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Ziege, Elena

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Elena Ziege

BiB Bundesinstitut für Bevölkerungsforschung

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Elena Ziege*

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Abstract

Many western countries are currently facing three major challenges. First, they experience increasing inflows of immigrants. Secondly, in the majority of countries, immigrant children, on average, exhibit lower academic performance in comparison to their non-immigrant peers. The third challenge is the unmet demand for highly skilled labor as a consequence of demographic change. One policy that may help to tackle these challenges is the granting of citizenship to immigrant children, promoting integration and education. To provide a more thorough account of the total benefits of citizenship, I examine not only the direct effects on these immigrant children but also spillover effects on their older siblings. Event study and difference-in-differences approaches are employed, taking advantage of the implementation of birthright citizenship in Germany for children born after 2000 and comparing children born around the birthdate cut-off. Analyses using the German Microcensus and the National Educational Panel Study (NEPS) provide evidence that birthright citizenship is advantageous for the education of children specifically targeted by the reform and also has positive spillover effects on the academic school track completion of their older siblings. Further analyses indicate that these spillover effects are driven by increased parental investments, particularly towards the older siblings. These findings reveal that previous assessments of citizenship have underestimated its benefits.

Keywords: Citizenship, education, siblings, spillover, parental involvement

JEL classification: I21, J15, J24, K37

*Federal Institute for Population Research (BiB) and Johannes Gutenberg University Mainz, Germany, elena.ziege@bib.bund.de. I am grateful for the financial support from the Stiftung Ravensburger Verlag. I also thank Mara Barschkett, Eric Bettinger, Dan Black, Aline Buetikofer, Kamila Cygan-Rehm, Ludovica Gambaro, Lidia Gutu, Mathias Huebener, Elisa Jacome, Ariel Kalil, Evan K. Rose, Sophia Schmitz, C. Katharina Spiess, Lesley Turner, Martin Weinmann and Susanne Worbs for helpful comments and fruitful discussions on the topic. Finally, my thanks go to the participants of the 36th Annual Conference of the European Society for Population Economics (Belgrade), the Junior workshop on the The Economic, Social, and Political Effects of Migration (Leiden) and the PhD Workshop Empirical Microeconomics Lüneburg and seminars at the University of Chicago, Swiss Leading House, and the BiB. Lina Binger provided excellent research assistance. Thanks also go to the RDC of the Federal Statistical Office and Statistical Offices of the Federal States of Germany for the provision of the German Microcensus. This paper uses data from the National Educational Panel Study (NEPS; see Blossfeld & Roßbach, 2019), Remote Access. The NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi, Germany) in cooperation with a nationwide network. The author declares that there is no conflict of interest.

1 Introduction

Global refugee and migration movements, driven by armed conflicts and climate change, are expected to continue rising in the future (OECD, 2022). This trend is already evident in most OECD countries, where the proportion of children with a migration background is rapidly growing. In Germany, the share of immigrant[1] students increased from 13 percent in 2012 to 26 percent in 2022 (OECD, 2023*a*).

In many OECD countries, immigrant students tend to achieve lower test scores compared to their peers, even after accounting for other relevant characteristics (OECD, 2023*a*).[2] In Germany the education gap between immigrant and non-immigrant students is particularly large and persistent (Ammermueller, 2007), despite a policy commitment since 2005 to promote integration.[3] This disparity is not only concerning from an integration perspective but is also likely to exacerbate skilled-labor shortages and is therefore relevant for efficiently allocating resources in the face of demographic change. Labor shortages have increased substantially in OECD countries in the last decade with 30 percent of companies reporting talent shortages in 2009, and 75 percent of companies reporting talent shortages in 2022 (OECD, 2023*b*). Policy measures promoting the educational attainment of immigrant children could boost skilled labor supply alleviate shortages. The German government for example explicitly names promoting Germany as an attractive country for immigration and decreasing immigrant/non-immigrant gaps in education as part of their strategy to tackle the skill shortage (see e.g. Bundesministerium für Arbeit und Soziales, 2022).

Existing research suggests that granting citizenship to immigrant children can enhance integration and education. What has been overlooked is that granting citizenship can also have spillover effects on other members of the household, such as siblings. However, examining spillover effects on siblings is crucial in order to obtain a comprehensive understanding of the total benefits of citizenship. This paper examines whether granting citizenship to a child affects the education of their siblings, revealing positive spillover effects. I examine a German citizenship law reform whereby immigrant children born in Germany after January 1, 2000, automatically receive citizenship at birth. Spillover effects from the focal child to their siblings[4]

[1] Following the definition provided by PISA, this paper employs the term "immigrant children/students" to refer to all children whose both parents immigranted to Germany. "Non-immigrant children/students" refers to those children who have at least one parent born in Germany.

[2] The United States is an exception, with immigrant and non-immigrant individuals achieving similar average test scores (Dustmann et al., 2012).

[3] "Gesetz zur Steuerung und Begrenzung der Zuwanderung und zur Regelung des Aufenthalts und der Integration von Unionsbürgern und Ausländern" (see Sachverständigenrat deutscher Stiftungen für Integration und Migration, 2018).

[4] Throughout the paper I will be using the term "focal child" to define children which were born around the

are identified by investigating older siblings born before the reform and utilizing the German Microcensus, a comprehensive mandatory survey data set which consists of one percent of the German population and provides detailed information on all household members.

Investigating spillover effects on older siblings is important for evaluations of costs and benefits of citizenship reforms. If citizenship policies that benefit children also benefit their siblings, policy evaluations would underestimate the benefit-cost ratio. Alternatively, they would overstate the ratio if there are negative spillovers on siblings. Finally, investigating spillovers can add to an understanding of mechanisms behind the effects of citizenship. If the benefits of citizenship are found to be higher than previously estimated, this would provide additional evidence that citizenship can act as a catalyst for initiating the process of integration, rather than being granted only at the end of the integration process.

There are several reasons why citizenship may affect the educational outcomes of focal children directly affected by the reform but also have spillover effects on their siblings. Citizenship grants individuals (when they reach the age of majority – the age studied in this paper) in Germany various benefits, including the eligibility for all professions (including civil service), and the ability to work in all European Union countries (Die Beauftragte der Bundesregierung für Migration, Flüchtlinge und Integration, 2023, §9 AufenthG). While these benefits are only granted to the focal child which receives citizenship and not extend to to their siblings (unless they naturalize themselves), the additional opportunities for the focal child may change parents behavior towards all their children. A priori, it is possible to imagine different and contrasting behavioral responses by parents.

One the one hand, parents may prioritize their engagement with the focal child as the perceived economics return to their investments might be higher for this child, which could mean that older siblings unaffected by the reform may receive less support. The US-study by Wikle and Ackert (2022) indicates that parents invest more time in children with citizenship. Secondly, Dizon-Ross (2021) shows that when parents learn about their children's performance in school, parents increase their investments more if their children is performing higher. Giannola (2024) confirms this and shows that parents believe investments to be more productive for higher-ability children. If parents expect citizenship to increase opportunities for the focal child and therefore its future performance/abilities, they may concentrate their investments on the focal child.

citizenship reform in 2000 and were the main targets of the reform. The term "(older) sibling" refers to children in the same household as the focal child but which were born before the focal child and born before the citizenship reform in 2000.

On the other hand, parents may focus more on older siblings who did not directly benefit from the citizenship reform in order to compensate for unequal external inputs. A lab-in-the-field experiment by Berry et al. (2020) shows that parents are inequality averse in regard to their children and would forego potential earnings to equalize inputs for their children. This behavior is also in line with norms of survey participants who believe that lower-achieving siblings should receive more instructional resources and parental involvement (Quadlin, 2019). Furthermore, parents may increase some investments for the focal children, and others for the older siblings. Yi et al. (2015) for example investigate negative early life health shocks and reveal that parents invest more in the health of the twin who experienced the health shock, but less in their education compared to the twin who did not experience the shock.

Finally, citizenship could also reduce parents' overall educational efforts for all their children. Migrant parents may have high educational aspirations because they perceive education as a means to achieve economic advancement and overcome discrimination. Once the focal child becomes a citizen, the family may expect less discrimination and improved labor market opportunities, leading to decreased parental involvement. This could mean that they now focus more on siblings or it could mean that they decrease investments in all their children. However, an overall decrease does not seem likely as Avitabile et al. (2014) show that a child's citizenship increases the time the mother spend on child care (and even decreases maternal employment, see Sajons (2019)). In general, the literature does not provide a conclusive prediction of how parental investments in older siblings might change (see Almond and Mazumder, 2013, for a review). Therefore, how parental investments change and how it affects older siblings' education remains an empirical question.

To analyze the potential spillover effects of citizenship on older siblings, this paper examines the introduction of birthright citizenship in Germany, which granted citizenship to all immigrant children born in the country since January 1, 2000, if at least one parent had resided in Germany for at least eight years and had an unlimited right of residence. This reform substantially increased the number of focal children with German citizenship, with nearly half of immigrant children in 2000 acquiring citizenship at birth through this policy – a total of 41,257 children (Statistisches Bundesamt, 2007). By taking advantage of this exogenous access to citizenship, the paper utilizes event study and difference-in-differences strategies to investigate the effects on the focal children's and their older siblings' education. The treatment group consists of immigrant children with two parents who migrated to Germany while the control group includes families with non-immigrant children, i.e. children with at least one parent born in Germany. By comparing children in the treatment and control groups, both before and after the imple-

mentation of the reform, it is possible to identify the impact of birthright citizenship on children directly affected by the reform and their families. To estimate potential spillover effects, the focus is on older siblings born between 1990 and 1998. Within this group, a comparison is made between older siblings in households with a focal child which was directly affected by the reform because it was born in 2000 or later and older siblings in households with a focal child which was born just before the reform came into effect. The analysis is based on data from the German Microcensus, a mandatory survey of one percent of the German population, and the German National Educational Panel Study, a representative panel study surveying children in secondary school.

The findings of this study demonstrate that the implementation of birthright citizenship not only improves the education of the focal child, but also has a positive impact on the education of their older siblings. The evidence shows that birthright citizenship increases the likelihood that immigrant children complete secondary school with a university entrance qualification, or attend a school that leads to such a qualification by 15 percentage points, when compared to non-immigrant children who were not affected by the reform. In addition to the direct impact on the focal child, the analysis reveals that older siblings in treatment households are also 11 percentage points more likely to complete secondary school at an academic track if the focal child is born after the reform cutoff. This means that the spillover effects correspond to 40 to 80 percent of the size of the direct effect on the focal child, depending on the specification. Event study graphs strengthen the common trend assumption and thereby support a causal interpretation of the reform estimates. Furthermore, the study demonstrates that this spillover effect on older siblings can be attributed to a substantial increase in the educational investments made by parents in the older siblings, particularly in terms of contact made with the school and the frequency of helping with preparations for school presentations. In contrast, investments in the focal child remain constant.

This paper makes several important contributions to the existing literature. First, it adds to the body of research on the impact of citizenship on families. Previous studies have already demonstrated that obtaining citizenship has positive effects on focal children's educational achievements (Cygan-Rehm, 2018; Felfe et al., 2020; Gathmann et al., 2021; Sajons and Clots-Figueras, 2014). These studies focus on educational achievements during school, however, we lack evidence on whether they finish school with better achievements. This is crucial to determine if there are any delayed effects, such as students catching up due to changes in academic tracks or if overly ambitious goals are not achieved. My study goes beyond these findings by investigating the long-term effects of citizenship on the focal children, specifically until the end of high school.

Second, my study is the first to investigate the effects on family members other than the parents. While previous research has explored the impact of citizenship on parents, focusing on aspects such as labor market participation, fertility, marriage, out-migration, and integration (Avitabile et al., 2013, 2014; Gathmann and Keller, 2018; Sajons, 2019), I examine how citizenship influences the older siblings of the focal children who are granted birthright citizenship.

Third,this article contributes to the small but growing literature on sibling spillover effects of political reforms. Previous studies in this area have examined spillover effects in various contexts, such as early childhood education, college major choice, grade retention, school performance, and school starting age (see e.g. Dahl et al., 2023; Figlio et al., 2023; García et al., 2024; Goodman et al., 2015; Karbownik and Özek, 2023; Landersø et al., 2020). These studies have revealed that previous research evaluating reforms may have underestimated the potential benefits of such policies. Most of these studies have focused on younger siblings. In contrast, my paper analyzes spillovers from younger to older siblings. Another study which has focused on spillovers from younger to older siblings, investigated a Norwegian program that aimed to increase parents' incentives to stay home with their youngest child. Bettinger et al. (2014) found positive spillover effects on the education of older siblings. My findings suggest that there are positive spillover effects of birthright citizenship on the education of older siblings, underscoring the importance of examining the effects on all potentially affected family members. Furthermore, the results imply that granting citizenship to children may have even larger benefits than what previous research has estimated.

Finally, this paper contributes to understanding the mechanisms behind the previously established effects of citizenship by analyzing parents' investments in detail. Parental investment could be an important channel, as there exists a strong relationship between parental involvement and students' academic achievement (Fan and Chen, 2001). Ammermueller (2007) further emphasizes that home resources, more precisely the amount of books and language spoken at home, play an essential role in explaining the educational gap between immmigrant and non-immigrant children. A study by Avitabile et al. (2014) focuses on parents of very young children (0-3 years) and finds that granting birthright citizenship increases mothers' time spent on child care, but has no effect on fathers' time. Additionally, Dahl et al. (2022) investigate parental support with homework and learning, as well as the frequency of speaking German with the child, in families with 14 to 15-year-old children. They show that granting birthright citizenship leads to a decrease in schooling support by parents of Muslim girls, while increasing support for non-Muslim boys. Interestingly, they do not find any differential effects on parental support by the number or sex of the focal children's siblings, arguing that parents do not reallocate

their resources to a specific child. In contrast, my study utilizes rich data that enables me to conduct a detailed examination of parental investments in both the focal children and their older siblings, which has not been explored in prior research. This provides valuable insights into how parents allocate their investments among their children based on access to citizenship.

The remainder of this paper is organized as follows: In the next section, I give a broad overview of the institutional background, namely the analyzed citizenship reform and the German education system. Then, I describe the empirical strategy in Section 3 and used data sets in Section 4. Section 5 presents the main results and discusses potential mechanisms, and Section 6 concludes.

2 Institutional Background

2.1 German Nationality Act and the Reform in 1999

Individuals in Germany can obtain German citizenship through birth, the status of an ethnic German repatriate, adoption, marriage, or naturalization[5].

On July 15, 1999, the German parliament amended the Nationality Act. This reform, effective on January 1, 2000, brought several changes. The first was the introduction of birthright citizenship. Until 1999, the applicable rule was *ius sanguinis*, which meant that German citizenship could only be acquired based on descent from a German parent. The revision of the Nationality Act introduced *ius soli*, which resulted in the right of children of immigrants born in Germany since January 1, 2000, to acquire German citizenship at birth if at least one parent fulfilled two conditions: The parent had lived legally in Germany for at least eight years at the time of birth and had an unlimited right of residence. The child would then be automatically granted the German citizenship at birth. The parents will be informed about the German citizenship of the child by the civil registry office after the birth without the possibility of refusing the citizenship or the need to apply for citizenship (BMI, 2023*a*).[6] In contrast to naturalization that individuals have to apply for and which will be pursued by a selected group, this citizenship access is automatic and can, therefore, be exploited as an exogenous variation.

Initially, the law also defined that children who obtained German citizenship through the reform had to choose either the German or their parents' foreign nationality once they turned 18. However, since December 20, 2014, children can keep both nationalities unless they did not

[5]Naturalization is the legal process by which a non-citizen of a country acquires citizenship of that country.

[6]31 Percent of countries worldwide have a birthright citizenship policy in place (*ius soli*), and eight percent of countries require the parents to have resided in the country for a certain period to allow citizenship at birth (Gathmann and Garbers, 2023).

grow up in Germany (BMI, 2023*b*).[7] Because younger siblings studied post-reform were born between 2000 and 2002, none of them had to choose between the two nationalities before the change in the law. Additionally, since August 28, 2007, nationals of EU member states and Switzerland who are naturalized in Germany have been allowed to hold multiple nationalities.

Not only children born after 2000 could profit from the new birthright principle, but also children born between 1990 and 1999. As part of a transition rule, parents could apply retroactively on their child's behalf for German citizenship between January 1 and December 31, 2000 – conditional on having legally resided in Germany for at least eight years (§40b StAG). This transitional rule might have affected older siblings of focal children as well. However, the share of children using the transition rule was fairly small: 49,169 or 20 percent of eligible children (Felfe et al., 2020; Worbs, 2008). Potentially, all older siblings could benefit from the transition rule if the parents were eligible. Siblings' eligibility did not depend on whether the focal child was born before or after the reform.

The second large change of the reform in 1999 was a change in the conditions under which adults could naturalize. The period of legal and unlimited residency in Germany required for naturalization was shortened from 15 to eight years(BMI, 2023*b*). In contrast to birthright citizenship, adults have to renounce their previous citizenship when naturalized[8] and have to fulfill certain requirements before naturalization[9]. This part of the reform is not studied in this paper. The reduction in the residency requirement is not connected to the focal child's birth date and applies to focal children in the treatment group born before and after the birth date cutoff in the same way and should therefore not affect this papers estimation strategy.

Immigrant children who do not obtain German citizenship at birth have the status of either temporary or permanent residents. Individuals with citizenship and permanent residency have partially the same privileges: they have an unlimited right to stay in Germany and are eligible for social assistance, unemployment benefits, day care, child benefits, parental benefits, and alimony advance (Riphahn et al., 2013). Citizenship status also does not change the probability

[7]Growing up in Germany is defined as (i) having lived in Germany for eight years, (ii) having visited a German school for six years, (iii) having obtained a German high school diploma, or (iv) having completed a German vocational training when turning 21 (§ 29 Absatz 1 a StAG).

[8]Research has shown that dual citizenship restrictions hamper immigrant naturalization (see e.g., Weinmann, 2022).

[9]The requirements for the naturalization of an adult are as follows: The individual needs to (i) confirm their commitment to the free democratic constitutional system enshrined in the Basic Law of the Federal Republic of Germany and declare that they will not pursue or support any endeavors directed against it, (ii) have a permanent right of residence, (iii) be able to support themselves, and their dependant family members without recourse to welfare benefits, (iv) give up their previous citizenship, (v) have not been sentenced for an unlawful act, (vi) have sufficient command of the German language, (vii) possess knowledge of the legal system, society and living conditions in the Federal Republic of Germany and accept German social norms (§10 StAG).

of being deported compared to permanent residency.

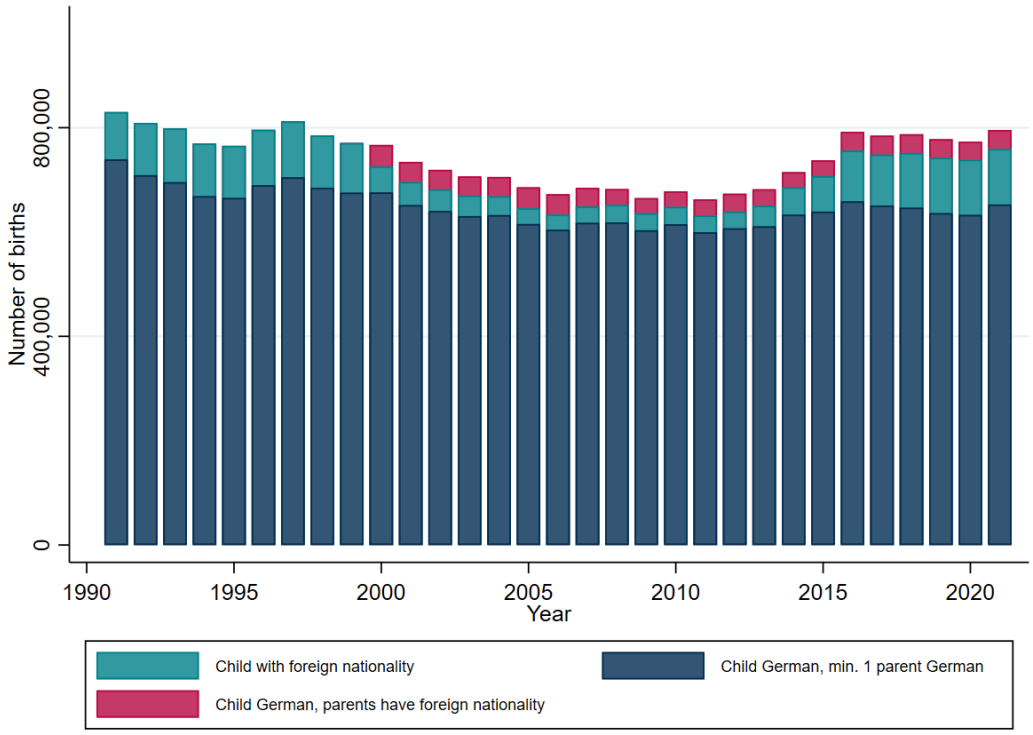
However, there are several benefits of citizenship over permanent residency that play an important role in this paper's setting, as most of these benefits play a role when the focal children become adolescents – the age studied in this paper. Citizenship gives access to all professions, including tenure for life as a civil servant in a state institution, for example, in the police or as a judge, as well as working as a doctor or opening a business without any restrictions under immigration law (Die Beauftragte der Bundesregierung für Migration, Flüchtlinge und Integration, 2023, §9 AufenthG). Citizenship also allows individuals to work, study, and travel in all countries of the European Union and thus extends the potential labour market and employment opportunities. Naturally, this is only an additional benefit for focal children whose parents did not migrate from another EU country. Furthermore, the individual is allowed to vote in national (and EU-level) elections and run for political offices. One also obtains travel and visa facilitation outside the EU, is protected against deportation or extradition to another state, and receives protection abroad from the German state at the German embassies. Finally, a person receives an unforfeitable right of residency in Germany. A permanent residency, in contrast, expires after a stay outside of Germany of six months or more.

Figure 1 shows the number of births per year in Germany by the focal child's and parents' citizenship. A large share of focal children born in Germany have German citizenship at the time of birth. They have German citizenship because one of their parents has German citizenship. From 1990 until 1999, there was also a substantial share of focal children born without German citizenship (around 10 percent). The introduction of birthright citizenship is also visible in the figure. From 2000 onwards, around five percent of focal children had German citizenship at birth, even though none of their parents had German citizenship. This is half the children who could not obtain citizenship in the years prior to the reform because none of their parents had citizenship. The share of children who obtained German citizenship through the reform remained fairly stable over the years, which can be attributed to the fact that new families immigrate to Germany each year and, therefore, the share of families who do not meet the residency requirement of eight years remains at a similar level. One can also observe the influx of refugees into Germany from 2015 onwards, as the share of focal children born without German citizenship increases from 2015.

2.2 The German Secondary School System

This paper investigates the academic secondary school track and university entrance qualification in Germany. This section gives a short introduction to the basics of the German secondary

Figure 1: Number of births by citizenship status



Source: German Federal Statistical Office (2023).

school system to facilitate understanding of the paper's analysis.

Children in Germany visit primary school for four years.[10] Thereafter, students are tracked into different school tracks according to their abilities and academic potential. There are three main tracks in secondary school in Germany that children can attend and that can be recommended by the teacher: the lowest track (Hauptschule), the intermediary track (Realschule), and the academic track (Gymnasium). The academic track is also the track that prepares students for tertiary education. The majority of schools of all three types are public and tuition-free. At the end of primary school (around age 10), students receive a recommendation from their teachers about which secondary school track they should attend.

In class twelve or thirteen, children have the opportunity to obtain a higher education entrance qualification if they pass a final examination.[11] This degree can be obtained at a Gymnasium and at comprehensive schools.[12] This university entrance degree qualifies the child to attend a

[10] In the federal states Berlin and Brandenburg, children are tracked two years later. They visit primary school for six years, but the total years of schooling to acquire certain school leaving certificates are the same.

[11] Whether the child obtains a higher education entrance qualification after twelve or thirteen years depends on the school the child attends. Children visit a Gymnasium for twelve years, and integrated schools are set up for thirteen years. The duration of the Gymnasium was reduced from 13 to 12 years in the 2000s. Some federal states have extended the duration back to 13 years in the last few years.

[12] Comprehensive schools include the low, middle, and academic tracks and prepare for all three degrees. They

higher education institution (university (of Applied Sciences)), which, if completed successfully, provides access to certain professions that are not available without a university degree.

Investigating the type of school degrees is important firstly because different degrees can lead to very different lifetime outcomes, and tertiary education eligibility increases individuals' earnings (Nordin et al., 2020). Second, the attended track (which leads to different secondary degrees) is relevant as there exists a immigrant/non-immigrant gap in school track attendance: 48 percent of non-immigrant students visit the highest secondary school track (Gymnasium), while only 43 percent of immigrant students visit the highest track (Statistisches Bundesamt, 2022). However, a gap exists within the group of immigrant students: 43 percent of German citizens visit the highest track, but only 36 percent of non-citizens.

3 Identification

To identify a causal effect of granting birthright citizenship on the education of focal children and their older siblings, I exploit the exogenous and automatic access to citizenship for focal children born after January 1, 2000. Unlike naturalization, which is pursued by only a select part of the population, the German reform contains two elements that make the eligibility for birthright citizenship exogenous: Citizenship is granted automatically, and it is not influenced by parents' decision. This allows me to compare focal children who should otherwise be very similar around this exogenous birth date cutoff.[13]

I use various empirical models to estimate the effects of birthright citizenship on children's education. My main specification is an event study design where I interact the treatment with the child's birth year:

$$Y_{itb} = \gamma_0 + \gamma_1 Treat_i + \sum_{b \neq 1999} \gamma_2 b + \sum_{b \neq 1999} \gamma_3 Treat_i \times b + X'_{it}\gamma_4 + \mu_m + \delta_t + \zeta_s + \epsilon_{itb} \quad (1)$$

In this equation, Y_{it} represents the completion of the academic school track for focal child i or older sibling i in year t. Specifically, it measures whether the individual has obtained a university entrance qualification or is currently attending a school track that leads to such qualification

are at least until grade 10 and have different names in different federal states: Integrierte Gesamtschule, Kooperative Gesamtschule, Gemeinschaftsschule (Baden-Württemberg, Saarland, Saxony-Anhalt, Schleswig-Holstein, Thuringia), Integrierte Sekundarschule (Berlin), Oberschule (Bremen, Lower Saxony), Stadtteilschule (Hamburg), Sekundarschule (North Rhine-Westphalia).

[13]The reform of the German nationality law from January 1, 2000, entails that all immigrant children born in 2000 or after to non-Germans will be granted German citizenship if at least one parent has been legally residing in the country for at least eight years at the time of the child's birth.

(at ages 17-22). $Treat_i$ is the treatment indicator, which equals unity if both parents were born outside Germany, and zero for children with at least one parent born in Germany. I include focal child's birth year indicators b, excluding 1999 as it is the year before the reform. To analyze spillover effects on older siblings, I also use the focal child's birth year for this definition.

Additionally, I include a set of focal child's birth month indicators, μ_m, to account for any seasonal effects, as indicated by Buckles and Hungerman (2013), who found differences in outcomes for children born in different months of the year. I also include survey year fixed effects δ_t and the age to capture any age-related differences in the outcome variable. Finally, I include federal state fixed effects ζ_s to control for remaining differences in the states' school systems. The vector of control variables X_{it} includes the child's sex, the mother's age at birth, and the highest educational degree in the household. When examining spillover effects on siblings, I also control for birth order and the age difference between the focal child and the older sibling.

The parameter of interest, γ_3, the interaction of $Treat_i$, the treatment indicator, with focal child's birth year indicators b from 1992 to 2002, represents the effect for the different birth cohorts relative to the cohort born in 1999. Using an event study approach allows me to assess diverging pre-trends of the treatment and the control group, which I will investigate in section 5.

In the second step of the analysis, I estimate a difference-in-differences approach based on the event study approach outlined in equation 1. The approach takes the following form:

$$Y_{it} = \beta_0 + \beta_1 Treat_i + \beta_2 Post_t + \beta_3 Treat_i \times Post_t + X'_{it}\beta_4 + \sum_{b \neq 1999} \beta_5 b + \mu_m + \delta_t + \zeta_s + \epsilon_{it} \quad (2)$$

In this specification, the binary variable $Post_t$ equals one if the focal child i was born from January 1, 2000 onward, and 0 for those born until December 31, 1999. $Treat_i$ has the same definition as in equation 1.

The parameter of interest here is β_3. It identifies the change in the outcome Y_{it} for children in the treatment group (children born to two born-abroad parents) compared to the change in outcomes for the control group (children born to at least one parent born in Germany) from the pre- to the post-reform period, assuming a common trend. This estimator corresponds to an intention-to-treat (ITT) effect. There are three reasons for this: First, the pre-treatment sample includes focal children eligible for citizenship through their parents citizenship (if they

naturalized before birth) or the transitional rule. Second, the post-treatment sample may include focal children who did not acquire birthright citizenship because their parents did not fulfill the 8-year residency requirement or did not have a legal residency status. Third, the control group may contain focal children of parents born in Germany but who do not have German citizenship, and, therefore, children also targeted by the reform.[14] However, as the share of focal children in the control group with citizenship at birth seems to be 100 (see Figure 1), this does not seem to play an important role.

All of these considerations mean that the estimate represents a conservative estimate of the impact of birthright citizenship. Consequently, I later scale the estimated effect by the take-up rate of birthright citizenship of the treatment group compared to the control group (shown in Figure 2) to obtain an average treatment effect on the treated (ATT).

Finally, I implement the same difference-in-differences model as described in equation 2 while restricting the sample to focal children born exclusively in 1999 (pre-reform) and 2000 (post-reform). By doing this, I ensure that the effects are valid even within a narrower timeframe around the birth date cutoff.

4 Data

4.1 German Microcensus

The main analysis is based on the German Microcensus from 2010 to 2020. The Microcensus is a representative survey of one percent of all households in Germany (Statistisches Bundesamt, GESIS, 2022). It has been conducted annually by the Federal Statistical Office of Germany in West Germany since 1957 and in East Germany since 1991. The sample is drawn from the entire population in Germany that is eligible to reside in private households and communal accommodations. The Microcensus contains a rotating sample whereby each household is interviewed four consecutive years and then dropped. Thus, the Microcensus mostly allows cross-sectional analyses. The advantage of working with the Microcensus is its large sample size and that the participation is mandatory which decreases sample selection biases.

The main outcome captures the educational success of focal children and their older siblings. In the German context an appropriate measure of educational success is the upper secondary school-leaving certificate that gives access to tertiary education (Abitur). The variable used is a binary indicator equal to 1 if the child has either obtained a university entrance certificate

[14] Using immigrant children as the treatment group is an approximation as I cannot sufficiently identify the parents' citizenship status and residency duration in the data.

or is enrolled in the upper secondary school track that leads to such certificate. In including also children who are, at the time of the survey, attending the highest school track that gives access to higher education, I am able to include children who were born at the beginning of the millennium and who may not have completed upper secondary school by 2020 (for a similar approach, see Piopiunik, 2014). The additional advantage of using this variable is that it is not affected by reforms that lengthen or shorten high school duration, like the reduction in school length from 13 to 12 years in the 2000s in some German states. The variable is measured for adolescents between 17 and 22 years, as this is the main age range at which individuals in Germany finish the academic track of secondary school (see Section 2.2). This outcome variable is measured in each wave of the Microcensus.

The treatment group in the event study and difference-in-differences approaches is defined as all children with two parents born outside of Germany. The reform targets only focal children born to two non-Germans (if neither parent had naturalized before childbirth). Over the whole study period, 12 percent of children in the Microcensus have a two-sided migration background (regardless of their parents' citizenship status). The control group includes all children born to one or two parents born in Germany. [15]

The sample of older siblings is restricted to those born between 1990 and 1998 and therefore before the reform. The second requirement is that they have at least one sibling (the focal child) born between 1994 and 2002 and which was born at least one year later than the older sibling. The focal children's birth cohorts are restricted to the cohorts 1994 to 2002 to ensure that for each focal child the majority of their older siblings is included in the sample. The median age difference between siblings is four years in the Microcensus. Therefore, my sample includes at least 50 percent of older siblings for each focal child (older siblings born 1990-1993 for the focal child cohort 1994; older siblings born 1990-1998 for the focal child cohort 2002).

All older siblings in my sample are defined as children who are themselves not directly affected by the reform but whose parents could have applied retroactively on their child's behalf for German citizenship between January 1 and December 31, 2000 – conditional on having legally resided in Germany for at least eight years (§40b StAG). The transition rule led to 49,169 naturalizations between 2000 and 2007, or a share of about 20 percent of eligible children (Felfe et al., 2020; Worbs, 2008). Usage of the transition rule would mean that the older sibling obtained citizenship at the age of two – if they were born in 1998 – or at older ages, but invariably not at birth like the focal children.

[15] I use parents migrant status and not citizenship status at childbirth as this question is not mandatory and therefore is missing information for some households.

For observations for which some information for any control variable is missing in the data, I replace values with the mean for continuous variables and create an additional category for missing values for categorical variables. The sample further excludes first-generation immigrant children as they were neither affected by the reform nor could they be part of the control group. Furthermore, I exclude ethnic Germans as citizenship rules are different for them than for other migrant groups.

Table 1 compares certain predetermined characteristics between the treatment and control groups. It can be observed that there are no differences between the two groups in characteristics that should be similar, such as the gender, birth month and year of the focal child, and the age of the older sibling. Both groups have an equal distribution of female focal children, with an average birth year of 1998. Additionally, the average age of the older siblings is 19 years. Both groups also exhibit a similar average age difference of around four years between the focal child and older siblings.

When examining the characteristics of the parents, notable differences can be observed between the two groups. This is why it is crucial for me to assess any divergent pre-trends in Section 5 and demonstrate that the time trends of the two groups are not statistically different. The differences presented in Table 1 are expected. On average, mothers in the treatment group are substantially younger at the time of childbirth, with an average age of 25 years, compared to mothers in the control group, who have an average age of 28 years. Previous research has emphasized the significance of maternal age in child development (see e.g., Currie, 2011). Therefore, it is particularly important for me to control for maternal age in my analysis. In terms of education, parents in the control group - those who were either both born in Germany or one born in Germany and one abroad - have a notably higher level of education compared to parents in the treatment group. Only 5 percent of control group households have no post-secondary school degree, while this percentage is 28 percent for households in the treatment group. Conversely, in 30 percent of households in the control group, at least one parent holds a university degree, whereas in the treatment group, a university degree is the highest level of education in only 4 percent of households.

The region of origin of parents is inherently different between the two groups.[16] The majority of parents in the control group were born in Germany. In the treatment group, 36-40 percent of parents were born in Turkey, making it the largest origin group. This distribution aligns with the population demographics in Germany (Schührer, 2018). A substantial proportion of

[16]In this study, the region of origin is approximated using either the current or previous citizenship, as the country of origin is only surveyed in a few waves in the Microcensus.

parents also migrated from Balkan countries and EU-12 countries.

Table 1: Summary Statistics

	Control Group	Treatment Group
	Mean/Percentage	
Focal Child is male	51.93 %	52.09 %
Birth month (focal child)	6.45 (3.38)	6.44 (3.42)
Birth year (focal child)	1998.05 (2.31)	1998.42 (2.32)
Older sibling's age (in years)	19.15 (1.58)	19.26 (1.60)
Age difference between siblings (in years)	3.83 (2.01)	4.24 (2.25)
Mother's age at birth (in years)	28.02 (4.02)	24.67 (4.61)
Highest post-secondary degree in the household		
No degree	5.22 %	48.13 %
Vocational training	60.89 %	39.69 %
University	29.57 %	8.01 %
Missing	4.32 %	4.18 %
Mother's region of origin		
German	88.82 %	0.23 %
Turkey	0.47 %	49.88 %
Eastern Europe	0.94 %	4.20 %
Balkan	0.43 %	12.27 %
Eu 12	0.99 %	8.22 %
Other	1.69 %	20.52 %
Missing	6.66 %	4.68 %
Father's region of origin		
German	75.10%	0.29 %
Turkey	0.48 %	45.94 %
Eastern Europe	0.33 %	3.55 %
Balkan	0.46 %	11.39 %
Eu 12	1.28 %	7.75 %
Other	1.12 %	18.99 %
Missing	21.23 %	12.10 %
Observations	75,852	13,698

Note: Standard deviation in parentheses. The statistics are based on the sample of households with older siblings born 1990-1998 and a focal child born 1994-2002. *Source:* German Microcensus (2010-2020).

4.2 National Educational Panel Study (NEPS)

To disentangle channels of the effects of birthright citizenship and investigate parental involvement, I additionally use data from the National Educational Panel Study (NEPS; see Blossfeld, 2019). The NEPS is a multi-cohort panel study following the education trajectories of six cohorts of children and adults in Germany. The analysis is based on the data from two different cohorts to analyze focal children and older siblings: cohorts 3 and 4. Starting cohort 3 is used

to investigate focal children and surveys children who were attending a fifth grade (approximately ages ten and 11) at regular schools and special needs schools ("Förderschulen") in 2010 in Germany (Skopek et al., 2012). Starting cohort 4 is used to analyze older siblings and surveys children attending a ninth grade (approximately ages 14 and 15) in 2010. Both surveys were conducted annually, and children were followed until the end of high school. If a child left the sampled school or class, for example due to grade retention, the child is followed individually in the survey from that moment onward. However, children who repeated or skipped a grade before the beginning of the survey will not be part of the sample because they are in a lower or higher grade than their cohort.[17] In addition to the children, also the teachers, the principals of schools, and the parents of the children were surveyed. This paper uses information from the surveys of the children and their parents.

To analyze the reform of the Nationality Act in 2000, I include focal children born in 1999 and 2000, around the cutoff date of January 1, 2000, in the main analysis sample.[18] Starting cohort 4 includes children born between 1994 and 1997.[19] My analysis only includes those children of starting cohort 4 with at least one younger sibling (focal child) born around the birthdate cutoff, i.e., in 1999 or 2000. Because the two cohorts were sampled individually and at partly different schools, I cannot link any families in both cohorts to investigate the division of parental investments within one family.

Using the NEPS, I investigate parents' involvement in their children with one overall index of investments and four sub-indices to capture various domains of parental school investments that might be affected. Using indices ensures that the results are not solely influenced by a single survey question that measures only one aspect of parental investment. These indices capture educational resources[20] available to the child, the frequency of conversations about school between the child and the parents[21], the frequency of parental support[22], and the frequency of

[17] As Felfe et al. (2020) show that birthright citizenship decreases the likelihood of grade retention, there might be a small sample selection.

[18] Because only children attending a fifth grade in 2010 were interviewed for starting cohort 3, 93 percent of sampled children were born in 1999 and 2000. 40.2 percent of the sample were born in 1999, and 52.5 percent in 2000.

[19] 0.3 percent of the sample are born in other years and are excluded.

[20] This variable is based on the child survey and counts the number of educational resources available to the child. These utensils are a desk, educational software, books for homework, and a computer.

[21] This index is based on the child survey. It is based on the mean of the following two questions: "How often do your parents talk to you about topics that are discussed in class?" and "How often do your parents talk to you about problems in school?".

[22] This measure is based on questions are "How frequently do you purchase additional learning materials or books for the child in order to support her learning?", "How often, together with the child, do you search for information on the internet for school classes?", "How often do you assist the child in preparing speeches or presentations for class?" from the parent survey. Due to data availability, the variable used to measure parental investments for older siblings only contains the frequency of purchasing material and the frequency of helping with presentations.

contact between the parents and the school[23]. Higher values in all variables correspond to more parental involvement related to school.

5 Results

5.1 Effects on Birthright Citizenship

The first step of the analysis is to determine whether the citizenship reform actually resulted in an increase in citizenship at birth for focal children born after the birth date cutoff. Thus, I begin by discussing the first-stage effects. Figure 2 displays the percentage of children in a birth quarter who have German citizenship. It compares children born before January 2000 with those born since January 2000, in both the treatment and control groups. It can be observed that all children in the control group have German citizenship at birth before and after the reform and the share is not affected by the reform.

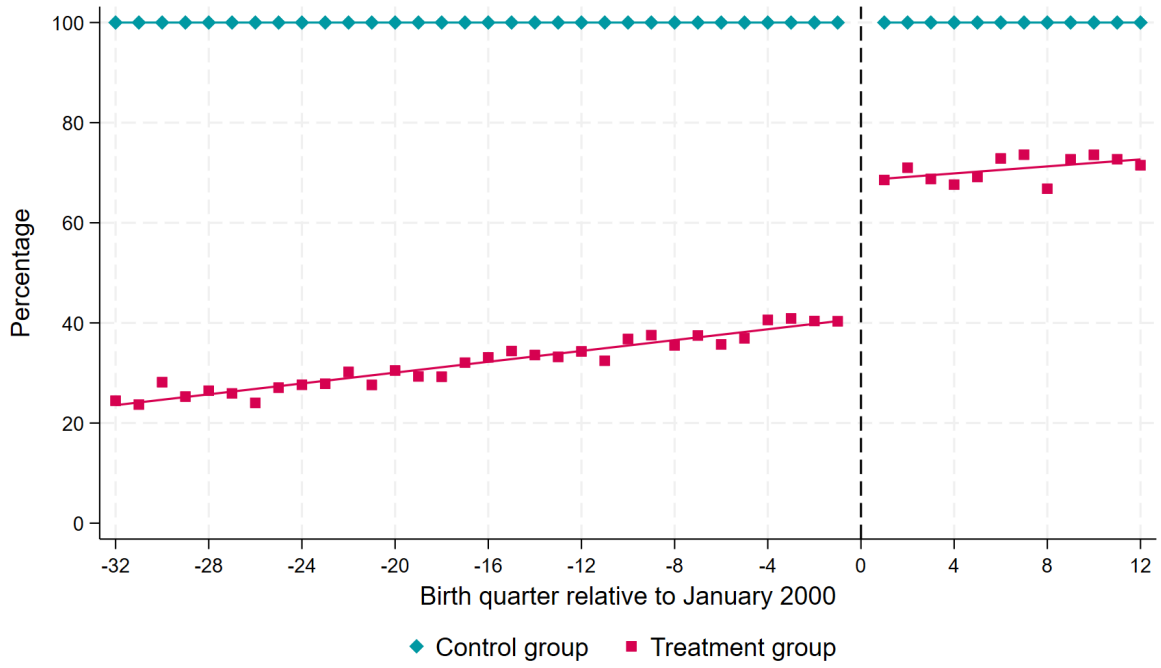
In contrast, a substantial increase in German citizenship is visible for the treatment group after the reform. Between 20 and 40 percent of focal children born between 1992 and 1999 have German citizenship at birth. They acquire citizenship either because one of their parents naturalized before childbirth or because their parents might have applied for the child's citizenship using the transition rule. However, the percentage jumps to around 70 percent for focal children born after the reform. The share does not increase to 100 percent after the reform because at least one parent must have lived in Germany and held a legal residence title for eight years at the time of childbirth. In general, there is a slight upward trend visible before and after the reform. Children born in later birth quarters are more likely to have German citizenship.

Table A.1 in the Appendix shows the first stage results as a regression for the treatment group. It can be seen that the increase has a size of 38 percentage points for children born between 1992 and 2002. For the sample 1994-2002 there is an increase of 36 percentage points and 28 percentage points for the sample born 1999-2000. The increase is stronger for a larger bandwidth due to the overall upward trend in citizenship.

Consequently, in this paper, I estimate an intention-to-treat effect and scale my results by this point complier rate (see a discussion of this in Section 3). I will use the three different complier rates depending on which sample I use to estimate the reform's effect.

[23]This variable is also measured from the parent's perspective of the questions "How often do you visit the parent teacher conferences?", "How often do you contact teachers outside the parent teacher conferences and open school days regarding behavior, performance or problems of the child?", "How often do you engage in the Parent Teacher Association (PTA)?", "How often do you help with the organization of parties or events at the school?".

Figure 2: Percentage of Children with Citizenship at Birth by Birth Quarter – Relative to January 2000



Source: German Microcensus (2010-2020).

5.2 Effects on Children's and Siblings' Education

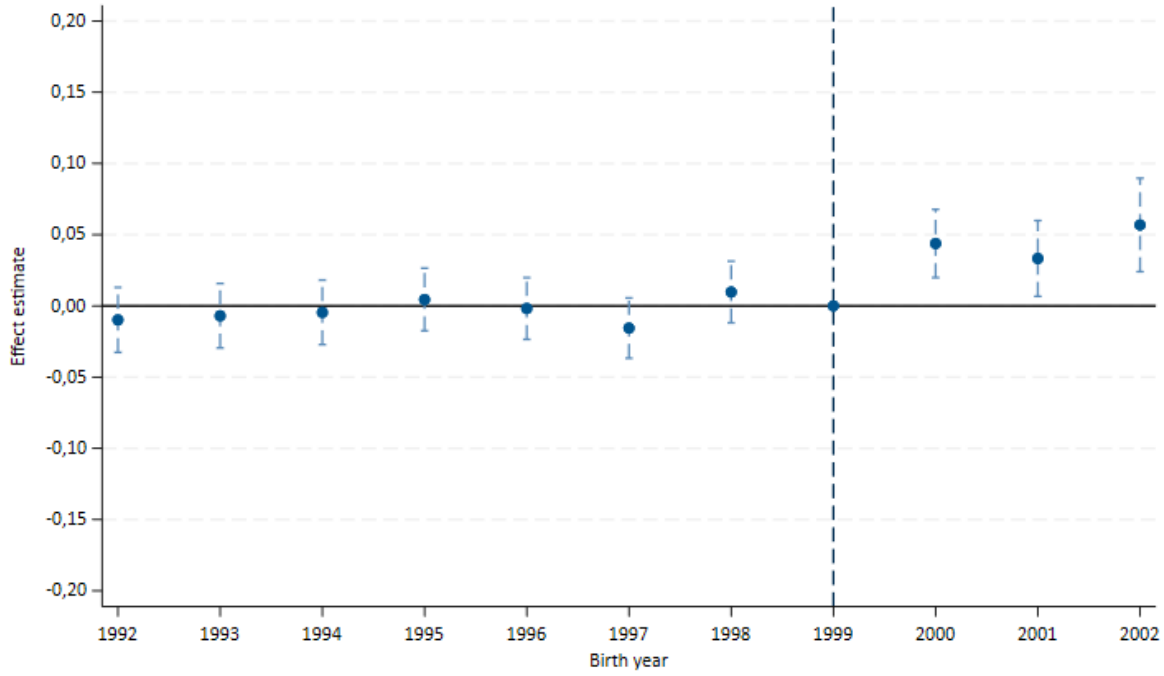
After establishing that the reform increased the likelihood of focal children in the treatment group to have German citizenship without affecting focal children in the control group, this section now discusses the consequences of the reform for the focal children and their older siblings.

In Figure 3, I examine the impact of the reform on the education of focal children using the event study approach described in equation 1. The figure shows the interaction between the treatment variable $Treat_i$ and the birth cohorts, compared to the last pre-reform year, 1999. It shows the reform's effect on the completion of the academic school track. The coefficients of the birth cohorts born before the reform (1992-1998) indicate that the two groups' pre-trends are not statistically different from each other when compared to the last pre-reform year, 1999. This supports the argument that the two studied groups had a similar trend in the outcome variable before the treatment, and would have continued to follow similar trends had the treatment not occurred. This strengthens the case for identifying a causal effect.

The interaction coefficients of the birth cohorts from 2000-2002 show a statistically significant

and positive effect on focal children's completion of the academic school track, which remains consistent for the first three birth cohorts.[24] This corroborates and extends previous findings pointing to positive short-term educational effects (see e.g., Cygan-Rehm, 2018; Felfe et al., 2020; Gathmann et al., 2021). Investigating the effect until the end of secondary school is important because students might change their trajectory during later stages and can only obtain a higher education entrance qualification if they attend a school leading to a university entrance qualification at the end of secondary school.

Figure 3: Effect on focal children's academic school track completion



Note: These coefficients are estimated using the event study approach described in equation 1. The figure displays the coefficients of the interaction of the treatment variable $Treat_i$ with the birth cohorts compared to the last pre-reform year 1999. The outcome variable captures whether the focal child (aged 17-22) either obtained a university entrance qualification or currently attends a school track leading to university entrance qualification. The treatment group includes all children born to two parents who were born abroad and immigrated. The control group includes all children with at least one parent born in Germany. All regressions include year and state fixed effects, the child's sex, the mother's age at birth, the highest educational degree in the household and the birth month. N=280,525. 90% confidence intervals are shown.
Source: German Microcensus (2016-2020).

In Table 2, I confirm the results using a difference-in-differences approach as described in equation 2. Columns 1 and 2 present the effects on the focal child directly with column 1 depicting the results for the entire sample and column 4 showing results for a restricted sample of focal children born just around the cutoff (born in 1999 or 2000). It is evident that the birthright citizenship reform significantly increases the probability of the focal child completing school with a university entrance qualification or attending a school that leads to such qualification. This effect holds even when I narrow down the sample to only children born in the two years

[24] I cannot investigate any later birth cohorts as 2020 is the most recent available data, and younger cohorts would not yet be old enough.

around the cutoff. Citizenship increases the likelihood that a focal child obtains a university entrance degree or attends the track which leads to a university entrance qualification by 4.6 or 4.2 percentage points. Comparing this with the pre-reform average, this is an increase of 6 to 7 percent. Scaling the effect by the first stage complier rate (38 and 28 percentage points) gives a local average treatment effect of 12 or 14.6 percentage points.

The estimated effect size is smaller than what previous research has shown. Focal children are 4 to 5 percentage points more likely to obtain a university entrance degree while Felfe et al. (2020) showed that birthright citizenship increases the likelihood of attending the academic track in fifth grade by nine percentage points. This indicates that effects might fade out slightly over time. Some children might attend the academic track as a consequence of birth right citizenship but not obtain the high school degree there. I present further robustness checks on this result later (see section 5.5) and I move now to estimate possible spillover effects on siblings.

Table 2: Effects on focal child's and older sibling's high school completion - difference-in-differences

	Focal Child		Older Sibling	
	(1)	(2)	(3)	(4)
Treat × Post	0.0459***	0.0416***	0.0178*	0.0325**
	(0.00826)	(0.0146)	(0.00925)	(0.0161)
Observations	280525	45377	89550	25509
Pre-reform Mean	0.652	0.665	0.611	0.617
Birth cohorts	1992-2002	1999-2000	1994-2002	1999-2000

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses. The treatment group includes all children born to two parents who were born abroad and immigrated. The control group includes all children with at least one parent born in Germany. All regressions include year and state fixed effects, the child's sex, the mother's age at birth, the highest educational degree in the household and the birth month, columns 3 and 4 also control for the birth order and the age difference between the siblings. The pre-reform mean shows the sample average for the treatment group born before the reform. *Source:* German Microcensus (2010-2020).

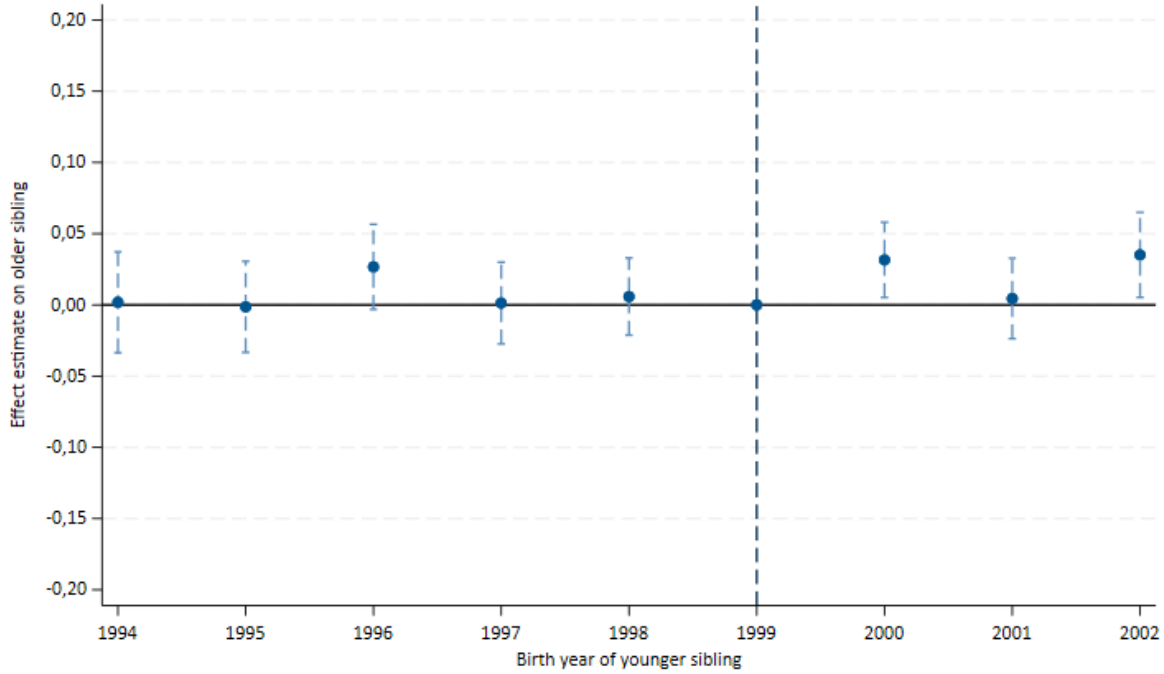
The previous results confirms that citizenship has advantages for the focal child. However, it is important to investigate whether the reform also affects other children in the household in order to evaluate the overall benefits. In Figure 4, I examine whether the birthright citizenship reform also impacted older siblings who were not the main focus of the reform. Specifically, I focus on older siblings born between 1990 and 1998.

Again, this figure shows the interaction of the treatment variable $Treat_i$ with the birth cohorts in comparison to the last pre-reform year, 1999. It illustrates the reform's effect on the academic school track completion of older siblings. The results also reveal a statistically significant

increase in the likelihood that older siblings complete the academic school track if the focal child was born after the reform (i.e., from 2000 onwards).

Similar to the development of academic school track completion for the focal child, there are no noticeable divergent pre-trends for the outcomes of older siblings. However, the coefficient for the birth cohort 1996 is almost as large as the one for the cohorts after the reform, albeit not significant. This allows to interpret this estimate as a causal estimate. The result demonstrates that granting birthright citizenship is not only beneficial for the education of focal children, but also for the education of their older siblings.

Figure 4: Effect on siblings' academic school track completion



Note: These coefficients are estimated using the event study approach described in equation 1. The figure displays the coefficients of the interaction of the treatment variable $Treat_i$ with the birth cohorts compared to the last pre-reform year 1999. The outcome variable captures whether the individual (aged 17-22) either obtained a university entrance qualification or currently attends a school track leading to university entrance qualification. The treatment group includes all children born to two parents who were born abroad and immigrated. The control group includes all children with at least one parent born in Germany. All regressions include year and state fixed effects, the child's sex, the mother's age at birth, the highest educational degree in the household, the younger sibling's birth month, the birth order and the age difference between the siblings. N=89,550. 90% confidence intervals shown. *Source:* German Microcensus (2010-2020).

Investigating the effects for older siblings using a difference-in-differences approach (Table 2) confirms the effect found in Figure 4. Granting citizenship to the focal child increases the probability that older siblings complete secondary school with the academic track (column 3). Restricting the sample to older siblings of focal children born in 1999 or 2000 (column 4) produces a larger treatment effect that is twice the size. Compared to the direct effect on the focal child, the spill-over effect is smaller, with 1.8 or 3.3 percentage points (or 3-5 percent in comparison to the pre-treatment average). However, the spillover effect still corresponds to

40-80 percent of the size of the direct effect on the focal child, depending on the specification. Scaling the spillover effect by the complier rate (36 percentage points) to calculate the local average treatment effect yields an effect size of 4.9 or 11.4 percentage points.

5.3 Mechanism: Parental Investments

This section investigates whether changes in parental investments can explain the substantial effects on older siblings. The positive spillovers on older siblings identified in this paper could be a direct effect of the focal child's education on the older sibling's education. Karbownik and Özek (2023) for example investigate a school starting reform in Florida and show that being one of the oldest children in class leads to a better school performance. In a second step they show that the better performance of this focal child has positive spillovers on the educational outcomes of their younger siblings. However, they find negative spillovers on educational outcomes of older siblings in high SES households. Therefore, it is likely that there are also other channels through which citizenship has positive spillovers on older siblings. Parents' behavior towards their children might be affected if a focal child is granted birthright citizenship. As discussed above, it is possible that parental investment in their children increases, decreases, or remains unchanged. Furthermore, it is also possible that the effects differ for the focal children and their non-treated older siblings.

Table 3, panel A displays the results for parental involvement in the focal child's education. It can be observed that granting children birthright citizenship increases the overall educational investments of parents in the focal children. This increase is primarily driven by an increase in the number of educational resources that parents provide for the focal child like a computer or books for homework.

In Table 3, panels B and C, I further investigate whether these increases also emerge in families with more children than the focal child. It can be seen that there is only an increase in parents' investment if the focal child is an only child. In families with only one child, parents provide their children with more educational resources and have more conversations about school. A detailed analysis reveals that focal children are more likely to have educational software and books for homework (see Table B.2 in the appendix). However, if the focal child has at least one sibling, parents' investment in the focal child does not change, which raises the question of whether parents' overall investment remains unchanged or whether they increase their investment in their older children not directly affected by the reform.

To answer this question, I next examine the impact of the reform on parents' investments in

the focal child's older siblings (panel D). There is a substantial increase in parents' educational investments in older siblings, and this change is substantially larger than the change in investments in focal children without any siblings. It is driven by an increase in the frequency of parental support and the frequency of contact between parents and schools. An investigation of the individual items that are part of these index variables shows that there is particularly an increase in the frequency of one-on-one meetings of parents with the child's teacher, but there are also increases in parents attending parent-teacher conferences and parent council meetings. The increase in the frequency of parents' support is driven by an increase in parents' support with preparing presentations for school (see Table B.2 in the appendix). The increased support with presentations, as well as parents' meetings with teachers, may be attributed to the fact that children's citizenship improves parents Germany proficiency (see Avitabile et al., 2013). This explanation is particularly plausible considering that the parents whose focal children were impacted by the reform had resided in Germany for at least eight years at the time of their child's birth.

These results indicate that access to birthright citizenship increases parental investments in the focal child. However, parents with more than one child shift their focus to children not granted citizenship. While they do not shift investments away (i.e., decreasing investments), investments in the focal child remained unchanged. In contrast, investments in older, non-treated siblings increased substantially, potentially to compensate for their lower labor market possibilities and unequal external inputs, as suggested by Berry et al. (2020).

5.4 Heterogeneity

To further investigate the mechanisms driving the effects of citizenship, this section will discuss heterogeneous effects. Table B.3 presents the results for different subsamples. It can be seen that focal boys, in particular, benefit from the citizenship reform (panel A). This finding is interesting because previous research has shown that immigrant girls in Germany have higher educational attainment than boys (Kristen and Granato, 2007). Citizenship may serve as a means to address gender differences. Additionally, older siblings also seem to benefit slightly more if the focal child is male. This indicates that focal boys are not only benefiting more but also have larger spillovers of these benefits on their older siblings. However, this effect is not statistically significant and can only serve as a suggestion. A differentiation by the older sibling's gender (panel B) shows that effects are larger for older sisters than for older brothers (however, not statistically significant). Therefore, the results are not driven by spillovers from focal boys to their older brothers.

Table 3: Effects on parental investments

	Parental Investments				
	Overall	Educational resources	Frequency conversations	Frequency support	Frequency contact school
	(1)	(2)	(3)	(4)	(5)
Panel A: Investment in children					
Treat × Post	0.0898***	0.0762*	0.0585	0.0435	0.127
	(0.0336)	(0.0353)	(0.0547)	(0.0516)	(0.0947)
N	24,805	16,158	8,371	16,283	3,864
Pre-reform Mean	2.529	2.306	2.961	2.717	1.811
Panel B: Investment in children (No siblings)					
Treat × Post	0.183***	0.276***	0.201**	0.0342	0.177
	(0.0577)	(0.0811)	(0.0927)	(0.0753)	(0.107)
N	9,358	3,789	3,864	7,907	2,944
Pre-reform Mean	2.603	2.586	2.973	2.661	1.810
Panel C: Investment in children (At least one sibling)					
Treat × Post	0.0465	0.0301	-0.00178	0.0509	-0.0244
	(0.0415)	(0.0416)	(0.0813)	(0.0625)	(0.183)
N	12,348	10,015	3,572	8,105	920
Pre-reform Mean	2.542	2.286	2.943	2.733	1.813
Panel D: Investment in siblings					
Treat × Post	0.290***	0.119	0.231	0.434**	0.594***
	(0.104)	(0.152)	(0.233)	(0.206)	(0.174)
N	3,407	1,279	1,060	2,033	1,160
Pre-reform Mean	2.536	3.432	2.615	1.971	1.347
Min - Max	0-4	0-4	1-4	1-4	0-4

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors clustered at the school level in parentheses. All regressions control for the child's sex, the mother's age, the highest educational degree in the household, the survey year and the federal state. Analyses of parental investments in the younger sibling control for the child's birth month and analyses of parental investments in older siblings control or the birth order, age difference. *Source:* National Educational Panel Study (NEPS SC3, SC4, 2010-2016).

Differentiating by age differences between siblings (panel C) shows that the positive sibling spillovers are driven by older siblings who are more than four years (the median) older than the focal child. This means that siblings benefit most if they were at least 4 (and up to 12) years old at the time when the focal child received citizenship. It is possible that siblings who were old enough at the time of the focal child's citizenship access to understand what was happening were more affected in their identity and feeling of belonging. Changes in personal identity and attitudes might be drivers especially of spillovers on siblings.

As Dahl et al. (2022) demonstrate an improvement in the well-being of boys from non-Muslim households following the birthright citizenship reform, while finding a deterioration in the well-being of girls from Muslim households, I next investigate effects for children whose mothers migrated from predominantly Muslim and non-Muslim countries.[25] However, unlike the effects by children's gender (which I can confirm), I find larger positive effects on focal children whose mothers migrated from Muslim countries.

Finally, the effects are greater for older siblings in families that migrated from EU countries, but for focal children in families that migrated from non-EU countries (panel E). One possible explanation is that citizenship provides access to the EU labor market, which only applies to focal children (who actually obtained a European Union passport through the reform). Older siblings can only access the EU labor market if they also naturalize. Without naturalization, the citizenship of the focal child does not impact the older sibling's labor market but may have other effects. Govind and Sirugue (2023) found that individuals from EU countries are more likely to naturalize in France, even though they experience the smallest benefits from naturalization. This finding suggests that citizenship may be about more than just its legal benefits. For example, a focal child's access to citizenship may influence the family's sense of identity with the host country, which is relevant for families from both EU and non-EU countries.

5.5 Robustness of the Results

Common trend assumption. The main explanatory variable, β_3 in equation 2, identifies the causal effect of birthright citizenship under the assumption of a common trend of the treatment and control groups. Figures 3 and 4 support this assumption, as there are no visible pre-trends that diverge significantly from 0. Additionally, there were no reforms or events that only affected either the control or the treatment group. One small reform that took place was the abolition of the so-called "Optionspflicht" in 2014, which originally required children who received citizenship through the birthright citizenship reform to choose between German

[25] A country is defined as Muslim if the majority of the population is Muslim.

citizenship and their second nationality once they turned 18. However, since no focal children who received citizenship through the birthright citizenship reform were 18 in 2014, none of them had to make that decision yet. Therefore, this reform should not have had differential effects on either group.

Manipulation around the cutoff. A second potential threat would be a manipulation of the birth date around the cutoff in order to be eligible for one citizenship law or the other. Such manipulation would occur if the reform influenced fertility rates. However, parents had no incentive to delay childbirth until 2000. Instead, parents of children born between 1990 and 1999 could apply for German citizenship until December 31, 2000, as long as they also met the residency requirement. Avitabile et al. (2014) find a reduction in immigrant fertility from 2001 onward. As a result, the effects found for focal children born in 2000 are interpreted as the main effects, while effects for later cohorts are interpreted with caution. The reduction in fertitlity is also the reason why I do not analyze spillover effects on younger siblings, i.e. siblings born after the reform cohort.

Transition rule. The transition rule may cause some focal children born before 2000 to also acquire German citizenship. This means that there is a possibility that I mistakenly classify some children as untreated when they actually received German citizenship through the transition rule. However, a study by Felfe et al. (2020) found that only 20 percent of children received citizenship through the transition rule, and I scale my effects accordingly. The transition rule may have also affected older siblings. However, I limit the sample of siblings to children born between 1990 and 1998 to ensure that all siblings in the sample could have similarly benefited from the transition rule. If the focal child's access to citizenship prompted parents to apply for citizenship for their other children, it would be an explanatory mechanism but not a threat to the identification strategy.

Placebo test. To rule out the possibility that my effects are driven by unobservable characteristics or underlying trends, I perform a placebo reform test. In this test, I use the same event study approach (see equation 1) and time period as in the main specification. However, instead of comparing my treatment group with the control group, I compare two subgroups within the control group for which nothing should have changed due to the reform. Within the control group I compare children born to one parent born abroad and one parent born in Germany with children with two parents born in Germany. Both of these groups already had German citizenship at birth before the reform through their parents' citizenship and should therefore not have been affected by the reform. Figures C.1 and C.2 in the Appendix show that there are

no significant effects observed in this placebo treatment group.

Controlling for household income. It is possible that an increase in parents' financial investments is driven by increased household income due to the child's citizenship. However, even after controlling for household income, the effects on parents' investments remain robust.[26]

Standard errors. In a final robustness check, I cluster the standard errors at the birth-month/year level (see Figures C.3 and C.4 in the Appendix). The main results for the birth cohort 2000 are still statistically significant in this specification. For siblings, the effect for the birth cohort 2002 (which cannot be interpreted as causal due to the previously-discussed fertility changes) is no longer statistically significant.

6 Conclusion

This paper examines a German reform that automatically grants citizenship at birth to immigrant children who were born since January 1, 2000. To be eligible, at least one parent must have resided in Germany for eight years at the time of the child's birth. The paper contributes to the existing literature by confirming the positive impact of this reform on focal children's educational outcomes and extending the analysis by investigating long-term effects and the completion of secondary education. It also makes a contribution by investigating spillover effects of this reform on older siblings, which is crucial for evaluations of benefit-cost ratios of citizenship policies and understanding the mechanisms behind the effects of citizenship on families.

The results of this study demonstrate that access to birthright citizenship has long-term effects on focal children's academic school track completion. Children are four percentage points more likely to achieve a university entrance qualification or attend the academic school track which leads to this degree at the end of high school. This effect is smaller than the medium-term effects found in previous research. Felfe et al. (2020) find that children are 9 percentage points more likely to attend the academic track at age 10. Around 8 years later, the effect seems to have partly faded out but is still substantial.

Beyond the focal children directly targeted by the reform, there are positive spillover effects on their older – non-eligible – siblings. Granting birthright citizenship to the focal child increases the likelihood of older siblings obtaining a university entrance qualification, which in turn enables them to pursue higher education. The spillovers on older siblings are about 40 to 80 percent[27] of the size of the direct effects on the focal child and should therefore not be over-

[26] The results are available from the author upon request.
[27] depending on the specification

looked. My analysis indicates that these spillover effects are driven by an increase in parental investments in older, non-eligible siblings while maintaining the same level of investments for the focal child. The positive spillover effects on older siblings align with the findings of Bettinger et al. (2014), who discovered positive spillover effects of parental time for care of a younger sibling on the education of older siblings.

These findings confirm that early access to citizenship in the host country has a positive impact on children. Moreover, this paper demonstrates that granting citizenship to children has even greater benefits than previous studies have estimated. The current political debates surrounding citizenship laws in countries like Germany highlight the timeliness of the topic and the importance of evaluating the benefits and costs associated with granting citizenship. This paper demonstrates that the recently implemented reduction in the residency requirement in Germany, from eight years to five years, which also expedites access to birthright citizenship, may enhance the educational attainment of children and their siblings.

The findings also challenge the common argument used to oppose facilitated access to citizenship, which suggests that citizenship should only be granted after individuals have fully integrated into society. Specifically, I demonstrate that granting early access to citizenship promotes the integration of not only the recipients themselves, but also their siblings. The results suggest that citizenship should not solely mark the culmination of an integration process, but can also serve as a catalyst for initiating the process of integration.

The demonstrated advantages for the education of immigrant children can also benefit host countries in the long run by addressing demographic change and decreasing labor shortages (see e.g. OECD, 2023*b*), as well as reducing educational inequalities. The German governments skill shortage strategy for example mentions not only attracting immigrants but also a reducing educational disadvantages for immigrant children as solutions. My findings show that granting birthright citizenship to immigrant children can be one way of promoting their education and even the education of their siblings. If educational disadvantages between immigrant and non-immigrant children are decreasing, this may have long-term effects on labor market participation and thus contribute to addressing labor shortages.

However, considering these results, one needs to bear in mind that those families which qualify for birthright citizenship and can be observed in this study are a specific group of immigrants. First, these families immigrated at least eight years prior to the birth of the child in order to qualify for birthright citizenship. Secondly, the families remained in Germany at least until the child left high school as otherwise I could not observe them in the dataset. This could mean that

these families are especially motivated to stay in Germany and potentially integrate themselves. The conclusions do not necessarily hold true for individuals who only arrived in Germany and are not planning to stay in the country. However, from a countries perspective it is also more pressing to address the integration of those immigrants that are planning to stay in the country long-term.

As the treated children are just entering the labor market, future research should evaluate the labor market effects of birthright citizenship reforms and whether they can help meet the demand for highly skilled labor. Additionally, to gain a comprehensive picture of the effects on the whole family, it would be interesting to evaluate long-term spillover effects on younger siblings, too, as soon as younger siblings reach the age at which they leave secondary school.

References

Almond, D. and Mazumder, B. (2013), 'Fetal origins and parental responses', *Annual Review of Economics* **5**(1), 37–56.

Ammermueller, A. (2007), 'Poor background or low returns? why immigrant students in germany perform so poorly in the programme for international student assessment', *Education Economics* **15**(2), 215–230.

Avitabile, C., Clots-Figueras, I. and Masella, P. (2013), 'The effect of birthright citizenship on parental integration outcomes', *The Journal of Law and Economics* **56**(3), 777–810.

Avitabile, C., Clots-Figueras, I. and Masella, P. (2014), 'Citizenship, fertility, and parental investments', *American Economic Journal: Applied Economics* **6**(4), 35–65.

Berry, J., Dizon-Ross, R. and Jagnani, M. (2020), 'Not playing favorites: An experiment on parental fairness preferences (tech. rep.)', *NBER Working Paper* (w26732).

Bettinger, E., Hægeland, T. and Rege, M. (2014), 'Home with mom: the effects of stay-at-home parents on children's long-run educational outcomes', *Journal of Labor Economics* **32**(3), 443–467.

Blossfeld, H.-P. Roßbach, H.-G. (2019), *Education as a lifelong process: The German National Educational Panel Study (NEPS). Edition ZfE (2nd ed.)*, Springer VS.

BMI (2023*a*), 'Erwerb der deutschen Staatsangehörigkeit durch Geburt in Deutschland', `https://www.bmi.bund.de/DE/themen/verfassung/staatsangehoerigkeit/optionspflicht/optionspflicht-node.html`. Accessed: 2023-01-04.

BMI (2023*b*), 'Staatsangehörigkeitsrecht', https://www.bmi.bund.de/DE/themen/verfassung/staatsangehoerigkeit/staatsangehoerigkeitsrecht/staatsangehoerigkeitsrecht-node.html. Accessed: 2023-01-04.

Buckles, K. S. and Hungerman, D. M. (2013), 'Season of birth and later outcomes: Old questions, new answers', *Review of Economics and Statistics* **95**(3), 711–724.

Bundesministerium für Arbeit und Soziales (2022), *Fachkräftestrategie der Bundesregierung*, Berlin.

Currie, J. (2011), 'Inequality at birth: Some causes and consequences', *American Economic Review* **101**(3), 1–22.

Cygan-Rehm, K. (2018), 'Estimating the effect of early-childhood citizenship on education using policy changes as instruments', *Applied Economics Letters* **25**(20), 1426–1431.

Dahl, G. B., Felfe, C., Frijters, P. and Rainer, H. (2022), 'Caught between cultures: Unintended consequences of improving opportunity for immigrant girls', *The Review of Economic Studies* **89**(5), 2491–2528.

Dahl, G. B., Rooth, D.-O. and Stenberg, A. (2023), 'Intergenerational and sibling spillovers in high school majors', *NBER Working Paper No. 27618* .

Die Beauftragte der Bundesregierung für Migration, Flüchtlinge und Integration (2023), 'Einbürgerung', https://www.integrationsbeauftragte.de/ib-de/ich-moechte-mehr-wissen-ueber/einbuergerung. Accessed: 2023-01-19.

Dizon-Ross, R. (2021), 'Using randomized information shocks to understand how parents' investments depend on their children's ability', *Unpublished manuscript* .

Dustmann, C., Frattini, T. and Lanzara, G. (2012), 'Educational achievement of second-generation immigrants: an international comparison', *Economic Policy* **27**(69), 143–185.

Fan, X. and Chen, M. (2001), 'Parental involvement and students' academic achievement: A meta-analysis', *Educational psychology review* **13**(1), 1–22.

Felfe, C., Rainer, H. and Saurer, J. (2020), 'Why birthright citizenship matters for immigrant children: Short-and long-run impacts on educational integration', *Journal of Labor Economics* **38**(1), 143–182.

Figlio, D. N., Karbownik, K. and Özek, U. (2023), 'Sibling spillovers may enhance the efficacy of targeted school policies', *NBER Working Paper No. 31406* .

García, J. L., Bennhoff, F. H. and Leaf, D. E. (2024), 'The dynastic benefits of early childhood education: Participant benefits and family spillovers', *Journal of Human Resources* **18**(1).

Gathmann, C. and Garbers, J. (2023), 'Citizenship and integration', *Labour Economics* **82**, 102343.

Gathmann, C. and Keller, N. (2018), 'Access to citizenship and the economic assimilation of immigrants', *The Economic Journal* **128**(616), 3141–3181.

Gathmann, C., Vonnahme, C., Busse, A. and Kim, J. (2021), *Marginal returns to citizenship and educational performance*, Ruhr Economic Papers No. 920.

Giannola, M. (2024), 'Parental investments and intra-household inequality in child human capital: evidence from a survey experiment', *The Economic Journal* **134**(658), 671–727.

Goodman, J., Hurwitz, M., Smith, J. and Fox, J. (2015), 'The relationship between siblings' college choices: Evidence from one million sat-taking families', *Economics of Education Review* **48**, 75–85.

Govind, Y. and Sirugue, L. (2023), 'To become or not to become french: Conscription, naturalization, and labor market integration', *Unpublished manuscript* .

Karbownik, K. and Özek, U. (2023), 'Setting a good example?: Examining sibling spillovers in educational achievement using a regression discontinuity design', *Journal of Human Resources* **58**(5), 1567–1607.

Kristen, C. and Granato, N. (2007), 'The educational attainment of the second generation in germany: Social origins and ethnic inequality', *Ethnicities* **7**(3), 343–366.

Landersø, R. K., Nielsen, H. S. and Simonsen, M. (2020), 'Effects of school starting age on the family', *Journal of Human Resources* **55**(4), 1258–1286.

NEPS Network (2022), *National Educational Panel Study, Scientific Use File of Starting Cohort Grade 5*, Leibniz Institute for Educational Trajectories (LIfBi), Bamberg.

Nordin, M., Heckley, G. and Gerdtham, U.-G. (2020), 'Impact of a tertiary eligibility threshold on tertiary education and earnings: A discontinuity approach', *Economic Inquiry* **58**(1), 401–424.

OECD (2022), *International Migration Outlook 2022*, Paris: OECD Publishing.

OECD (2023*a*), *PISA 2022 Results (Volume I)*.
URL: *https://www.oecd-ilibrary.org/content/publication/53f23881-en*

OECD (2023*b*), *Retaining Talent at All Ages, Ageing and Employment Policies*, OECD Publishing, Paris.

Piopiunik, M. (2014), 'Intergenerational transmission of education and mediating channels: Evidence from a compulsory schooling reform in germany', *The Scandinavian Journal of Economics* **116**(3), 878–907.

Quadlin, N. (2019), 'Sibling achievement, sibling gender, and beliefs about parental investment: Evidence from a national survey experiment', *Social Forces* **97**(4), 1603–1630.

RDC of the Federal Statistical Office and Statistical Offices of the Federal States, Microcensus, 10.21242/12211.2020.00.00.1.1.0 (2010-2020), *own calculations*.

Riphahn, R. T., Sander, M. and Wunder, C. (2013), 'The welfare use of immigrants and natives in germany: the case of turkish immigrants', *International Journal of Manpower* **34**(1).

Sachverständigenrat deutscher Stiftungen für Integration und Migration (2018), 'Steuern, was zu steuern ist: Was können einwanderungs-und integrationsgesetze leisten?: Jahresgutachten 2018'.

Sajons, C. (2019), 'Birthright citizenship and parental labor market integration', *Labour Economics* **57**, 1–22.

Sajons, C. and Clots-Figueras, I. (2014), 'Birthright citizenship and education-do immigrant children need a passport to thrive?', *Unpublished manuscript* .

Schührer, S. (2018), *Türkeistämmige Personen in Deutschland: Erkenntnisse aus der Repräsentativuntersuchung" Ausgewählte Migrantengruppen in Deutschland 2015"(RAM)*, Bundesamt für Migration und Flüchtlinge.

Skopek, J., Pink, S. and Bela, D. (2012), *Starting Cohort 3: 5th Grade (SC3)–SUF Version 1.0.0. Data Manual*.

Statistisches Bundesamt (2007), *Geburten in Deutschland*, Wiesbaden: Statistisches Bundesamt.

Statistisches Bundesamt (2022), *Bevölkerung mit Migrationshintergrund - Ergebnisse des Mikrozensus 2021 - Fachserie 1 Reihe 2.2 - 2021 (Erstergebnisse)*, Wiesbaden: Statistisches Bundesamt.

Statistisches Bundesamt, GESIS (2022), *Wichtige Informationen zur Nutzung des Mikrozensus Scientific Use Files 2019*.

Weinmann, M. (2022), 'Barriers to naturalization: How dual citizenship restrictions impede full membership', *International Migration* **60**(5), 237–251.

Wikle, J. and Ackert, E. (2022), 'Child citizenship status in immigrant families and differential parental time investments in siblings', *Social Sciences* **11**(11), 507.

Worbs, S. (2008), *Die Einbürgerung von Ausländern in Deutschland: Integrationsreport, T.3.*, Bundesamt für Migration und Flüchtlinge (BAMF) Forschungszentrum Migration, Integration und Asyl (FZ), Working Paper 17. Nürnberg: Bundesamt für Migration und Flüchtlinge (BAMF) Forschungszentrum Migration, Integration und Asyl (FZ).

Yi, J., Heckman, J. J., Zhang, J. and Conti, G. (2015), 'Early health shocks, intra-household resource allocation and child outcomes', *The Economic Journal* **125**(588), F347–F371.

Appendices

A First Stage

Table A.1: First stage

	Birth cohorts		
	1992-2002	1994-2002	1999-2000
	(1)	(2)	(3)
Post	0.383***	0.363***	0.284***
	(0.00376)	(0.00393)	(0.00794)
Observations	80,164	67,684	15,829

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses. Post equals 1 for all children born since 2000 and o for all children born until 1999. The regressions only include children in the treatment group (children born to two parents who were born abroad and immigrated). *Source:* German Microcensus (2010-2020).

B Detailed and Subsample Analyses

Table B.2: Effects on parental investments (detailed analysis)

	Parental Investments			
	(1)	(2)	(3)	(4)
Panel A: Investment in children (no siblings): Educational resources				
	Desk	Educational Software	Books for Homework	Computer
Treat × Post	0.0261	0.119**	0.144***	0.008
	(0.0305)	(0.0557)	(0.0507)	(0.0162)
N	3,252	3,209	3,241	3,156
Pre-reform Mean	0.941	0.491	0.718	0.973
Min - Max	0-1	0-1	0-1	0-1
Panel B: Investment in children (no siblings): Frequency conversations about...				
	Curriculum	Difficulties in School		
Treat × Post	0.222*	0.175*		
	(0.117)	(0.0973)		
N	3,857	3,855		
Pre-reform Mean	2.855	3.092		
Min - Max	1-4	1-4		
Panel C: Investment in siblings: Frequency of support with...				
	Buying Study Material	Support with Presentations		
Treat × Post	0.0329	0.434*		
	(0.347)	(0.219)		
N	816	1,994		
Pre-reform Mean	2.5	1.863		
Min - Max	1-4	1-4		
Panel D: Investment in siblings: Frequency of contact with the school				
	Parent-teacher conferences	Talks with Teachers	Parents Council	Help with School Events
Treat × Post	0.545*	0.872***	0.633**	0.206
	(0.322)	(0.246)	(0.268)	(0.248)
N	1,120	1,175	1,175	1,138
Pre-reform Mean	2.533	1.161	0.645	1.167
Min - Max	0-4	0-4	0-4	0-4

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors clustered at the school level in parentheses. All regressions control for the child's sex, the mother's age, the highest educational degree in the household, the survey year and the federal state. Analyses of parental investments in the younger sibling control for the child's birth month and analyses of parental investments in older siblings control or the birth order, age difference. *Source:* National Educational Panel Study (NEPS SC3, SC4, 2010-2016).

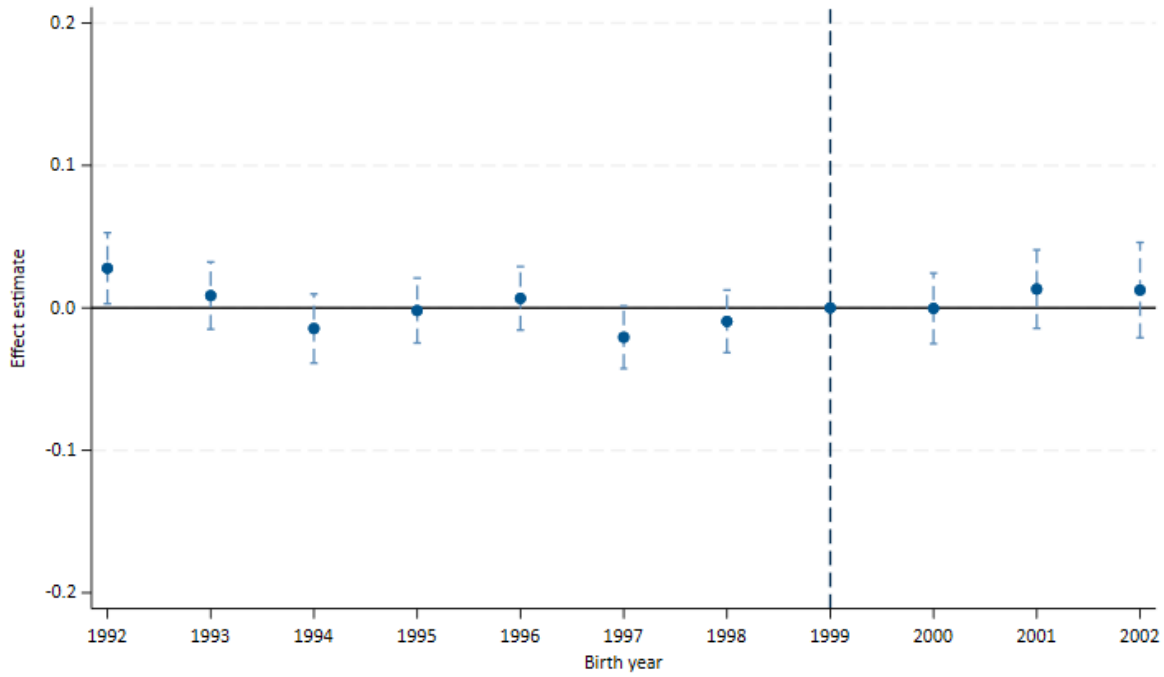
Table B.3: Effects on *target* child's and sibling's high school completion - for different subsamples

	Focal Child		Older Sibling	
	(1)	(2)	(3)	(4)
Panel A: By Focal Child's Gender				
	Female	Male	Female	Male
Treat × Post	0.0420*** (0.0128)	0.0521*** (0.0149)	0.0156 (0.0160)	0.0202 (0.0160)
Observations	140,993	139,532	43,242	46,308
Mean	0.741	0.662	0.688	0.685
Panel B: By Older Sibling's Gender				
			Female	Male
Treat × Post			0.0213 (0.0149)	0.0141 (0.0167)
Observations			43087	46463
Mean			0.726	0.650
Panel C: By Age Difference Between Siblings				
			Below median	Above median
Treat × Post			0.00764 (0.0174)	0.0273** (0.0120)
Observations			46,196	43,354
Mean			0.711	0.661
Panel D: By Mother's Country of Origin				
	Non-muslim	Muslim	Non-muslim	Muslim
Treat × Post	0.0250 (0.0165)	0.0437*** (0.0115)	0.0132 (0.0209)	0.0150 (0.0124)
Observations	261,776	269,084	79,482	85,329
Mean	0.706	0.702	0.699	0.688
Panel E: By Mother's Country of Origin				
	Non-EU	EU	Non-EU	EU
Treat × Post	0.0365*** (0.0113)	0.0383 (0.0235)	0.0143 (0.0119)	0.0227 (0.0354)
Observations	273,476	257,384	87,430	77,381
Mean	0.703	0.705	0.688	0.699

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses. The treatment group includes all children born to two parents who were born abroad and immigrated. The control group includes all children with at least one parent born in Germany. All regressions include year and state fixed effects, the child's sex, the mother's age at birth, the highest educational degree in the household and the birth month controls, columns 3 and 4 also control for the birth order and the age difference between the focal child and the older sibling. *Source:* German Microcensus (2010-2020).

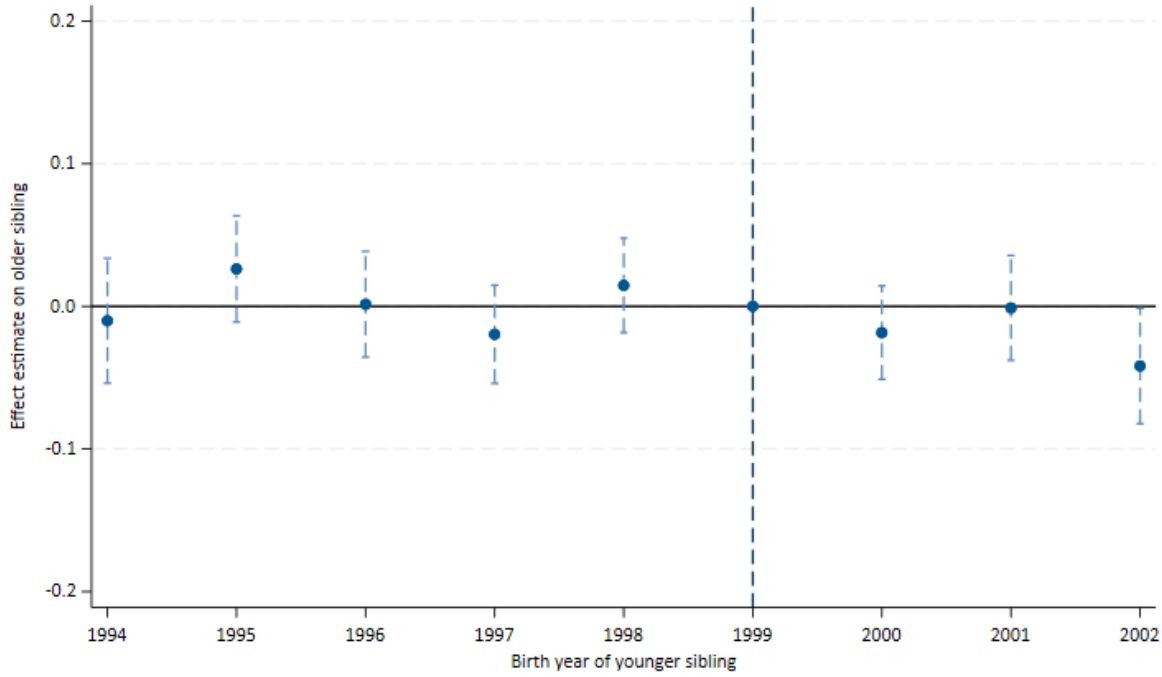
C Robustness

Figure C.1: Placebo test: Effect on focal children's academic school track completion



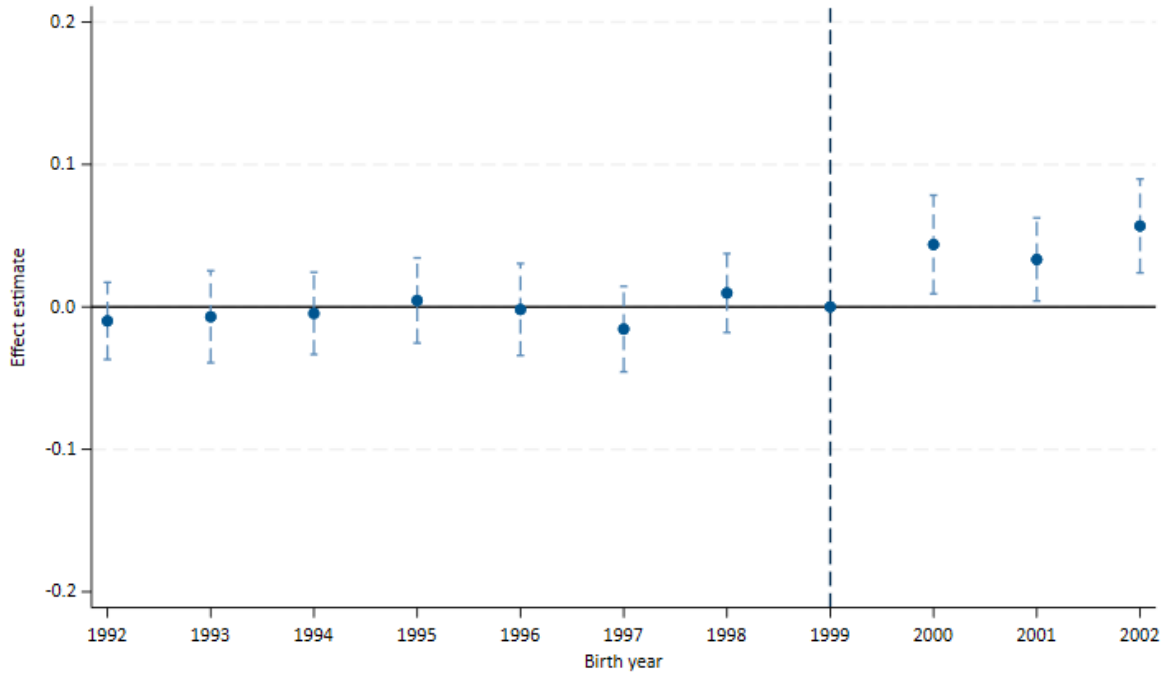
Note: These coefficients are estimated using the event study approach described in equation 1. The figure displays the coefficients of the interaction of the treatment variable $Treat_i$ with the birth cohorts compared to the last pre-reform year 1999. The outcome variable captures whether the individual (aged 17-22) either obtained a university entrance qualification or currently attends a school track leading to university entrance qualification. In this setting, the treatment group includes all children born to one parent who was born abroad and one parent born in Germany. The control group includes all children with both parents born in Germany. All regressions include year and state fixed effects, the child's sex, the mother's age at birth, the highest educational degree in the household and the birth month. N=253,064. 90% confidence intervals are shown. *Source:* German Microcensus (2016-2020).

Figure C.2: Placebo test: Effect on siblings' academic school track completion



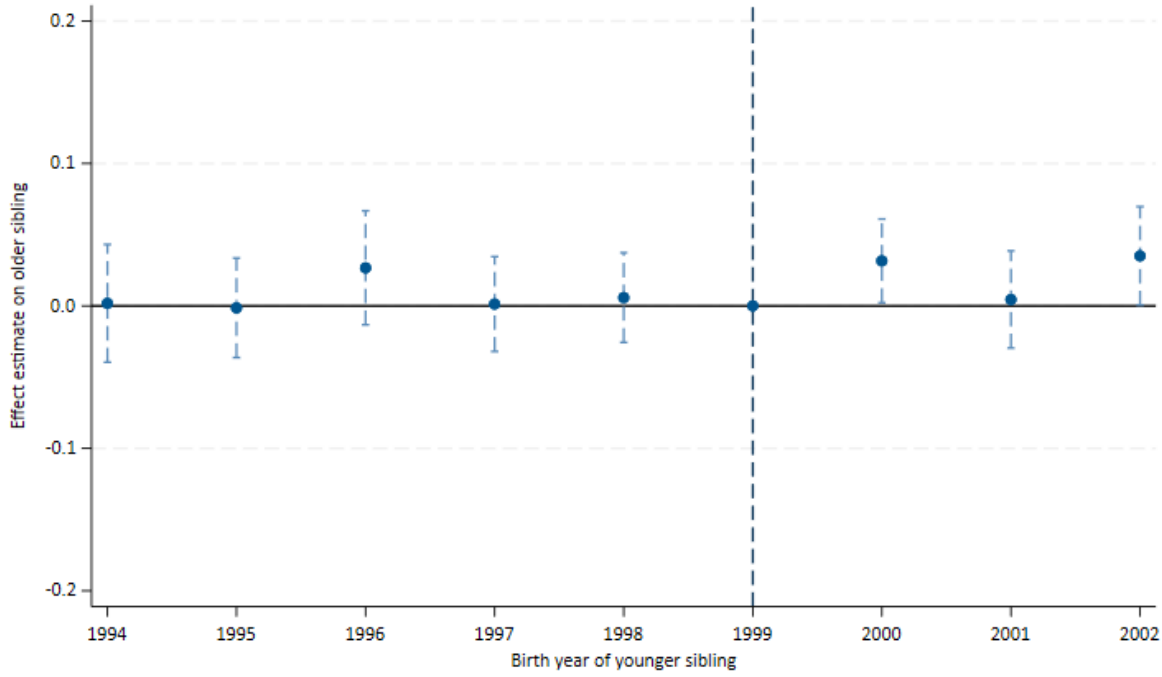
Note: These coefficients are estimated using the event study approach described in equation 1. The figure displays the coefficients of the interaction of the treatment variable $Treat_i$ with the birth cohorts compared to the last pre-reform year 1999. The outcome variable captures whether the individual (aged 17-22) either obtained a university entrance qualification or currently attends a school track leading to university entrance qualification. In this setting, the treatment group includes all children born to one parent who was born abroad and one parent born in Germany. The control group includes all children with both parents born in Germany. All regressions include year and state fixed effects, the child's sex, the mother's age at birth, the highest educational degree in the household, the younger sibling's birth month, the birth order and the age difference between the siblings. N=75,852. 90% confidence intervals shown. *Source:* German Microcensus (2010-2020).

Figure C.3: Standard errors clustered at birth month-year level: Effect on focal children's academic school track completion



Note: These coefficients are estimated using the event study approach described in equation 1. The figure displays the coefficients of the interaction of the treatment variable $Treat_i$ with the birth cohorts compared to the last pre-reform year 1999. The outcome variable captures whether the individual (aged 17-22) either obtained a university entrance qualification or currently attends a school track leading to university entrance qualification. The treatment group includes all children born to two parents who were born abroad and immigrated. The control group includes all children with at least one parent born in Germany. All regressions include year and state fixed effects, the child's sex, the mother's age at birth, the highest educational degree in the household and the birth month. N=280,525. 90% confidence intervals are shown. Standard errors clustered at the birth month-year level. *Source:* German Microcensus (2016-2020).

Figure C.4: Standard errors clustered at birth month-year level: Effect on siblings' academic school track completion



Note: These coefficients are estimated using the event study approach described in equation 1. The figure displays the coefficients of the interaction of the treatment variable $Treat_i$ with the birth cohorts compared to the last pre-reform year 1999. The outcome variable captures whether the individual (aged 17-22) either obtained a university entrance qualification or currently attends a school track leading to university entrance qualification. The treatment group includes all children born to two parents who were born abroad and immigrated. The control group includes all children with at least one parent born in Germany. All regressions include year and state fixed effects, the child's sex, the mother's age at birth, the highest educational degree in the household, the younger sibling's birth month, the birth order and the age difference between the siblings. N=89,550. 90% confidence intervals shown. Standard errors clustered at the birth month-year level. *Source:* German Microcensus (2010-2020).