany between 1960 and 1975 to 63 percentage points for those who immigrated between 1990 and 2001. The gap between the group of non-nationals from non-European countries and natives also shows a large increase with respect to the attainment of vocational degrees, but since this group is very diverse, these data will not be interpreted further. Although the gap between natives and non-nationals
Table 3. Determinants of attainment of vocational degrees for first generation by immigration cohorts and Germans by birth cohorts, average marginal effects.

| Immigration cohort | 1960–1975 | 1976–1989 | 1990–192001 |
|--------------------|------------|------------|-------------|
|                     | Model 1    | Model 2    | Model 3     |
| Reference: German (by birth cohorts 1960–1967, 1968–1975, 1976–1983) |           |            |             |
| Turkey              | −0.417***  | −0.253***  | −0.179***   |
|                     | (0.01)     | (0.01)     | (0.01)      |
| Former recruitment countries | −0.235***  | −0.141***  | −0.096***   |
|                     | (0.01)     | (0.01)     | (0.01)      |
| Central/Eastern/Southeastern European countries | −0.219***  | −0.128*    | −0.084*     |
|                     | (0.05)     | (0.04)     | (0.02)      |
| Non-European countries | −0.271***  | −0.199**   | −0.157**    |
|                     | (0.06)     | (0.05)     | (0.02)      |
| Reference: Mittlere Reife |           |            |             |
| ≤Lower secondary school | −0.170***  | −0.169***  | −0.208***   |
|                     | (0.00)     | (0.00)     | (0.00)      |
| Higher secondary school | 0.012***   | 0.012***   | 0.020***    |
|                     | (0.00)     | (0.00)     | (0.00)      |
| Only non-nationals in household | −0.028**   | −0.023***  | −0.014      |
|                     | (0.01)     | (0.01)     | (0.01)      |
| Single household    | −0.013***  | −0.008**   | −0.003      |
|                     | (0.00)     | (0.00)     | (0.00)      |
| Percentage of non-nationals in neighbourhood | −0.001***  | −0.001***  | −0.001***   |
|                     | (0.00)     | (0.00)     | (0.00)      |
| Age                 | Yes        | Yes        | Yes         |
| Sex                 | Yes        | Yes        | Yes         |
| Survey year fixed effects | Yes       | Yes        | Yes         |
| Federal state fixed effects | Yes     | Yes        | Yes         |
| Observations        | 651,279    | 651,279    | 651,279     |
| Akaike information criterion (AIC) | 154,271.5  | 141,397.3  | 140,744.2   |
| Pseudo $R^2$        | 0.043      | 0.123      | 0.127       |

Notes: Binary logistic regression, outcome: to have a vocational degree or not; statistical significance: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; Standard error in parentheses; students in general secondary school or vocational education programmes are not included in the sample. Source: Author’s own calculations based on Microcensus 1996–2011.
from other former recruitment countries and from Central/Eastern/Southeastern European countries also increases over the diverse range of immigration cohorts, this increase is just 10 or 11 percentage points, only half as large as the increase in the gap between Turks and natives. This result partly supports hypothesis H1b, which predicted that trends may be different for newer migration flows. Indeed, the negative trend is less severe for newer migration flows and for migrants from former recruitment countries. Only the Turkish group stands out with its larger gap increase. The next section analyses the development of ethnic inequality with respect to the attainment of vocational degrees while holding the general secondary school leaving degree and social integration indicators constant.

5.3. The contribution of general secondary school education

As suggested by previous research, general secondary school education plays a crucial role in the attainment of vocational degrees. Holding a lower secondary school leaving certificate (Hauptschulabschluss) or not having a school leaving degree has a strong negative effect on the probability of obtaining a vocational degree – this probability is reduced by 17 percentage points both for the first-generation non-national cohort group who immigrated to Germany between 1960 and 1975 and for the comparison group of native Germans (Table 3, Model 2). Moreover, it seems that the negative effect of a low general secondary school education increases over cohorts. For the immigration cohort 1976–1989, a low or absent general school leaving certificate reduced their chances of obtaining a vocational degree by 21 percentage points, and for the youngest cohort (1990–2001) the reduction was 25 percentage points.

When holding constant the general school leaving degree, the negative effect of having a foreign nationality persists, although it declines to a large extent. After controlling for secondary school education, the largest decrease in the gap regarding the attainment of vocational degrees was found to be for first-generation Turks. Additionally, secondary school education is even more important for explaining the ethnic gap in the attainment of vocational education in later cohorts than in earlier cohorts, which supports hypothesis H2. For example, for Turks, controlling for secondary school education reduces the ethnic gap from 42 to 25 percentage points (a decrease of 17 percentage points) in the 1960–1975 immigration cohort (compare Table 3, Model 1 and Model 2). This reduction is 27 percentage points for the youngest cohort (a reduction from 63 to 36 percentage points).

Interestingly, the increase in the gap between non-nationals and natives over immigration cohorts is a lot smaller after general school education is held constant, and for non-nationals from former recruitment countries, this gap loses its statistical significance. This finding has two possible explanations. First, as the descriptive results showed, the gap between natives and immigrants with respect to the level of general school education grows over immigration cohorts, since natives seem to have profited more from educational expansion than immigrants. Second, over cohorts, obtaining a higher level of general school education became more important for securing a place in the vocational education system.

5.4. The contribution of social integration

In the next step of the analysis, indicators of social integration were added to the model (Table 3, Model 3). Individuals with a foreign nationality who immigrated to Germany
during the years 1960–1975, and who do not live in a household with a person who has German citizenship, have a three percentage point lower chance of obtaining a vocational degree. The effect of not living in a household with a German citizen is rather small compared with the effect of general secondary school education, which may be due to the fact that this indicator is only available for a small group of immigrants in the sample. In the last immigration cohort, this small effect decreases to a difference of one percentage point, which supports the hypothesis that with the increasing support of an ethnic social network, contact with German natives decreases in importance with respect to the attainment of vocational degrees (H3a). However, the results do not support H3b, which suggests that the trend should be different for different nationality groups, since the impact of social network on the ethnic gap slightly decreases for all nationality groups (compare Table 3, Model 2 and Model 3). Also, social integration explains the gap between natives and migrants, with respect to the attainment of vocational degrees, to a smaller extent for newly arrived cohorts than for cohorts of migrants who have resided in Germany for some time. However, the effect of not living with a German in one household is small and decreases over cohorts, and so these results should not be over-interpreted.

 Regarding the neighbourhood in which non-nationals are living, the following can be assumed. An increase of 1% of non-nationals living in a neighbourhood decreases their chances of obtaining a vocational degree by 0.1 percentage points. However, these results do not provide empirical evidence that the negative impact of living in a neighbourhood with a high percentage of foreigners decreases over cohorts.

6. Conclusion and discussion

The present study analysed the development of the ethnic gap – with respect to the attainment of vocational degrees – between non-nationals of the first generation who migrated to Germany (between 1960 and 1975, between 1976 and 1989, and between 1990 and 2001) and native Germans (born between 1960 and 1967, between 1968 and 1975, and between 1976 and 1983) by examining how social integration indicators and general secondary school education may help to explain this gap. Thus, this study is a contribution to the literature on ethnic inequality in vocational and tertiary education, which is very rare at present. The special merit of this study is its presentation of empirical developments and examination of the current situation with a special focus on historical and migration-specific changes. Additionally, this study analyses the integration processes of newer migration groups.

The main findings can be summarized as follows. The results of this study are comparable with the previous research that found an ethnic gap in the attainment of vocational degrees, which is more or less pronounced for different nationalities. The gap between the group of Central/Eastern/Southeastern European countries and German natives with respect to the attainment of vocational degrees is smaller compared with the gap confronting migrants from former recruitment countries, and importantly this gap is largest for Turks.

With respect to the development of this gap over immigration cohorts, the present study found, as expected, that the gap between natives and migrants grew for the first-generation migrants who migrated to Germany between 1990 and 2001, compared with the group who came between 1960 and 1975. Theoretical considerations about how educational expansion and the changing economy may impact ethnic inequality, as well as earlier results (for example, from Wagner 2005), suggested this development. Above all, the large increase
in this gap between Germans and Turks over cohorts is alarming. Even when holding the level of general secondary school education constant, the negative trend for first-generation Turks is still large. Further research should examine the potential causes for this alarming development.

This negative trend is less severe for newer migration flows, and also for migrants from other former recruitment countries, which, to a large extent, can be explained by the lower levels of secondary school education of these nationality groups when compared with native Germans. Reasons for the increase in the gap between non-nationals from Central/Eastern/Southeastern European countries and Germans, even after holding the general school leaving certificate constant, could be that the group of migrants from Central/Eastern/Southeastern European countries is very diverse and constantly changing in composition. As a whole, this group is characterized – compared with immigrants from former recruitment countries – by more emigration and remigration, which in turn leads to an interruption of integration processes and the establishment of ethnic capital. Certainly, more research is needed on this group. Moreover, all of the developments of the findings of the present study may be slightly overestimated due to the fact that migrants can only be distinguished by nationality and not by migrant background.

Future research should try to learn more about the impact of the trends described in this study with respect to life chances and labour market integration, especially for the group of Turkish immigrants – one of the largest immigrant groups in Germany and also one of the most disadvantaged. Unskilled workers have the highest unemployment rate due to the fact that the number of jobs for them has declined and the current competition for jobs is high. Thus, not having a vocational degree is a problem for individuals and society, a problem that will continue to grow in an increasingly digitalized and high-skilled working environment. In addition, a need exists to examine whether the group of people without a vocational degree had an opportunity to participate in vocational education, never wanted to achieve a vocational education, or interrupted their vocational education programme and why.

As previous research has also shown, holding a low secondary school leaving degree explains a great deal of the ethnic gap in the attainment of vocational degrees. Thus, in addition to previous research, the present study showed that the negative impact of a school leaving certificate has been increasing over cohorts, which supports the hypothesis of this study. Consequently, a great number of negative trends can be explained by the increasing weight of the level of secondary school education and by the growing gap between natives and migrants with respect to the level of secondary school education due to educational expansion. The results of this study add to the discussion about how the changing economy challenges the vocational education system and how these developments affect stratification (for example, Kupfer 2010). The results of the present study suggest that non-nationals suffer even more than Germans from these developments. Why they suffer more is another question that could be analysed in future research: is this development due to an actual rise in required job skills that migrants cannot fulfil or is it due to employers choosing increasingly to hire individuals with the highest qualification levels available because this supply has increased?

Educational expansion and challenges to the vocational education system due to a changing economy have occurred in other European countries as well. Thus, the present study results for Germany are an example of the impact of these developments on ethnic inequality and can be useful for other countries with similar vocational education systems, such as
Switzerland, Austria, and Denmark. However, it would be interesting to see whether the same trend of ethnic inequality with respect to the attainment of vocational degrees can be found in other countries as well. The overall results of this study show that government efforts to foster educational success for migrant students – such as the development of a ‘transition system’ to smooth the transition from school to vocational education – are too little, too late. The policy implications of this result are obvious – to minimize the problems in the transition to vocational education, a crucial need exists to foster the achievement of higher general secondary school education among migrants in much earlier interventions in the school system, and also in programmes beyond school or in pre-school.

Low social integration has a negative effect on the attainment of vocational degrees, but this effect decreases over immigration cohorts. However, both the effect and the decrease of the effect of social integration are rather small and should not be over-interpreted. Although different developments were predicted, this finding is the same for all nationality groups. Unfortunately, the present study could not analyse the impact of parental characteristics on the attainment of vocational degrees because the availability of such information depends on the fact that an individual is living with her/his parents in the same household, which typically is not the case with individuals aged 28 and older. Especially in Germany, the negative impact of having a migrant background is strongly linked to social background. Consequently, not controlling for parental characteristics can be seen as a limitation of this study. Also, the results concerning the impact of neighbourhood composition need to be interpreted with caution, since neighbourhoods with a high percentage of foreigners often are also economically deprived areas. In addition, the group of migrants analysed in this study is just one portion of an overall very diverse group of migrants. So, for example, since the main concern of this study was on migrants’ attainment of vocational degrees in Germany, it focused on those migrants who migrated to Germany before age 15 because most older migrants would have obtained their vocational degree in another country. Because of the restriction on the number of cases, especially for newer migration groups, the developments for second-generation migrants could not be analysed, which would be an important topic for future research. Also, the kind of vocational qualifications that migrants might bring with them when migrating to Germany at an age when they already should have attained some kind of vocational degree needs to be analysed.

Finally, the exact impact of educational expansion or a further development of the vocational education system – such as variations in the supply of apprenticeships or school-based vocational education for immigration cohorts – could not be investigated in this study and remains to be analysed in future research.

Notes

1. The results are not weighted, since the change in the expansion factors in 2005 makes a comparison difficult. The disadvantage of unweighted results is that because microcensus data are a clustered sample, standard errors can be underestimated (see Schimpl-Neimanns 2010). However, a regression model that includes the cluster shows that the results are robust.
2. The rate of household non-response (2.5–3%) is relatively low.
3. However, information on education is only available since 1976.
4. For more information on these data and harmonization procedures, Accessed 30 January 2016. see https://mz-trendfile.gesis.org/apex/f?pp=606:1:3959383874504167.
5. These immigration cohorts were developed according to the immigration flows described in Section 3.

6. The nationality groups are Turkey; other former recruitment countries (Italy, Spain, Greece, Portugal, Bosnia-Herzegovina, Croatia, Yugoslavia [Serbia Montenegro]); Central/Eastern/Southeastern European countries (Poland, Rumania, Slovakia, Commonwealth of Independent States [CIS], and the rest of Europe [the author of the present study does not have knowledge as to what is included in the category ‘the rest of Europe’]); and other non-European countries (Morocco, Iran, Vietnam, other African countries, other American countries, other Middle East countries, other South Asian countries, East Asia, other non-European countries). Nationality groups from the following countries were omitted from the analyses because a large migration flow from these countries did not occur; the differences between these groups and native Germans regarding the attainment of vocational education is very small; and their omission helped to simplify the results: the USA and the EU countries of France, the Netherlands, Luxembourg, Belgium, Austria, Denmark, Ireland, Great Britain, Sweden, Finland, Estonia, Latvia, Malta, and Cyprus.

7. The German secondary school system is highly stratified. The bottom tier, Hauptschule (lower level secondary school), provides basic skills; the middle tier, Realschule (middle level secondary school), provides intermediate skills (Mittlere Reife); and the top tier, Gymnasium (higher level secondary school), leads to Abitur, the higher education entry qualification (Secretary General of the Standing Conference of the Ministers of Education and Cultural Affairs 2013).

8. Various models with different nationality groups as the reference group show that the differences between the nationality groups are statistically significant.

9. Pooled models that include the interaction effects of nationality groups and immigration cohorts show that the trend is statistically significant for all nationality groups.

Disclosure statement

No potential conflict of interest was reported by the author.

ORCID

Karin Schuller http://orcid.org/0000-0003-4164-717X

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