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Granting Birthright Citizenship - A Door Opener for Immigrant Children's Educational Participation and Success?

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Abstract

Does granting citizenship at birth help immigrant children to integrate in the host country's educational system and thus, to promote their educational success? Our identification strategy is based on a reform of the German naturalization law in 2000. We exploit this natural experiment and use a difference-in-difference design that compares children born shortly before and after the reform in years of policy change and years where no policy change took place. Our empirical analysis relies on two comprehensive datasets, administrative data from school entry examinations and the German Micro Census, Europe's largest household survey. We find positive effects on immigrant children's participation in non-mandatory preschool (by 3.2 percentage points) and referral to upper secondary school (by 7.8 percentage points).

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1 Introduction

The integration of immigrants constitutes a remarkable challenge for many developed countries. Economic disadvantages, such as worse job prospects or lower earnings, are only some of the problems immigrants have to deal with (Algan, Dustmann, Glitz, & Manning, 2010; Borjas, 1985; Chiswick, 1980). Disadvantages also exist among the descendants of immigrants and are, for instance, evident in form of lower educational achievements (Dustmann, Frattini, & Lanzara, 2012; Riphahn, 2003). Closing such gaps between the immigrant and native population may matter for several reasons. The lack of educational and economic success may lead to social and economic exclusion, which in turn may lead to social unrest. In addition, poor performance in the educational system or on the labor market may foment prejudices of the native population towards the immigrant population and thus, hamper the integration of immigrants.

Granting citizenship is one highly debated policy meant to foster the integration of immigrants. Expected benefits are above all related to immigrants' conditions on the labor market (Chiswick, 1978; Brantsberg, Ragan, & Nasir, 2002; Fougère & Safi, 2009; Steinhardt, 2012). Besides the prerequisites for the acquisition of citizenship, many countries are debating the introduction of birthright citizenship (e.g. Austria in 2013, Germany in 2000, Greece in 2010, Italy in 2013 and Portugal in 2004). On the contrary, the U.S. are considering the abolishment of birthright citizenship in light of rising births among illegal immigrants.¹ Yet, what are the consequences of granting immigrant children with citizenship at birth? Several recent studies document positive effects on the integration efforts of immigrant children's parents. In particular, they find reduced remittances and return migration as well as increased interactions with the local community and usage of the local language (Avitable, Clots-Figueras, & Masella, 2012, in press; Piracha & Zhu, 2012; Sajons, 2010, 2011). The direct consequences of birthright citizenship on the children, however, are basically unstudied.²

To the best of our knowledge, we are the first to address the consequences of granting birthright citizenship on children's educational outcomes. Our particular focus lies on the participation and progress of immigrant children in the host country's educational system.

¹The U.S. introduced birthright citizenship in 1868 by the fourteenth amendment to the US constitution.

²The exception is Avitable et al. (2012) who analyze whether birthright citizenship affects fertility - as a measure of the quantity of children - and children's health - as a measure of the quality of children.

Analyzing the consequences of birthright citizenship on children’s educational outcomes is challenging as mainly families who feel part of the host country’s society and/or see themselves living in the host country in the long-run apply for citizenship. A mere comparison between immigrant children with and without citizenship is thus prone to yield biased results. Our identification strategy therefore relies on a natural experiment - a reform of the naturalization law in Germany that implied a change from *ius sanguini* - only descendants of home country nationals receive citizenship - to *ius soli* - everyone born on the national territory is eligible for citizenship.³ To be more precise, the reform under study established that all immigrant children born in Germany after January 1, 2000, with at least one parent exhibiting a minimum duration of residence of eight years, were automatically granted German citizenship.⁴ This setup provides us with a sharp cut-off regarding the entitlement to birthright citizenship. To abstract from possible seasonal effects or age of school entry effects on children’s educational outcomes, we do not only compare immigrant children born shortly before and after the cut-off date (second semester of 1999 and first semester of 2000, respectively), but draw upon immigrant children from earlier and later school cohorts as a control group (second semester of 1998 or 2000 and first semester of 1999 or 2001, respectively). In other words, we employ a difference-in-difference design (DiD) to isolate the causal effect of introducing birthright citizenship on child outcomes.

Our empirical analysis focuses on a rather small subset of the German population - immigrant children of only a few cohorts - and thus is likely to lack statistical power. Two rather large and unique datasets, however, enable us to yield precise results. First, we use administrative records from school entry examinations of all children born in one German federal state (Schleswig-Holstein). These records contain physicians’ assessments of children’s school readiness at age six years old based on a set of cognitive and non-cognitive skills. An accompanying questionnaire, filled out by the parents, provides additionally information on children’s preschool attendance and important background characteristics. For this study, we use the records of 6,716 immigrant children, born between July 1998 and June 2001 and ex-

³The above cited studies by Avitable et al. (2012), Avitable et al. (in press), Piracha and Zhu (2012), Sajons (2010), and Sajons (2011) rely on the same reform to study the impact of birthright citizenship on parental outcomes.

⁴The reform changed additional features of the naturalization law, among others it reduced the period of residence required for eligibility for adults’ citizenship from 15 to eight years and it established a transition rule regarding citizenship rights for all children born between 1990 and 1999. For details on the reform please refer to Section 2.1.

amined for school entry in 2005, 2006 and 2007. Second, we use the German Micro Census, Europe’s largest household survey. This dataset - available for the whole federal republic of Germany - provides us with educational outcomes at a later stage of childhood, namely tracking into different types of secondary school at age ten years old. For this study, we use the survey years 2009, 2010 and 2011 and thus a sample of 2,980 immigrant children born between July 1998 and June 2000.⁵

Our results suggest an overall positive impact of birthright citizenship on the participation of immigrant children in the German educational system. Introducing birthright citizenship increases non-mandatory preschool attendance by 3.2 percentage points (ppt) and access to upper secondary school by 7.8 ppt. Does birthright citizenship boost also the acquisition of cognitive and non-cognitive skills during early childhood? We indeed find (marginally significant) effects on children’s socio-emotional maturity (2.3 ppt), but not on children’s knowledge of the German language. Our results are robust to a variety of sensitivity checks, such as introducing one further control group - native children - and employing a triple DiD or combining the DiD approach with a regression discontinuity design (RDD).

Finding positive effects of birthright citizenship on the successful integration of immigrant children in the host country’s educational system raises the question about the underlying channels. Why should birthright citizenship enhance the integration of immigrant children? First, citizenship is a premise for political and professional equality and thus for successful integration in the host country in the long-run. It may thus incentivize parents to invest in their children’s human capital by integrating better in the host country’s society, e.g. by improving the knowledge of the local language, developing a network of native friends, or adopting cultural habits (Avitable et al., in press; Sajons, 2011). Second, citizenship may reduce discrimination by peers or local decision makers (e.g. teachers or school principals). We discuss these channels in detail in Section 2.3

The remainder of the paper is structured as follows. The next section provides a brief overview of the institutional background and lies out a small model meant to clarify the main mechanisms through which birthright citizenship exerts its effects on children’s educational outcomes. Section 3 introduces the empirical strategy. Section 4 describes the different data sets used for our analysis. Section 5 presents our main results and provides a series of robustness checks. Section 6 finally concludes.

⁵Currently, the German Micro Census is only available until 2011 and thus, tracking results are not yet available for children born after June 2000.

2 Background

2.1 The Immigration Law of 2000

After a long and heated debate how to deal with the rising numbers of immigrants, in May 1999 the German parliament decided to undertake a major revision of the Citizenship and Nationality law dating back to 1913. On July 15, 1999 the German parliament ratified the new version of the law. The reform implied the following aspects: first, it introduced birthright citizenship; second, it changed the eligibility criteria for naturalization; and third, it forbade dual citizenship (beyond age 23 years old).

The focus of our paper lies on the first aspect of the reform. Until 1999, citizenship was granted according to the "ius sanguinis". In other words, children could only receive German citizenship if at least one parent was German citizen. From January 1, 2000, the prevailing regime changed to "ius soli", which granted each child born on German territory a conditional right to citizenship at birth. Specifically, every immigrant child born on German territory after January 1, 2000, received automatically German citizenship conditional on at least one parent having resided for eight or more years in Germany. Up to the age of 23 years, children were allowed to enjoy dual citizenship, afterwards they needed to decide between the two nationalities. Parents of children born between 1991 and 1999 could apply for their children's citizenship within a transition period (January 1 - December 31, 2000). Yet, in practice only a very small share used this transition rule.

The reform also changed the general eligibility criteria for citizenship. On the one hand, it relaxed the eligibility requirement on the length of residence from 15 down to eight years. On the other hand, it tightened the eligibility requirements in a way that applicants needed to express their loyalty to the German constitution, to be financially independent (i.e. they must not receive social security or unemployment benefits), to prove a clean criminal record, to be proficient in the German language, and finally to renounce their former citizenship.

What did the reform imply for the costs of receiving/applying German citizenship? While children born after the cut-off date were granted citizenship automatically at birth, children born before the cut-off date could only be granted citizenship in case their parents applied for German citizenship (with the exception of the one year transition period). In other words, the reform of the German naturalization law reduced the costs of endowing children with German citizenship dramatically. While in the case of

children born after the cut-off date, application for citizenship was for free, in the case of children born before the cut-off date, application for citizenship came along with administrative costs and the renunciation of parents' original citizenship.

2.2 The Education System in Germany

The German education system is threefold: i) initial years, which are divided into early care available for children age zero to two years old and preschool or kindergarten available for children age three to six years old; ii) primary school, which starts usually at age six and covers the first four years of schooling; iii) secondary schooling which starts at age ten or eleven and covers between five and nine further years.

Preschool attendance is non-mandatory in Germany. Yet, since 1996 every child turning three years old is granted the right of a place in preschool. As a result, in the late 1990ies supply of preschool slots rose dramatically to essentially meet demand in the early 2000s.⁶ In 2012 89 % of all three-year old children and 96 % of all five-year old children attended preschool (Federal Statistical Office, 2012). Among three-to five-year old immigrant children, this share only amounted to 85 % (Bildungsberichterstattung, 2012). This is unfortunate in light of their high gains from attending preschool, in particular in terms of competence in the German language, school readiness and recommendation for upper secondary school (B. Becker, 2006; R. Becker & Tremel, 2011; Dustmann, Raute, & Schönberg, 2013).

Before entering primary school, every child has to undergo an examination where a pediatrician employed by the local health service examines the child's intellectual, physical, and psychological development and assesses whether a child is ready for school. Parents, however, ultimately decide whether to enroll their child in school or not with a possible interference of the school board.

Once having passed all four grades in primary school, students are referred to secondary school. At that point - usually at age ten or latest eleven years old - students are tracked into one of the following three school types:⁷

⁶Fees are heavily subsidized and depend on the region of residence, the care provider, parental income, the number of siblings and the duration of care per day. Fees are deductible from personal income taxes and in case of severe financial constraints are even reimbursed by the local youth welfare service (Bundesministerium für Familie, Senioren, Frauen und Jugend, 2013).

⁷There exist also a number of alternative school forms such as Waldorfschule and in the last couple of years the comprehensive school (Gesamtschule) has been partially introduced. Overall, the number of these alternative school forms is negligible.

lower secondary school - the Hauptschule - which lasts usually until grade nine or ten, endows students with a general education and prepares them for an apprenticeship; intermediate secondary school - the Realschule - which lasts usually until grade ten and can either lead to an apprenticeship or to a higher vocational school; upper secondary school - the Gymnasium, also considered as the academic track - which lasts until grade twelve or 13 and prepares students basically for university.

Primary school teachers give recommendations for tracking a child into one of the three types of secondary school. Recommendations should be based on a child's personality and performance shown during elementary school, but not on a child's socio-economic or demographic background. Eligibility criteria for tracking vary across federal states and so does the degree of compulsion of these recommendations (Ständigen Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland, 2010).

In 2009, 24.1 % of all 15-year-old immigrant children attended lower secondary school, in comparison to 13.3 % of their native peers. In contrast, 25.9 % of all immigrant students attended upper secondary school while 37.1 % of all native children did so (Bildungsberichterstattung, 2012). This difference might be the result of worse performance during elementary school, but also of possible discrimination by teachers - i.e. criteria not related to immigrant children's skills or school performance (Lüdemann & Schwerdt, 2013). Given important consequences of tracking for later success in life, one goal should be to minimize this gap in early tracking or at least allow for ample opportunities to revise initial track assignment (Duflo, Dupas, & Kremer, 2011; Dustmann, 2004; Dustmann, Puhani, & Schönberg, 2014).

2.3 How does birthright citizenship affect children's education?

Why should citizenship at birth exert any effect on children's educational development? In what follows we describe a simple model of children's human capital production which should help to discuss the main mechanisms underlying any effect of introducing birthright citizenship on children's human capital production.

According to the theory of human capital production, there are essentially three factors entering the production of children's skills (Cunha & Heckman, 2007): children's initial endowment, children's environment and parental investments. Children's initial endowment consists of children's genetic pool, but also children's legal situation. Children's environment is characterized by the people and institutions children are exposed to, in other

words peers, neighbors, but also care givers or teachers. Parental investment can be of material as well as immaterial nature, such as time investments. Where does a change in the naturalization law enter the human capital production function? First, being granted citizenship from birth onwards constitutes a positive shock to children’s initial endowment. Second, being German citizen might also influence the behavior of peers or teachers towards the child, i.e. a child might be less bullied or discriminated against. Finally and most importantly, having the prospect of being German citizen might influence parents’ investment into the human capital of their children. In turn we discuss why this should be the case.

On the one hand, human capital might be general, and hence valuable independently of the country of residence. For instance, basic skills, such as being able to speak or to walk, as well as more advanced skills, such as being able to socially interact or to perform some mathematical tasks, are valuable across country borders. On the other hand, human capital might also be country specific and hence lose its value once changing the country of residence. Examples for such country specific human capital are the local language or country specific norms and culture. Thus, immigrant parents face the challenge that the human capital investments they endow their children with might not only differ from the human capital investments native parents endow their children with, but also be partially worthless outside their country of origin.

The willingness of immigrants to invest into host country specific human capital is likely to depend on the expected return. Returns to host country specific human capital are likely to rise with the expected length of stay in the host country. Given improved political rights and professional opportunities when enjoying citizenship, birthright citizenship is likely to act as a positive shock to children’s expected length of stay and thus returns to host country specific investments. As a result, parents might be more likely to invest into host country specific human capital by, for instance, using the local language, increasing their contacts to the local community, or adopting cultural habits and norms (Sajons, 2011; Avitable et al., in press). In contrast, if parents do not expect to stay long in the host country, they might be less willing to endow their children with any host country specific human capital. The reason for this is that parents do not expect any future gains from such investments.

Taken together, granting citizenship at birth is likely to exert an effect on children’s human capital because it raises the likelihood of a future in the host country and thus parents’ expectations on the returns to host country specific human capital investments. In addition, peers or teachers might

change their behavior as they see the acquisition of the host country citizenship as an integrative signal. Adjustments in both dimensions are likely to increase immigrant children’s participation in the host country’s educational system and promote their educational development.

3 Empirical Approach

Analyzing the impact of citizenship on children’s development is challenged by the fact that parents applying for citizenship might differ from parents not applying for citizenship in their willingness to integrate and to stay in the host country. To overcome this endogeneity issue we exploit the reform of the German naturalization law in 2000. As described in Section 2.1 immigrant children born after January 1, 2000 were granted German citizenship conditional on at least one of their parents having resided in Germany for eight or more years. This cut-off regarding the eligibility for citizenship at birth constitutes the core of our identification strategy.

To be more precise, we compare children born shortly before the cut-off to children born shortly after the cut-off. To abstract from any differences across school cohorts, we restrict our sample to one school cohort and thus children born six months before and after the cut-off date (second semester of 1999 and first semester of 2000, respectively). To abstract further from any seasonal effects in children’s educational outcomes (Buckles & Hungerman, 2013), we do not only compare children born shortly before and after the cut-off date, but draw upon children from earlier and later school cohorts as a control group (in particular, from the second semester of 1998 and 2000, and the first semester of 1999 or 2001). In other words, we employ a difference-in-difference design (DiD) that compares outcomes of children born shortly before and after the cut-off date in the year of policy change and adjacent years where no policy change took place.⁸ Thus, the equation to be estimated looks as follows:

$$Y_{i,m}^s = \alpha + \beta Treat_i + \gamma After_{i,m} + \delta After_{i,m} * Treat_i + \sum \theta_m D_{i,m} + \eta X_i + \epsilon_{i,m} \quad (1)$$

where $Y_{i,m}^s$ represent the educational outcome in dimension s of child i born in month m . $Treat_i$ is a binary variable indicating whether child i belongs to the treatment group, in other words whether child i belongs to

⁸A similar strategy has been used by Lalive and Zweimüller (2009), Dustmann and Schönberg (2012), Schönberg and Ludsteck (2011) and Danzer and Lavy (2013).

the school cohort 1999/2000 when the law change happened. $After_{i,m}$ is a binary variable indicating if child i is born between January and June.

What are potentially confounding variables with the assignment variable, month of birth, and thus should be controlled for? First, we control non-parametrically for children’s age. Doing so shall account for any direct age effects on children’s educational progress. Children born in the first semester of the school year are on average half a year older and thus more mature when being assessed for school readiness or being tracked into upper secondary school than children born in the second semester of the school year. Thus, unconditional DiD estimates are likely to represent a lower bound of the potentially positive effect of introducing birthright citizenship. Second, as shown by Buckles and Hungerman (2013) there is a striking seasonal pattern in children’s educational development with respect to the month of birth. Children born in spring do generally better in terms of their educational development than children born in winter. Underlying reasons for such seasonal effects are differences in the socio-economic status of the mother. We therefore do not only control for a set of birth month dummies $\sum D_{i,m}$,⁹ but also for proxies of families’ socio-economic status. In particular, we control for parental education and single parenthood.

The effect of interest is captured by the coefficient δ preceding the interaction term $After * Treat_{i,m}$. Yet, does this coefficient identify the causal effect of a switch from a "ius soli" to a "ius sanguinis" regime on immigrant children’s educational integration? The crucial identifying assumption is that parents could not react to the policy change. In which ways could parents have reacted to the policy change? First, parents could have delayed the birth of their child such that it is born under the new policy regime. The transition rule, however, facilitated applications for citizenship also for any child born between 1991 and 1999. Thus, it did not seem worth to delay the birth of a child as German citizenship could have also been yielded by application for children born before the cut-off. Second, parents might have adjusted the desired number of children downwards. In fact, Avitable et al. (2012) show a reduction in fertility after the introduction of birthright citizenship in Germany. They argue that this reduction in the quantity of children is due to an increase in the quality of children - as discussed in section 2.3, birthright citizenship is likely to increase the returns to country-specific skills. In other words, their argument is based on the quantity-quality trade

⁹Since the binary variable $After_{i,m}$ correlates perfectly with the birth months January to June, we omit not only one, but two birth month dummies. In particular, we omit January and December, as they are immediately around the cut-off date.

off put forward by G. S. Becker and Tomes (1976). Yet, Avitable et al. (2012) only find an adjustment in fertility from 2001 onwards. Hence, the children included in our sample - conceived until September 1999 - are unlikely to be affected by this concern. Nevertheless, in a robustness check we restrict our sample to children who were all conceived prior to ratification of the new naturalization law (hence, children born until April 2000). Finally, the introduction of birthright citizenship made return migration less attractive (Sajons, 2010). As a result, the remaining sample might be selected, in particular the older the children grow. The arising selection, however, is likely to lead to a lower bound of the effect as the reform might have induced less integrated families and thus more disadvantaged children to stay in Germany.

To address the concern of any further unobserved changes in the conditions children born before and after the cut-off are exposed to, we estimate the following alternative specifications: first, we introduce a further control group - native children - and employ a triple DiD design; second, we combine the DiD approach with a regression discontinuity design (RDD). The exact specifications are explained in Section 5.2.

4 Data

The question under study requests data that provides information on children’s educational outcomes over the first ten years after child birth. In addition, our analysis relies on immigrant children born in a few school cohorts only (1998/1999, 1999/2000 and 2000/01). Since there is no single dataset fulfilling both conditions, we draw upon two datasets for our empirical analysis: first, school entry examinations (SEE) from one German state, Schleswig-Holstein;¹⁰ and second, the German Micro Census (GMC). The following subsections describe both datasets.

4.1 School Entry Examination Data

The school entry examinations (SEEs) of Schleswig-Holstein serve as a basis for our analysis on children’s educational outcomes up to primary school. SEEs are mandatory for all children who turn 6 years between July of the previous year and June of the year of school entry. Children born between

¹⁰Unfortunately, administrative data on children’s early educational outcomes are not available for the whole German territory, but for selected states only. In fact, access to the SEE is highly restricted and only possible when being invited for cooperation by the respective office in charge.

July 1998 and June 2001 are thus included in the SEEs 2005, 2006 and 2007.¹¹ The sample of second generation immigrant children consists of 6,716 observations.¹²

Unfortunately, the SEEs only contain information on parent's country of origin, but not on their length of stay in Germany. Thus, we can not restrict our sample further to children whose parents have resided for at least eight years in Germany. In other words, in the case of preschool children our design is fuzzy as it includes also children who do not benefit from the reform of the naturalization law despite being born after January 1, 2000.

The main purpose of the SEE is to determine whether a child is "ready" for school. For this purpose a pediatrician employed by the local health service enquires whether the child has all the skills needed to follow the teaching in school. The main measures to judge about children's school readiness are medical diagnoses concerning language competence, socio-emotional maturity and physical development. In addition to the medical examination, parents are asked to fill out a questionnaire on important background information, such as children's preschool attendance as well as children's and families' socio-demographic characteristics.

Language competence is exclusively tested for immigrant children, and is ranked between one and five, indicating "no competence" to "fluent" in German. We recode this measure into a binary variable taking the value one if a child is fluent or makes at most small mistakes (original values four and five). The diagnosis of children's socio-emotional maturity is based on the pediatrician's observations as well as on a brief behavioral screening questionnaire designed to identify emotional problems, conduct problems, hyperactivity, peer relationships, and pro-social behavior (Goodman, 1997). This questionnaire is usually filled out by the accompanying care giver.¹³ The diagnoses for socio-emotional maturity are "negative, no problems",

¹¹Parents can ask their child to be examined already a year before the official SEE would have taken place. We exclude these so-called "can-children" since they are a non-random sub-sample of younger age cohorts. Moreover, each child is only included once in the SEE as children who are not ready for school in one year undertake a special examination one year later.

¹²Given only gradual introduction of the assessment of language proficiency and socio-emotional maturity across counties, sample sizes are slightly lower in these skill dimensions.

¹³Thus, in contrast to the diagnosis of language the assessment of socio-emotional maturity might be affected by subjective perceptions of the care giver. Moreover, survey responses might be affected by non-response. Yet, given that the diagnosis is based on a pediatric assessment of those responses, the diagnosis is probably less affected by response bias. Also, in 93 % of all cases, a medical diagnoses regarding socio-emotional maturity is available. This indicates that non-response bias is not a major concern.

"positive, but no treatment is necessary", "positive, already in treatment", "positive, treatment necessary", and "positive, problem will reduce child's performance in school". We recode all diagnoses to take the value one if there is no diagnosis of a developmental problem, i.e. if the child develops normally, and zero otherwise. The recommendation on school readiness is a summary measure of the entire set of diagnoses that the pediatrician in charge of the SEE has performed. The pediatrician gives his or her own assessment of the extent to which a child is ready for school. Parents ultimately decide whether to enroll their child in school or not with a possible interference of the school board. The SEE assessment of school readiness is thus an important piece of information concerning that decision, yet parents are not obliged to follow the SEE recommendation.

A mere comparison between foreign children born in the second semester of 1999 and the first semester of 2000 reveals a worse performance among children born after the enactment of the "ius soli". This gap amounts to 16 ppt in terms of language competence (only 42 % of the children born after the cut-off date are fluent in German versus 58 % born before the cut-off date) and 2 ppt in terms of socio-emotional maturity (89 % versus 91 %). Children born after the cut-off date are less likely to be ready for primary school (78 % versus 88 %). Yet, as already discussed in Section 3 children born after the cut-off are on average half a year younger at the time of assessment and thus likely to perform worse on average. The empirical analysis accounts for the age difference by controlling non-parametrically for children's age.

4.2 German Micro Census

The German Micro Census (GMC) - which includes one percent of the German population and thus is the largest household survey in Europe - serves as our database when analyzing children's referral to secondary school. Since children are assessed for referral to secondary school in grade four and thus when being between nine and eleven years old, we draw upon the GMC in 2009, 2010 and 2011. We restrict our sample to children whose parents are both migrants and children belonging to the school cohorts 1998/99 and 1999/2000 and thus being born between July 1998 and June 2000.¹⁴ We restrict our sample furthermore to children residing in West Germany as the percentage of foreign born children in East Germany is negligible. The

¹⁴Unfortunately, the GMC is only available until 2011 and thus we do not possess yet information about referral to secondary school for children belonging to the school cohort 2000/01.

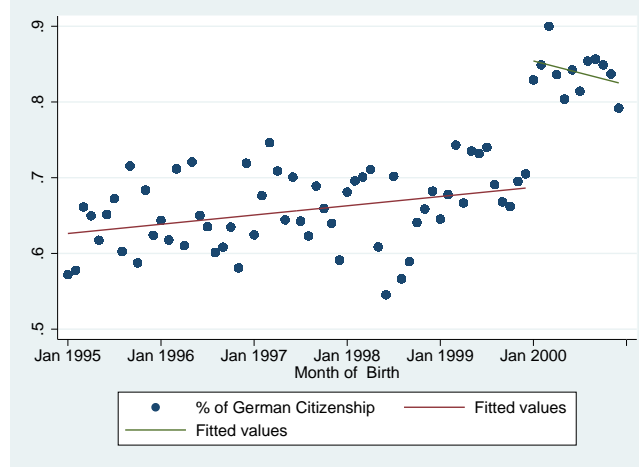
resulting sample consists of 2,980 children.

In contrast to the SEEs, the GMC provides information on the year of arrival to Germany. Thus, we can restrict our sample further to children whose parents have resided for eight or more years in Germany (at the time of childbirth) and who are thus entitled to birthright citizenship. Hence, in the case of school children, we can not only estimate our results using a "fuzzy" design, but also a "sharp" design. The resulting sample - also referred to as the eligible sample - contains 1,607 children.

The GMC contains information about all household members and thus enables us to link information on the children with information on their parents. As a result, we cannot only elicit our variable of interest - which school track children are attending -, but also background information on the children and the parents. In contrast to the SEEs, the GMC also contains information on the nationality of the child. Hence, we can inspect whether the introduction of the "ius soli" indeed led to an increase of citizenship among immigrant children born in Germany. Figure 1 shows that the share of children being German citizens jumps from 69 % among the children born shortly before the reform to 83 % among children born shortly after the reform measured at the time of the Micro Census.¹⁵

¹⁵The reason for why the share of children possessing German citizenship does not correspond to 100% is because we are showing the percentage of all immigrant children born in Germany, even if they were not yet eligible for citizenship at birth. In addition, children are entitled to more than one nationality until their 23rd birthday. Parents, however, may only report one nationality.

Figure 1: % of Citizenship by Month of Birth



Source: German Micro Census 2009-2011

What about immigrant children's attendance to upper secondary school? As expected, immigrant children are less likely to be tracked in upper secondary school at age ten than native children (16.6 % versus 26.3 %). Immigrant children born after the cut-off date are additionally 7.3 ppt less likely to attend upper secondary school than immigrant children born before the cut-off date (11.8 % versus 19.1 %). Again, this difference stems from the fact that children born after the cut-off are significantly younger than those born before the cut-off at the time of tracking recommendations. Indeed, after netting out the age effect, the correlation between German citizenship and attendance to upper secondary school is significantly positive. Yet, whether this correlation is indeed causal will only be shown by the results of our DiD estimations described in the following section.

5 Results

The following subsections shed some light on the impact of granting birthright citizenship on second-generation immigrant children's educational outcomes. Section 5.1 presents our baseline results, section 5.2 discusses the robustness of our results and section 5.3 investigates whether birthright citizenship boosts children's skills at school entry.

5.1 Main Results

Do immigrant children gain access to and progress better in the educational system after the reform of the naturalization law in Germany in 2000? Table 1 displays the DiD estimates for children’s preschool attendance (Panel 1), children’s readiness for primary school (Panel 2) and tracking into upper secondary school (Panel 3). The estimates are based on equation 1 using the sample of all immigrant children. Since entitlement to birthright citizenship is conditional on parents’ length of stay in Germany, the estimates correspond to intention-to-treat (ITT) effects. In the case of children’s tracking into upper secondary school, we can restrict the sample to immigrant children for whom the reform in the naturalization law actually entailed entitlement to German citizenship - in other words, immigrant children whose parents were living at least eight years in Germany at the time of birth (Panel 4). The estimates displayed in the first column stem from a DiD equation controlling for children’s age and month of birth only. In further specifications, shown in column two and three, we additionally control for children’s characteristics, such as gender and number of siblings, and family characteristics, such as single parenthood and parental education. Results are robust across the three specifications. In turn, we discuss the estimates based on the latter specification.

The introduction of birthright citizenship stimulates immigrant children’s preschool attendance: after the introduction of birthright citizenship, immigrant children are 3.2 ppt more likely to attend preschool than they were before. Thus, given the initial level of preschool attendance among immigrant children and native children - 92.6 % and 94.9 %, respectively - immigrant children are catching up with native children in terms of their preschool attendance. Yet, the introduction of birthright citizenship does not seem to promote immigrant children’s readiness for primary school. While 92.8 % of all native children are ready for primary school at age six years old, only 88.1 % of all immigrant children are so. This share is unchanged after the reform. Nevertheless, the introduction of birthright citizenship carries some benefits later in the educational system. After the reform of the German naturalization law, immigrant children are 7.8 ppt more likely to attend upper secondary school than they were before. As such, the gap in upper secondary school attendance between immigrant and native children - 16.6 % and 26.3 %, respectively - is substantially reduced. These estimates are based on the sample of all immigrant children independently of the length of stay of their parents in Germany. In other words, they are likely to underestimate the effect of citizenship at birth on chil-

dren's access to upper secondary school as not all immigrant children are entitled to citizenship at birth. And indeed, when restricting the sample to only eligible children the effects are slightly stronger: entitlement to citizenship at birth increases immigrant children's prevalence to attend upper secondary school by 9.3 ppt.

Table 1: DiD estimates for children's educational participation

	(1)	(2)	(3)
Panel 1: Kindergarten			
ITT	0.032** (0.013)	0.033*** (0.013)	0.032** (0.013)
Adj. R^2	0.003	0.015	0.016
Baseline level	0.926	0.926	0.926
Children	6716	6716	6716
Panel 2: School Readiness			
ITT	-0.007 (0.019)	-0.009 (0.019)	-0.013 (0.019)
Adj. R^2	0.024	0.041	0.049
Baseline level	0.881	0.881	0.881
Children	6716	6716	6716
Panel 3: Upper secondary school - all children			
ITT	0.071** (0.031)	0.073** (0.031)	0.078*** (0.029)
R^2	0.067	0.083	0.017
Baseline level	0.166	0.166	0.166
Children	2980	2980	2980
Panel 4: Upper secondary school -eligible children			
Born after the reform	0.080* (0.043)	0.084* (0.043)	0.093** (0.041)
R^2	0.067	0.082	0.161
Baseline level			
Children	1607	1607	1607
Age Dummies	yes	yes	yes
Child Controls	no	yes	yes
Family Controls	no	no	yes

Source: German Micro Census 2009-2011 (in the case of upper secondary school) and administrative data/school entry examination 2005-2007; own calculations

Note: Robust standard errors in parentheses; Child controls consists of children's gender and number of siblings; Family controls contain a dummy for single parenthood and a set of dummies indicating parental education. *p < 0.1; **p < 0.05; ***p < 0.01

In sum, the DiD estimates provide evidence for positive effects of introducing birthright citizenship on immigrant children's access and progress in the German educational system. In particular, gains are visible in terms of attending preschool and being tracked into upper secondary school. Such

gains are likely to open doors for later professional success (Dustmann & Fabbri, 2003; Dustmann, 2004; Bleakley & Chin, 2004) and thus, potentially for a better integration of immigrants into the host country's society.

5.2 Robustness

Can we attribute the above presented effects on immigrant children's educational outcomes solely to the introduction of birthright citizenship? One threat to our identification strategy is the existence of further adjustments in any determinant of children's educational development. To the best of our knowledge, there occurred no further reform around our cut-off date that could have stimulated the educational development of children born in the first half of 2000, while not having affected the educational development of children born in the second half of 1999. Nevertheless, to exclude the possibility of any changes around the cut-off date, we introduce a further control group - native children - and estimate a triple DiD. To also exclude the possibility that our results are driven by a trend in children's educational outcomes - in particular a trend in the cohort 1999/2000 that differs from the trend in the adjacent cohorts - we combine our DiD approach with a RDD approach that allows for differential trends across cohorts.

The triple DiD draws upon native children born between July 1998 and June 2001 as a further control group.¹⁶ The equation to be estimated looks as follows:

$$\begin{aligned} Y_{i,m}^s = & \alpha + \beta Treat_i + \gamma After_{i,m} + \delta After_{i,m} * Treat_i \\ & + \zeta Migrant_i + \eta Migrant_i * Treat_i + \theta Migrant_i * After_{i,m} \\ & + \iota Migrant_i * After_{i,m} * Treat_i + \sum \kappa_m D_{i,m} + \eta X_i + \epsilon_{i,m}(2) \end{aligned}$$

In comparison to the baseline DiD, the triple DiD approaches controls additionally for the variable $Migrant_i$, which indicates whether a child has any migratory background or not. In addition, we interact this variable with $Treat_i$, $After_{i,m}$ and $After_{i,m} * Treat_i$. The coefficient of interest is thus ι , which measures the change in educational outcomes between immigrant children born shortly before and shortly after the introduction of birthright citizenship, net of not only any general differences between children born in different semesters of a school year, but also net of any differences between children born in different semesters of the school year 1999/2000 unrelated to ethnicity. As we can see in table 2 column (1), the coefficients indicating

¹⁶We only use children whose parents are both born in Germany.

the impact of the reform on immigrant children's participation in preschool and upper secondary school are basically unchanged. The introduction of birthright citizenship leads to an increase in immigrant children's preschool attendance by 3.9 ppt and access to upper secondary school by 6.9 ppt.

Table 2: Alternative specifications

	DiDiD	DiD-RDD	4-month window
1. Kindergarten			
ITT	0.039*** (0.011)	0.050** (0.022)	0.038** (0.015)
Adj. R^2	0.017	0.015	0.014
Children	61831	6716	4577
2. School Readiness			
ITT	-0.009 (0.016)	0.014 (0.034)	-0.002 (0.022)
Adj. R^2	0.059	0.049	0.037
Children	61831	6717	4577
3. Upper Secondary School			
ITT	0.069** (0.035)	0.093** (0.042)	0.075** (0.035)
Adj. R^2	0.249	0.174	0.179
Children	14033	2980	1998
Age Dummies	yes	yes	yes
Child Controls	yes	yes	yes
Family Controls	yes	yes	yes

Sources: Micro Census Data 2009-2011 and Administrative data/School entrance examination 2005-2007; own calculations

Note: Robust standard errors in parentheses; Child controls consists of children's gender and the presence of siblings. Family controls contain single parenthood and parental education * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Combining our DiD approach with an RDD approach helps us to get hold of any underlying trend that is specific to children born between July 1999 and June 2000. The equation to be estimated looks as follows:

$$Y_{i,m}^s = \alpha + \beta Treat_i + \gamma After_{i,m} + \delta After_{i,m} * Treat_i + \theta B_{i,m} + \eta B_{i,m} * Treat_i + \eta X_i + \epsilon_{i,m} \quad (3)$$

This equation corresponds to the baseline equation 1 with the difference

that we replace the set of birth month dummies by a continuous variable indicating birth month $B_{i,m}$ and control additionally for the interaction between the birth month and a dummy variable indicating whether a child belongs to the treated group (school cohort 1999/2000), $B_{i,m} * Treat_i$. Hence, in contrast to our baseline specification, we are now assuming a linear trend in birth month which can vary between the control and the treated group. The causal effect of granting citizenship at birth on educational outcomes of immigrant children is thus given by δ , which corresponds to the discontinuous jump in education outcomes for children born shortly before and after the reform. Again, our results are robust as can be seen in Table 2, column (2): the introduction of birthright citizenship increases immigrant children’s preschool attendance by 5.0 ppt and access to upper secondary school by 9.3 ppt.

Finally, we want to exclude the possibility that parents adjusted their fertility behavior once the new naturalization law was ratified in July 1999. We therefore restrict our sample to children conceived exclusively before the ratification of the reform and thus narrow our sample to birth months closer around the cut-off date. In particular, we restrict the sample to children born four months around the cut-off date (September until April). Results based on the restricted sample are robust (see table 2, column (3)): immigrant children’s preschool attendance rises by 3.8 ppt and access to upper secondary school by 7.5 ppt.

5.3 Underlying Mechanisms

Why should birthright citizenship enhance immigrant children’s access and success in the host country’s educational system? As discussed in Section 2.3 citizenship might exert its influence on children’s education mainly through parental investments and behavior of peers and local authorities. While there is no evidence on the impact of citizenship on mobbing or discrimination against immigrant children, there are two recent papers providing evidence for the impact of children’s citizenship on parents’ integration efforts.

Exploiting the same reform as we do, but using the German Socio-Economic Panel - a dataset which is much smaller, but richer in background characteristics than the datasets we use - Avitable et al. (in press) and Sajons (2011) both find that the introduction of birthright citizenship incentivized parents to interact with the local community and to use more often the German language.¹⁷ Yet, do these investments translate into im-

¹⁷Sajons (2011) employs furthermore the German Micro Census to look on the impact

proved skills when children are about to enter primary school? As described in section 4.1 the SEEs provide us with diagnoses of children’s language competence and socio-emotional maturity. Thus, we can assess the question whether immigrant children benefit from being granted birthright citizenship in terms of their skill development.

As we can see in table 3, there are no gains in terms of children’s language competencies. Yet, the introduction of birthright citizenship seems to have some marginal benefits for immigrant children’s socio-emotional maturity (significant at the 15 % significance level). In particular, the introduction of birthright citizenship leads to an improvement of immigrant children’s socio-emotional maturity by 2.3 ppt. Whether such gains might be due to increased parental integration or due to reduced mobbing or discrimination by peers and local authorities, remains unfortunately an open question.

Table 3: DiD estimates for children’s competencies

	(1)	(2)	(3)
1. German language			
Born after the reform	-0.029 (0.038)	-0.039 (0.037)	-0.042 (0.037)
Adj. R^2	0.038	0.048	0.063
Children	2716	2716	2716
2. Socio-emotional maturity			
Born after the reform	0.025 (0.016)	0.023 (0.016)	0.023 (0.016)
Adj. R^2	0.013	0.027	0.029
Children	6533	6533	6533
Age Dummies	yes	yes	yes
Child Controls	no	yes	yes
Family Controls	no	no	yes

Source: Administrative data/School entrance examination 2005-2007; own calculations

Note: Robust standard errors in parentheses; Child controls consists of children’s gender and number of siblings. Family controls consist of single parenthood and a set of dummies indicating parental education. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

of the reform on parents’ naturalization and labor market integration. Yet, he does not find any significant effects on these outcomes.

6 Conclusion

This study is the first to shed some light on the impact of granting birthright citizenship on immigrant children’s educational development. Identification is based on the introduction of birthright citizenship in Germany in 2000. Drawing upon two large and comprehensive datasets - school entry examinations for one German state and the German Micro Census - allows us to employ a difference-in-difference approach that compares immigrant children born shortly before and after the cut-off date in the year of policy change and children born shortly before and after the cut-off date in years when no policy change occurred. Our results reveal large gains in terms of children’s preschool attendance and access to upper secondary school.

Granting birthright citizenship thus seems to be one promising policy to foster the integration of immigrants into the host country’s society. Besides parents’ integration efforts (Sajons, 2011; Avitable et al., in press), second-generation immigrant children gain access to the host country’s educational system not only earlier, but also to the most advanced school track which opens doors for higher education as well as professional success (Dustmann, 2004; Bleakley & Chin, 2004). Our study therefore should serve as a useful guideline for the current discussion on reforming immigration laws in Western countries.

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