

Long-Term Heterogeneity in Immigrant Naturalization: The Conditional Relevance of Civic Integration and Dual Citizenship

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Abstract

What are the long-term differences in the propensity of immigrants to acquire destination country citizenship under different institutional contexts and how do these vary between migrant groups? This article draws on micro-level longitudinal data from administrative registers in Denmark, the Netherlands, and Sweden—three countries with widely different and changing requirements for the acquisition of citizenship—to track the naturalization propensity of eight complete migrant cohorts (1994–2001) up to 21 years after migration. We find that after two decades in the destination country, cumulative naturalization rates vary remarkably with over 80 per cent of migrants in Sweden, two-thirds in the Netherlands, and only around a third in Denmark having acquired citizenship. We observe lower rates and delayed naturalization for migrants, especially among those with lower levels of education, after language requirements and integration tests were introduced in Denmark and the Netherlands. Dual citizenship acceptance in the Netherlands and Sweden, by contrast, is associated with durably higher citizenship acquisition rates, especially, among migrants from EU and highly developed countries. These findings highlight the long-term but conditional relevance of citizenship policy for immigrant naturalization.

Introduction

For foreign-born residents, attaining citizenship in the host country provides security in residence status, voting rights, and ‘may improve social integration, from one’s health to social relations with others’ (Bloemraad, 2017:

544). Research suggests that immigrant naturalization increases voter turnout among the foreign born (Bevelander and Pendakur, 2011), political knowledge, and sense of political efficacy (Hainmueller, Hangartner and Pietrantuono, 2015) and is associated with better

employment and wage premiums (Helgertz, Bevelander and Tegunimataka, 2014; Peters, Vink and Schmeets, 2018; Peters, Schmeets and Vink, 2019).

While acquiring the citizenship of a developed, democratic country is a life-changing event for some migrants (Aptekar, 2015), for others, it may reflect more instrumental interests such as superior travel freedom. Researchers typically associate these different utility calculations of citizenship ascension with origin factors in terms of the relative added value of the destination country citizenship compared to the origin citizenship (Yang, 1994). Scholars have recently drawn attention to the need of embedding naturalization decisions within the broader life course of migrants (Hainmueller *et al.*, 2018; Helgertz and Bevelander, 2017; Peters, Vink and Schmeets, 2016). Furthermore, pathways into citizenship are conditioned by the institutional context that determines whether dual citizenship is possible in origin countries (Jones-Correa, 2001), the requirements for acquiring citizenship in destination countries (Bloemraad, 2006), as well as the interaction between these (Vink, Prokic-Breuer and Dronkers, 2013).

As a result, the existing scholarship helps us understand why citizenship acquisition rates vary substantially between different migrant groups in single destination countries based on origin characteristics, life course, and socio-economic status, as well as between migrants in different destination countries, facing varying institutional conditions. However, most studies investigate immigrant naturalization within one destination context only, hence prioritizing individual level and origin country variation or, in the few comparative studies, focus on selected origin groups (e.g. Bloemraad, 2006). Only a limited number of quantitative studies make use of institutional variation within a single destination country (e.g. Yassenov *et al.*, 2019). While these studies help us understand variation within a single context or the general impact of policies, they do not facilitate understanding heterogeneous findings across destination contexts, e.g. with regard to the relevance of education (Bueker, 2005: 110; Yang, 1994: 468–489) or dual citizenship acceptance (Helgertz and Bevelander, 2017: 685–688; Peters, Vink and Schmeets, 2016: 368). Moreover, existing cross-national analyses of naturalization rates in relation to institutional context (Huddleston and Falcke, 2020; Vink, Prokic-Breuer and Dronkers, 2013) are based on cross-sectional data and, as a result, not optimally designed to analyze long-term heterogeneity in immigrant naturalization in the context of citizenship policy differences.

This article aims to overcome the limitations of existing studies and addresses the question of the long-term and heterogeneous relevance of institutional conditions by analyzing the naturalization propensity of eight migrant cohorts who arrived between 1994 and 2001 in three North-Western European countries: Denmark, the Netherlands, and Sweden. We select these destination countries for three reasons: (i) national citizenship of these highly developed countries with longstanding immigration experience comes with a broadly similar package of social and political rights and gives access to mobility rights within the EU; (ii) the requirements for the acquisition of citizenship differ between countries and over time on two of the most controversial aspects: civic integration requirements and dual citizenship acceptance; and (iii) similar, high quality and full administrative register data are available in all three countries. Based on data from population registers, we track these cohorts up to 21 years after migration and analyze differences in cumulative naturalization rates and their correlates. We apply harmonized Cox proportional hazard models on a series of sub-sample analyses in order to assess how cumulative citizenship acquisition rates vary between migrant groups under different and changing institutional conditions.

State of the Art

In his seminal work on immigrant naturalization, Yang (1994) introduces a cost-benefit model of subjective utility maximization, where benefits comprise political and socio-economic rights and privileges, while costs include the money and effort spent in an application process that can prove strenuous and the potential loss of the former citizenship. Much of the literature has centred on identifying which elements play a role in this deliberation, typically looking at migrants' origin country, individual characteristics, as well as the context of the destination country. The origin context is traditionally assumed to condition the perceived utility of citizenship acquisition, as it determines the relative 'added value' of the citizenship of the destination country. For example, in Europe, for immigrants from developed countries that come already with privileged citizenship status, such as EU citizens, the perceived benefits of naturalization are typically lower (cf. Alarian, 2017; Graeber, 2016). More generally, immigrants from less developed parts of the world have a higher propensity to naturalize (Vink, Prokic-Breuer and Dronkers, 2013). Naturalization rates are also substantially higher among refugees, coming from conflict zones, compared to other immigrants (Mossaad *et al.*, 2018).

The origin context not only conditions the relative value of citizenship of the destination country but its dual citizenship policy also plays a role in determining whether one can maintain her or his original citizenship upon acquiring a new one. Losing the citizenship of a country can have important implications, for example with regard to the ability to work, hold property, or invest in the origin country, as well as the loss of rights to its public services and social benefits. In the context of a cost-benefit framework, the loss of the origin citizenship can be considered an important deterrent to naturalization. Empirical findings, however, provide an ambiguous picture (Jones-Correa, 2001; Logan *et al.*, 2012; cf. Helgertz and Bevelander, 2017).

Besides the origin context, the value of citizenship depends on one's life situation. Prolonged residence increases commitment to the host society through the gradual accumulation of socio-economic, political, and cultural resources and is positively related to citizenship acquisition (Mossaad *et al.*, 2018). Arriving at a younger age and childbearing are generally expected to increase naturalization propensity (Yang, 1994). Marriage provides stability and increases commitment to the host society (Liang, 1994). Recent research drawing on longitudinal data from the Netherlands (Peters, Vink and Schmeets, 2016) and Sweden (Helgertz and Bevelander, 2017) shows that especially marriage to a native citizen or naturalized foreign-born migrant increases the propensity to acquire citizenship.

Socio-economic characteristics are also found to matter for migrants' naturalization propensity, even if hypothesized mechanisms vary. Higher naturalization rates among higher educated migrants may reflect political interest and a greater sense of political efficacy (Bloemraad, 2002: 207) or, by contrast, better capacity to deal with the naturalization procedure (North, 1987: 325). Others, however, argue that 'highly educated immigrants may resist further assimilation' (Yang, 1994: 470) or 'have strong career opportunities even without citizenship' (Logan *et al.*, 2012: 547). Higher citizenship acquisition rates among employed immigrants may reflect a higher degree of social and economic integration, as well as economic requirements for naturalization in countries, such as Denmark.

Finally, citizenship law in the destination country determines the conditions for citizenship eligibility and is of crucial importance. Restrictive citizenship policies are associated with lower naturalization rates, as observed both in studies using aggregate-level data (Janoski, 2010), as well as comparative studies using cross-sectional micro-level data (Huddleston and Falcke, 2020; Vink, Prokic-Breuer and Dronkers, 2013). These

papers show that to correctly assess the strength of the relationship between contexts and naturalization outcomes, it is crucial to combine individual-level variables with contextual information on policies.

Our article adds to the literature by analyzing the conditional relevance of institutional context, in particular civic integration requirements and dual citizenship acceptance, for immigrants' naturalization propensity in destination countries. We add to existing studies by providing evidence on two crucial aspects that have so far remained under-investigated: first, the long-term differences in cumulative naturalization rates under restrictive and liberal elements of citizenship policies on; and second, the conditional relevance for those migrants who can be expected to be most strongly affected by differences in the institutional context.

Institutional Context and Theoretical Expectations

In what follows, we introduce the institutional context of the three countries in our study with regard to civic integration requirements and dual citizenship acceptance and explain our main theoretical expectations.

Civic Integration Requirements

So-called civic integration requirements have increasingly found their way into, mostly, Western European citizenship laws, which require migrants to pass formalized tests demonstrating language skills and knowledge as a condition for naturalization (Goodman, 2012). Two of the countries in our study, Denmark and the Netherlands, were early adopters of such citizenship exams and have had these in place since the early 2000s. While the civic knowledge part of the exam is broadly comparable in both countries, focusing on customs, history, and culture, different levels of language proficiency are required. In Denmark, initially, intermediate level B1 of the Common European Framework of References for Languages (CEFR) was required from applicants for Danish citizenship since mid-2002, subsequently, the level was increased to upper intermediate level B2 in 2006 (with a further increase in 2009), while in 2013 the requirement was lowered again to B1 once it had become clear that the language test was an unsurmountable obstacle to many 'despite their best efforts' (Ersbøll, 2015: 38). Denmark also increased the residence requirement for ordinary naturalization from 7 to 9 years in 2002. Compared to Denmark, the elementary A2 level requirement in the Netherlands is moderate, even if—together with the required level of civic

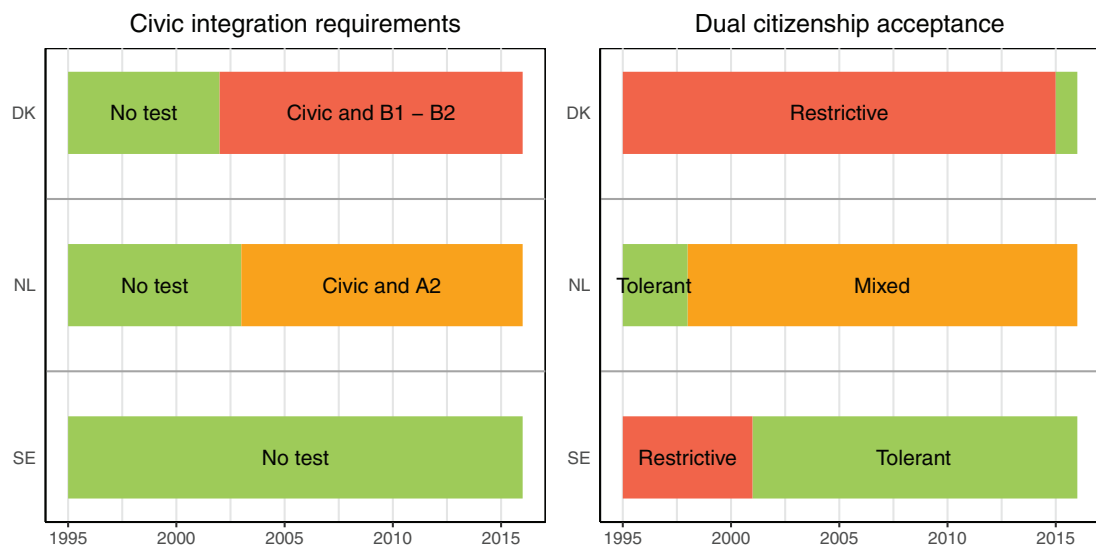


Figure 1. Overview of changing citizenship policy context in Denmark, the Netherlands, and Sweden, 1995–2015. *Note:* Civic integration and language test requirement and dual citizenship acceptance for residence-based naturalization. For language test level, reference to Common European Framework of Reference for Languages

knowledge—both ‘the level and price of the tests’ caused ‘problems’ (Van Oers, 2013: 180). Sweden did not introduce such tests and, besides a moderate residence requirement of 5 years (as in the Netherlands) and a criminal record check, virtually does not have any additional requirements for citizenship (Midtbøen, Birkvad and Erdal, 2018). Figure 1 (left panel) summarizes these changed requirements in the three countries since the mid-1990s.

Overall, we expect the introduction of formal language and civic knowledge tests as a requirement for acquiring citizenship to have a depressing effect on naturalization rates. Having to pass language and knowledge tests will, at minimum, pose an additional barrier for migrants to overcome as part of their naturalization trajectory (Goodman, 2010). Labussière and Vink (2020: 7) have recently demonstrated such an ‘initial drop’ for migrants in the Netherlands who became eligible after the 2003 reform; however, they do not specify the heterogeneous impact of this reform and do not provide comparative evidence. Jensen *et al.* (2019) demonstrate that education level at entry is the biggest predictor of whether and when newcomers potentially qualify for citizenship acquisition in Denmark under the condition of doing a language and integration test; however, besides focusing on a single country, they only look at recent cohorts who all fall under the restrictive requirements and they do not analyze the actual cumulative naturalization rates.

For *highly educated migrants* overcoming such obstacles may not pose a severe cognitive challenge, but still requires a serious time investment in order to acquire the minimally required knowledge to pass these tests. For *less educated migrants*, we expect that mastering a new language and passing formal tests will be especially difficult. This pattern should be more pronounced in Denmark, compared to the Netherlands, given the significantly more restrictive Danish language requirement of B1/B2, which will put citizenship acquisition virtually beyond the reach of a substantial part of the immigrant population (Jensen *et al.*, 2019). Based on these considerations, we expect that introducing civic integration reforms will be associated with delayed naturalization in Denmark and the Netherlands, and that naturalization rates will converge over a longer period among less educated migrants.

Dual Citizenship Acceptance

A second citizenship policy element we consider in this article concerns the possibility to hold on to one’s origin citizenship when acquiring a new citizenship. Several studies, both in the United States (Jones-Correa, 2001; Mazzolari, 2009) as well as the European context (Peters, Vink and Schmeets, 2016; Vink, Prokic-Breuer and Dronkers, 2013) have found that in light of both the instrumental and sentimental value of citizenship migrants are more likely to naturalize if they can do so while retaining their origin country citizenship. In

Western Europe, throughout the 1980s and 1990s, many states had policies in place which required individuals interested to naturalize to renounce their origin citizenship, upon acquiring the new one. This was the case in Sweden up to 2001, in Denmark up to 2015 and in the Netherlands until today (with major exceptions). [Figure 1](#) (right panel) summarizes these changed requirements since the mid-1990s in the three countries of our study.

Nevertheless, despite its theoretical plausibility and ample empirical evidence, findings in other studies are ambiguous ([Helgertz and Bevelander, 2017](#)). We argue that two steps are of crucial importance to disentangle this ambiguity: first, an appropriate operationalization of the transnational legal constellation of dual citizenship acceptance; and, second, a better understanding of how dual citizenship acceptance is of particular relevance to different migrant groups.

First, since dual citizenship is by definition the results of two states granting an individual citizenship, the measurement of a dual citizenship option (in order to assess its impact on naturalization propensity) requires taking into account the legal situation in two states. After all, even if the home country accepts dual citizenship, if the destination country requires an immigrant to renounce her or his citizenship, this is not an option; vice versa, even if destination countries have liberalized, if the home country does not allow it, dual citizenship is not a legal option.

Second, if the *relative value of the origin country citizenship* conditions the cost-benefit calculation associated with the decision to acquire the citizenship of the destination country, losing or renouncing one's origin citizenship has greater implications for some migrants than for others, in terms of global mobility and other rights attached to citizenship ([Kochenov and Lindeboom, 2019](#)). From this perspective, we expect migrants from EU or other highly developed countries who hold a valuable citizenship already, to be less interested to naturalize if this would imply the loss of their origin citizenship. Vice versa, if the potentially acquired citizenship adds relatively little in terms of rights to the citizenship of origin, as in the case of EU citizens, we expect them generally to be interested in acquiring the host country citizenship only if this would not imply the loss of their origin citizenship. This effect should be durable (rather than one of delaying, as with civic integration requirements) from the perspective that not being able to maintain the citizenship acquired at birth will dissuade these migrants from becoming interested to naturalize ([Labussière and Vink, 2020](#)).

In sum, on the one hand, we expect civic integration requirements to be associated with lower rates and delayed naturalization, especially among immigrants with lowest levels of education; on the other, we expect dual citizenship acceptance to be positively and durably associated with higher naturalization propensity, strongest among immigrants from EU and other highly developed countries.

Data and Methodology

Data

We make use of administrative register data from Denmark, the Netherlands, and Sweden. These data allow for a comprehensive analysis of citizenship status transitions as they cover the entire resident population, over long time periods. By using individual and family identifiers, information and individuals can be linked between registers. Linking family members is crucial with a view to identifying naturalization as the result of a household, rather than an individual decision.

Our analyses focus on foreign-born residents of whom both parents were also born abroad. Only migrants who are at least 18 years upon arrival in the destination country are included and those who are already a citizen upon arrival are excluded. We track all migrants from their third year of residence since migration (YSM). Before that moment—notwithstanding some exceptions—there are few migrants who become eligible for naturalization and are thus at risk of experiencing the event of interest. From their third year of residence, substantial groups will be eligible, notably those with a citizen partner in the Netherlands and Sweden and Nordic citizens in Denmark and Sweden. After 5 years of residence, all migrants in the Netherlands and Sweden will be eligible to naturalize (provided they fulfil applicable dual citizenship and civic integration requirements, as well as criminal record criteria and pay the application fee). In 2002, the maximum waiting time in Denmark increased from 7 to 9 years (see a complete overview of requirements in Supplementary Table SA7).

We incorporate these different and changing eligibility criteria between the three destination countries and within those countries across groups in two different ways in our analysis. First, in our main analyses, we treat all migrants as 'at risk' from $YSM = 3$ to ensure the comparability of results from the analyses across the three destination countries; i.e. by comparing migrants with similar lengths of residence. The results of those analyses thus reflect both the relative importance of covariates and the more or less restrictive institutional

context across destination countries and within countries over time and between migration groups (including variation in eligibility requirements). Second, in a robustness analysis, we reproduce the same analysis based on a more narrowly defined at-risk population based on eligibility (Supplementary Table SA14). The results of those analyses should be interpreted as the relative importance of co-variables given the different eligibility criteria applicable across destination countries and migration groups.

We track migrants from the eight arrival cohorts 1994–2001 across the observation period 1997–2015. This means that we can track long-term cumulative naturalization rates for these migrants over a period of 14 years (cohort 2001) to 21 years (cohort 1994). In total, our analyses cover 642 thousand migrants with 4.3 million person-year observations (see further summary statistics in Supplementary Table SA1).

In order to estimate the changing naturalization propensity after the introduction and further restriction of civic integration requirements, we include period dummies that capture the introduction of civic integration requirements in Denmark (2002) and the Netherlands (2003) to proxy the different institutional contexts faced by immigrants in these two destination countries if they are not yet naturalized at the beginning of these periods. The opportunity to hold dual citizenship in the Netherlands and Sweden is determined by the relevant citizenship policies in both the origin and host country, with a moderately restrictive policy in the Netherlands since 1997 and a liberal policy in Sweden since 2001. This dynamic variable depends on changing origin and destination country regulations, as well as individually specific situations in light of relevant legal exemptions (see [Supplementary Appendix SA1](#) for details on operationalization).

We include a range of individual-level and contextual control variables to account for differences in the propensity to naturalize between migrants. In terms of individual-level variables, we use both time-constant (gender, age at migration, migrant cohort, asylum motive, highest achieved education) and time-varying variables (partner status, having children under 18 in the household, employment and earnings from labour). In terms of contextual variables, we take into account both the political and economic characteristics of origin countries. We use two variables to capture main characteristics of origin countries: membership of the EU or one of its associated states Iceland, Norway, or Switzerland, and alternatively a measure of human development. Both variables are measured in a dynamic manner and vary over time. Due to multi-collinearity between these

two variables, we only include the measure EU in our baseline model (see Supplementary Table SA8); whereas we run sub-sample analyses aimed at specifying the conditional relevance of dual citizenship acceptance for immigrants from EU/non-EU countries and those from highly and less developed origin countries (Supplementary Table SA11). The individual characteristic of ‘asylum motive’ captures the political characteristics of the origin context.

Additionally, in all analyses, we control for two potential period confounders based on economic and electoral cycles. Economic hardship may drive citizenship take-up to increase labour market opportunities ([DeVoretz and Irastorza, 2017: 204–207](#)), whereas support for far-right parties may incentivize naturalization to reinforce one’s legal standing and acquire national voting rights, or by contrast decrease interest in naturalization as migrants reconsider their intention to settle permanently ([Bloemraad, 2017: 528](#)). We account for such period effects by controlling for the employment rate in relation to the total labour force (active population) aged 20–64, and the share of votes for far-right parties in the latest general elections.

In order to enhance interpretability and avoid strong functional form assumptions, we discretize continuous predictors (cf. [Mossaad et al., 2018: 5](#)). Additional notes on operationalization ([Supplementary Appendix SA1](#)) and descriptive statistics (Supplementary Table SA1–SA6) are included in the [Supplementary Material](#).

Empirical Strategy

To model the transition from foreigner to citizen, we employ stratified Cox proportional hazard models ([Cox, 1972](#); cf. [Helgertz and Bevelander, 2017](#), and [Peters, Vink and Schmeets, 2016](#) for a similar approach). These models allow the estimation of duration until naturalization, including both time-constant and time-variant covariates. The main econometric equation is:

$$h(t) = h_{0s}(t) \exp(bx + Bz(t)) \quad (1)$$

where $h(t)$ is the hazard function at time t , determined by the baseline hazard at time t across stratum s , when all predictors are equal to zero ($h_{0s}(t)$) and the exponential function of the time-constant (x_1, x_2, x_p) and time-varying ($z_1(t), z_2(t), z_p(t)$) predictors. Note that the latter predictors have an effect that depends on their values at time t . Due to our annual observations, the model constitutes a discrete-time survival analysis, where all characteristics are recorded within yearly intervals. To accommodate the violation of the proportional hazard assumption by the variables capturing migrant origin

and partner status (since both are strongly associated with the timing of naturalization, cf. Helgertz and Bevelander, 2017; Peters, Vink and Schmeets, 2016), we use a stratified Cox regression, where we allow a different baseline hazard function for origin region and partner status.

Since we cannot pool individual-level register data cross-nationally, our main models are run separately for each destination country in a harmonized manner that applies a similar operationalization to comparable variables. More specifically, our longitudinal approach draws on a comparison of immigrant naturalization propensity under conditions that are—beyond the predefined institutional circumstances—as similar as possible, both between host countries and within these countries over time. To that end, we aim to facilitate comparability between countries by analyzing the same migrant cohorts over the same time period, based on highly comparable and detailed microdata from administrative registers. Moreover, we harmonize the operationalization of our variables across countries. To further enhance comparability between observation years within countries, we include controls for various period confounders. Our identifying assumption based on this approach is that residual variation captured by the policy dummies (on civic integration requirements and dual citizenship acceptance) reflects the relevance of the institutional conditions in the host countries on the propensity of immigrants to naturalize. To assess the robustness of our cross-national comparison and identifying assumption, we perform additional analyses to account for potentially confounding differences between host countries on right censoring and selective out-migration (Supplementary Table SA13); eligibility criteria and associated at-risk populations (Supplementary Table SA14); the quality of register data on education (Supplementary Table SA15 and SA16); anticipatory behaviour (Supplementary Table SA17); and unmeasured period effects (Supplementary Table SA18).

A limitation of this comparative approach is that the hazard ratios in all analyses can only be compared in as far as they refer to *relative differences in naturalization rates between groups within each country*, but they cannot be used to derive conclusions about absolute differences in naturalization propensity between groups between countries. Further, our empirical strategy does not yield results that can be interpreted in a strictly causal sense since we aim to limit but cannot eliminate all risk of unmeasured variation. Instead, our approach is designed to offer a systematic comparative analysis of theoretical expectations with regard to long-term and conditional differences in naturalization propensity

associated with differences in citizenship policy, by drawing on standardized variables based on longitudinal microdata from administrative registers in three West European EU member states.

We incorporate two steps to account for compositional variation in the migrant population in the three destination countries (Supplementary Table SA1). First, we stratify all analyses in each destination country by 10 origin regions, as well as partner status. This allows for a robust comparison of relative differences in hazard ratios across life course and socio-economic characteristics, controlled for variation in origin and household context. Second, we run sub-sample analyses for migrants from EU and associated states and non-EU countries, migrants from low/medium, and highly developed countries, as well as migrants with varying highest levels of education.

Our main analysis of the heterogeneous impact of core citizenship policy elements proceeds in two steps, in line with our argument, spelled out above. We start with analyzing naturalization propensity among migrants who have to face formal civic integration requirements (in Denmark and the Netherlands), compared to those who do not, for the full sample and for the sub-samples by highest level of registered education. Subsequently, we focus on the relevance of dual citizenship acceptance (in the Netherlands and Sweden) and specify the analysis for sub-samples by migrant origin. In both of these steps, we visualize relative differences in hazard ratios between countries, based on harmonized Cox regression models, by using coefficient plots and also plot the hazard ratio by years since migration, in order to analyze the long-term relevance of citizenship policy.

Following the main analyses, we report the results of a series of checks designed to assess the robustness of our findings.

Analysis

Cumulative Naturalisation Rates

Before presenting the results of the Cox regression models, we estimate the cumulative naturalization rates in order to explore long-term differences in the three destination countries. We use Kaplan–Meier estimates to account for right censoring of the data and estimate naturalization rates for the total immigrant population in the three destination countries (Figure 2, left), as well as by migrant origin (Figure 2, right).

We observe remarkable cumulative differences in long-term naturalization propensity between these three countries with 80 per cent of migrants in Sweden, two-

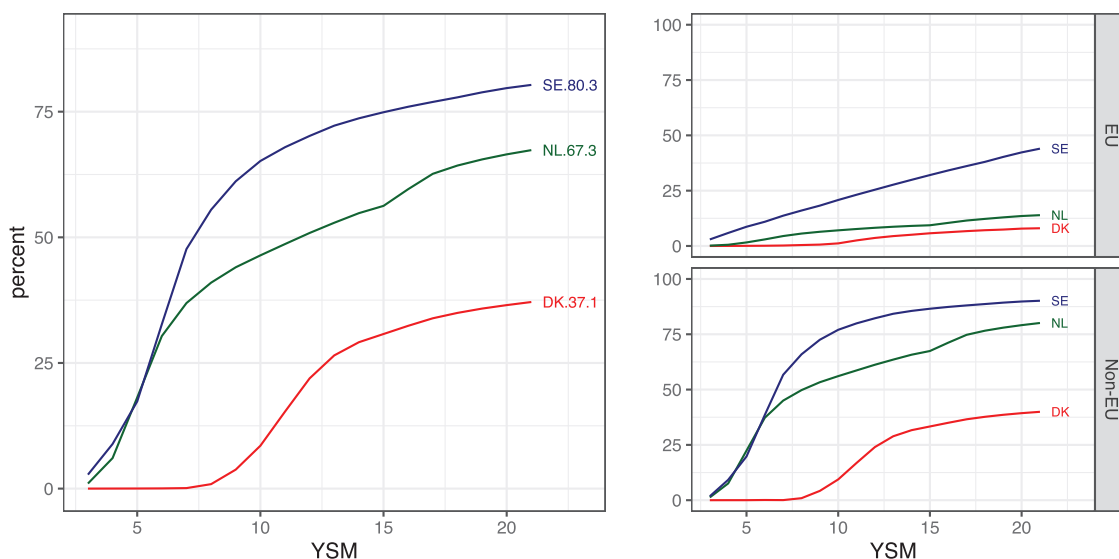


Figure 2. Cumulative percentage of naturalized immigrants in Denmark, the Netherlands, and Sweden by years since migration, total (left panel), and by migrant origin (right panels). *Note:* Kaplan-Meier failure function curves based on migration cohorts 1994–2001 with observation period 1997–2015

thirds in the Netherlands, and just over a third in Denmark having naturalized after 21 years since migration. These differences vary by origin group with cumulative naturalization rates for non-EU migrants up to 80 per cent in the Netherlands and even up to 90 per cent in Sweden; yet not exceeding 40 per cent for this group in Denmark. For migrants from the EU or one of its associated states with free movement privileges, cumulative naturalization rates after 21 years do not exceed 8 per cent in Denmark and 14 per cent in the Netherlands; while in Sweden rates of naturalized EU migrants after 21 years still are considerable at 44 per cent.

These cross-national differences have been exacerbated over time. Swedish rates on average remain well over 70 per cent naturalized migrants after 14 years for the eight cohorts (and never below 66 per cent). In the Netherlands, by contrast, rates have declined from 71 per cent naturalized among the 1994 cohort to 50 per cent or lower among the cohorts from 1999 to 2001. In Denmark, the decline in the cumulative rate of naturalization has been even more dramatic, from an already low rate of 35 per cent naturalizations (1994 cohort) to a staggering low of only 15 per cent of all migrants (2001 cohort) having acquired Danish citizenship after having resided for 14 years in Denmark (Supplementary Figure SA1).

Conditional Relevance of Citizenship Policy I: civic Integration Requirements

In order to analyze the relevance of citizenship policy for these long-term differences in naturalization propensity, we first focus our discussion on the introduction in Denmark in 2002 of a civic knowledge test combined with a language test (B1, subsequently increased to B2) and a restriction of the residence requirement, and the introduction of civic knowledge and language test (A2) in the Netherlands in 2003. Figure 3 plots the hazard ratios (HR) based on the stratified Cox regression models on the risk of naturalization for the full sample and different sub-samples defined by the highest registered level of education (Supplementary Table SA8 reports the complete model for the full sample; Supplementary Table SA9 for a model without stratification; Supplementary Tables SA10 and SA11 report the sub-sample models).

We observe that, overall, migrants are substantially less likely to acquire, respectively, Danish (HR: .307) and Dutch (HR: .474) citizenship after these citizenship reforms introducing civic integration requirements. These results confirm previous findings suggesting that these reforms posed ‘overwhelming obstacles’ in Denmark (Jensen *et al.*, 2019: 16) and a ‘considerable barrier’ in the Netherlands (Van Oers, 2013: 170).

For which migrants are these institutional changes most relevant? As discussed above, previous research

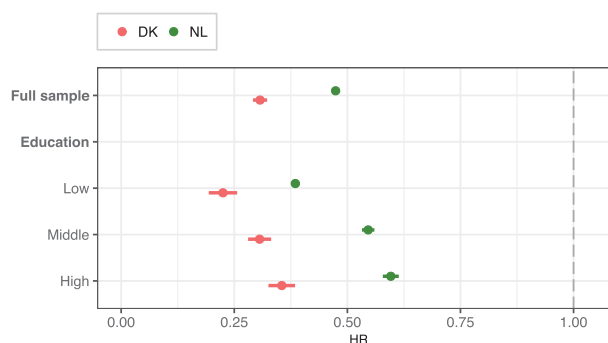


Figure 3. Heterogeneous effects of civic integration requirements on the risk of naturalization among immigrants in Denmark and the Netherlands, full sample and subsamples by level of education. *Note:* Reference category is the situation before the reforms were introduced. Dots denote hazard ratios from Cox regression with time-dependent variables and horizontal lines correspond to 95 per cent CIs. All models include full controls (see Supplementary Table SA10)

suggests that these requirements should affect especially lower-educated migrants. We thus analyze the heterogeneous impact of the reforms introducing civic integration requirements in Denmark and the Netherlands across subsamples based on the highest registered level of education.

Our analyses confirm that the introduction of the citizenship test is associated with a large naturalization gap in both Denmark and the Netherlands between migrants by educational background. In Denmark, whereas higher-educated migrants are less likely to naturalize after the 2002 reform (HR: .355), the difference under the more restrictive post-2002 requirements is much stronger among low educated migrants (HR: .225). Additional analyses demonstrate that the reduced naturalization propensity is even more pronounced after the required language level was increased from B1 to B2 in Denmark in 2006 (Supplementary Table SA12). In the Netherlands, we observe a similar pattern: while higher-educated migrants are less likely to naturalize after 2003 (HR: .596), the difference is stronger among lower-educated migrants (HR: .385). These patterns are stronger and can be more precisely estimated among non-EU migrants (Supplementary Table SA10).

We subsequently plot the hazard rates for the introduction of civic integration requirements by years since migration (Figure 4). These plots visualize the time it takes migrants with different educational background to catch up with their hypothetical peers who could naturalize without having to do a language and civic integration test. We draw two conclusions from these estimates. First, migrants, on the whole, catch up more quickly in the Netherlands, where the requirements are less prohibitive, compared to their counterparts in

Denmark. In this context, it is important to take into account that after the 2002 reform in Denmark most migrants needed to wait for 9 years until they could submit their citizenship application. Nevertheless, these estimates demonstrate that the ‘catch-up’ process for most migrants takes at least until they have resided 14 years in Denmark (5 years after eligibility). Even in the Netherlands, where migrants can naturalize after 5 years at the latest, the results of our analyses show that it takes at least up to 10 years of residence (5 years after eligibility) to catch up with peers who could naturalize without these—moderate—requirements. Second, in both Denmark and the Netherlands, delayed naturalization is most pronounced, as expected, among migrants with lowest registered levels of education who only catch up with their hypothetical counterparts after, respectively, 16 and 13 years since arriving in the destination country (7 and 8 years after eligibility, respectively).

These findings confirm that naturalization requirements, which may well be aimed at strengthening the ‘integration’ of migrants in host societies, by encouraging language acquisition and interaction with society, ‘may constitute overwhelming obstacles for some groups’ (Jensen *et al.*, 2019: 16). Corroborating the link between these requirements and exclusionary naturalization outcomes among already vulnerable groups, we find that in Sweden, where no such tests exist, educational background is a weak predictor of citizenship acquisition: medium (HR: 1.036) and highly educated migrants (HR: 1.048) are only minimally more likely naturalize compared to low educated migrants. In the Netherlands (HR: 1.305/1.344) and, especially, Denmark (HR: 1.705/2.315), the stratifying effect of education is substantially more pronounced (Supplementary Table SA8).

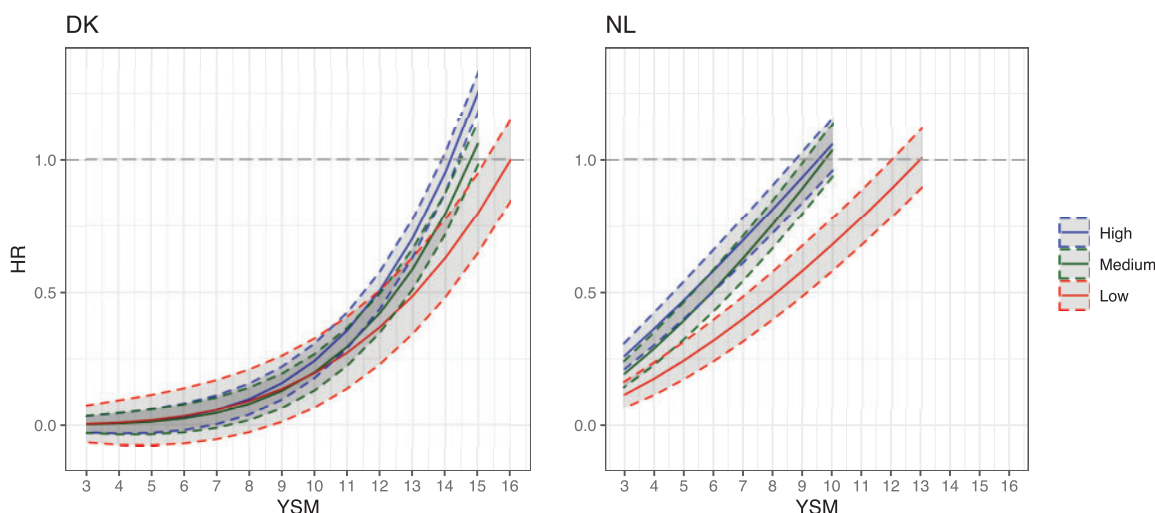


Figure 4. Heterogeneous effects of civic integration requirements on the risk of naturalization among immigrants in Denmark and the Netherlands, by years since migration (logged), by level of education. *Note:* Reference category is the situation before the reforms were introduced. Estimates denote hazard ratios from Cox regression with time-dependent variables with 95 per cent CIs and plotted until YSM in which HR reaches 1. All models include full controls (see Supplementary Table SA10)

Conditional Relevance of Citizenship Policy II: dual Citizenship Acceptance

Next, we look at the impact of being able to maintain the origin country citizenship, while naturalizing in the destination country. The results of our analysis clearly demonstrate that dual citizenship acceptance increases the propensity to naturalize, but that its relevance is strongly conditioned by migrants' origin context (Figure 5). Based on a time-variant coding of citizenship laws in origin and destination countries (see Supplementary Appendix SA1 for details) we find that the formal possibility of naturalizing while maintaining the citizenship of the origin country increases naturalization propensity both in the Netherlands (HR: 1.267) and Sweden (HR: 1.262). Yet, the positive association is much more pronounced for EU migrants, both in the Netherlands (HR: 1.829) and in Sweden (HR: 1.712).

The results from the HDI sub-group analyses confirm that dual citizenship acceptance, both in the Netherlands and Sweden, is of greater relevance to migrants from the highest developed origin countries, i.e. those with the most valuable home country citizenship (Supplementary Table SA11). This effect is even stronger than for migrants from EU countries (NL, HR: 2.138; SE, HR: 1.922), in line with research that found that also within the EU relative economic development differences condition the perceived value of the origin country citizenship (cf. Alarian, 2017; Graeber, 2016). These findings suggest that not having to consider a trade-off between one's origin citizenship and Dutch or Swedish citizenship, respectively, facilitates

naturalization especially for those migrants whose origin citizenship is highly 'valuable' (Kochenov and Lindeboom, 2019).

When we subsequently plot the hazard rate of the dual citizenship coefficient by years since migration (Figure 6), we find that being able to retain one's origin citizenship is associated with durably higher naturalization rates among EU citizens and migrants from highly developed countries (Labussière and Vink, 2020). This holds in both the Netherlands and Sweden. After 20 years of residence in the destination country, immigrants from EU countries are still substantially more likely to naturalize (NL, HR: 1.63; SE, HR: 1.91) if they can do so while maintaining their origin country citizenship. This is even more pronounced among immigrants from high-HDI countries (NL, HR: 2.05; SE, HR: 2.09). We interpret the long-term relevance of dual citizenship, for migrants who already hold a highly valuable citizenship from their origin countries, in light of return ambitions, emotional ties and the political and socioeconomic entitlements associate with citizenship (Leblang, 2017).

Robustness Checks

We perform five additional analyses to assess the robustness of our findings.

First, since outmigration is unlikely to be random, we reproduce our main analyses for individuals who remain in the host country for the entire observation period of each cohort. These analyses provide an

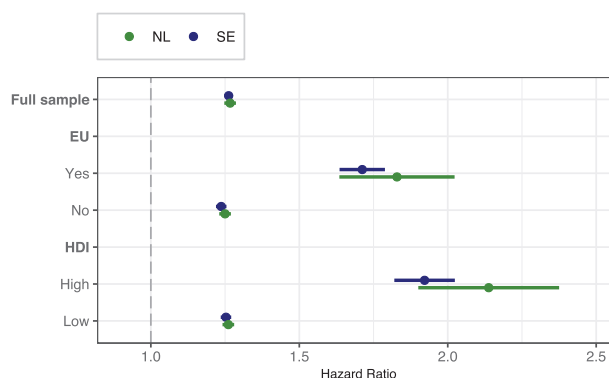


Figure 5. Heterogeneous effects of dual citizenship acceptance on the risk of naturalization among migrants in the Netherlands and Sweden, full sample and subsamples by migrant origin. *Note:* Reference category is the situation where dual citizenship is not accepted. Dots denote hazard ratios from Cox regression with time-dependent variables and horizontal lines correspond to 95 per cent CIs. All models include full controls (see Supplementary Table SA11)

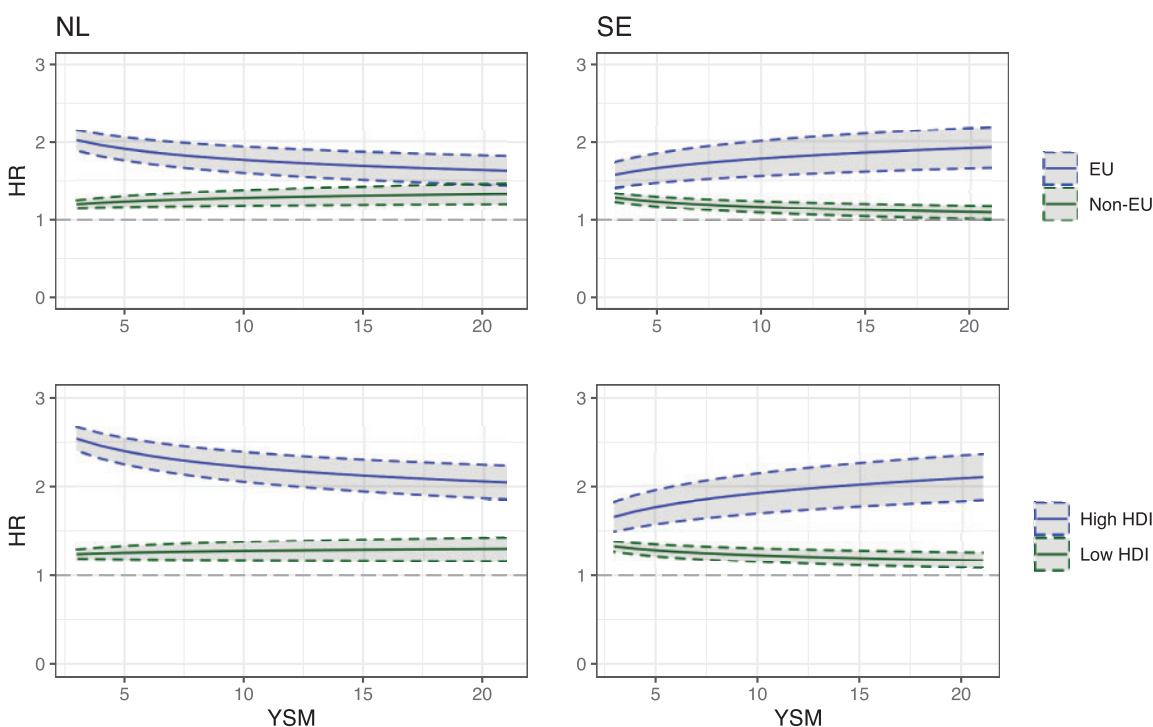


Figure 6. Heterogeneous effects of dual citizenship acceptance on the risk of naturalization among migrants in the Netherlands and Sweden, by years since migration (logged), sub-samples by migrant origin. *Note:* Reference category is the situation where dual citizenship is not accepted. Estimates denote hazard ratios from Cox regression with time-dependent variables with 95 per cent CIs. All models include full controls (see Supplementary Table SA8)

indication of the extent to which our findings are driven by selection into settlement. The results from the main models with regard to the heterogeneous impact of institutional context remain robust to right censoring and hence we conclude that these are not driven by selection into settlement (Supplementary Table SA13).

Second, in the main model, we track all individuals from 3 years since migration onwards to compare a similar at-risk population between countries and to incorporate the effect of higher and changing residence requirements (in Denmark) in our analyses. The downside of this approach is that we include migrants, who

may not yet be eligible to naturalize during the early observation years in light of the residence requirements that apply to them in a given year, in our at-risk population. To analyze the extent to which this decision affects our findings, we reproduce our analyses by tracking individuals from the moment at which they fulfil the residence requirement according to register information about the individual situation and the applicable law in a given year. The results of these analyses (Supplementary Table SA14) are broadly similar to the findings from our main models. This is reassuring in particular for the results from Denmark, as this implies that we do not over-estimate the negative effect of the 2002 reform in our main models due to the parallel increase of the residence requirement from 7 to 9 years (compare $HR = .307$ in the main model with $HR = .262$ in the robustness check).

Third, since we cannot pool register data from different countries, a potential problem when comparing relative differences in estimates across countries is that there exist cross-country differences in the quality of the independent variables. In particular, education is unknown for 40 per cent of the immigrant sample in the Netherlands, while this information is missing only for 12–13 per cent of immigrants in both Denmark and Sweden (Supplementary Table SA1). While we include a control for ‘unknown’ education in all our models, in order to test the extent to which these missing observations bias our results, we re-run the main analyses for the Netherlands with imputed data for educational attainment based on a set of observed characteristics (Supplementary Table SA15). These tests lead to similar findings as in our main models (Supplementary Table SA16).

Fourth, we measure the impact of citizenship law restriction and liberalization by using period dummies in our models. If migrants were to anticipate such reforms, this may bias especially estimates of short-term differences in immigrant naturalization. We run a robustness check in which we include an additional dummy that captures naturalization behaviour in the year before the reform (Supplementary Table SA17). In the Netherlands, we confirm a previously observed ‘naturalization bump’ before the 2003 reform (Peters, Vink and Schmeets, 2016: 373), but this limited anticipation effect ($HR: 1.183$) does not affect the estimation of the main reform effect ($HR: .474$ v $.469$). Similarly, the limited anticipation of the Swedish dual citizenship reform in 2002 ($HR: .939$) does not affect the main estimate of the reform ($HR: 1.262$ v 1.231). In Denmark, we observe a larger effect in the year before the 2002 civic integration reforms ($HR: 1.760$). As a result, the post-reform effect

is noticeably lower, especially among medium and highly educated immigrants ($HR: .739$ and $.820$, respectively). However, these results should be interpreted with care due to restrictive residence requirements which imply that most immigrants from the earliest cohorts in the Danish sample will only have become eligible to naturalize shortly before 2002; in other words, there is possible collinearity between the ‘year before change’ and ‘pre-reform’ estimates. Further research is needed to determine whether this reflects a hitherto unnoticed anticipation effect of the Danish citizenship reform of 2002 or, by contrast, reflects a limitation of our comparative strategy in which we compare migrants from similar cohorts over similar observation periods, across these three destination countries.

Fifth, while we control for alternative period effects in the three destination countries of this study by including year-specific controls for economic and electoral cycles, if there would be a regional European trend pushing for restrictive outcomes and thus depressing naturalization rates across the board, besides from policy restrictions, we could incorrectly associate a downward trend in Denmark and the Netherlands with civic integration policies. To check for a broader regional trend, we run a cross-national ‘placebo’ analysis in Sweden where we apply a similar period dummy as aimed to capture the effect of policy changes in Denmark and the Netherlands (Supplementary Table SA18). While we observe a decrease in naturalization rates in Sweden over the last 12 observation years ($HR: .925$), this is substantially smaller than the respective decrease in the Netherlands ($HR: .474$) and Denmark ($HR: .307$).

Conclusions

This study adds to a well-established body of literature on immigrant naturalization by utilizing population-level microdata from administrative registers on entire adult immigrant populations in Denmark, the Netherlands, and Sweden. Our approach, tracking migrants from eight cohorts up to 21 years in these three countries with different and changing citizenship policies adds both a comparative and longitudinal dimension to existing research. We provide evidence on two crucial aspects that have so far remained under-investigated: first, the long-term differences in naturalization propensity under different institutional contexts; and second, the conditional relevance of restrictive and liberal elements of citizenship policies for those migrants who can be expected to be most strongly affected by these.

We find that after two decades in the destination country, cumulative naturalization rates vary remarkably with over 80 per cent of migrants in Sweden, two-thirds in the Netherlands, and only around a third in Denmark having acquired citizenship. We observe lower rates and delayed naturalization for migrants, especially among those with lower levels of education, after language requirements and integration tests were introduced in Denmark and the Netherlands. Dual citizenship acceptance in the Netherlands and Sweden, by contrast, is associated with durably higher citizenship acquisition rates, especially, among migrants from EU and highly developed countries.

These findings have both scholarly and political implications. First, the longitudinal dimension of immigrant naturalization remains surprisingly under-studied. This is most obvious in those international comparisons of naturalization rates based on aggregate-level national statistics that only provide very crude ‘snapshot’ estimates of the ratio of citizenship acquisitions by the total foreign resident population of a country (Eurostat, 2019). Most researchers drawing on cross-sectional microdata routinely estimate naturalization propensity among migrant groups by years of residence (Huddleston and Falcke, 2020; Mossaad *et al.*, 2018; Vink, Prokic-Breuer and Dronkers, 2013) or control for years of migration by studying a single migrant cohort (Yang, 1994), but rarely provide estimates of how naturalization rates cumulate over time. Those recent studies that provide longitudinal evidence (Helgertz and Bevelander, 2017; Peters, Vink and Schmeets, 2016) or, even more rarely, those analyzing the long-term consequences of institutional change (Labussière and Vink, 2020), do so for individual countries only with cohort selections that do not allow for cross-national comparison.

Second, our findings on the conditional relevance of citizenship policy are broadly consistent with existing literature, though systematize the available evidence. With regard to civic integration requirements, the evidence on the adverse effects of the introduction of the citizenship test in 2003 in the Netherlands on lower educated immigrants is largely anecdotal and based on descriptive statistics (Van Oers, 2013). In Denmark, a recent study draws on register data to demonstrate the selection effects of restrictive naturalization requirements but considers eligibility to naturalize, rather than the actual acquisition of Danish citizenship (Jensen *et al.*, 2019). These findings also facilitate understanding the heterogeneous findings across destination contexts with regard to the relevance of education (Bueker, 2005: 110; Yang, 1994: 468–469). Our evidence from Western Europe, including from the liberal Swedish case where education is only a marginal predictor of

naturalization, suggests that education has a stronger stratifying role for long-term citizenship status under more restrictive institutional conditions.

Third, while the encouraging role of dual citizenship acceptance for immigrant naturalization is generally well-understood, some contradictory findings remain in the literature (Helgertz and Bevelander, 2017: 685–688; Peters, Vink and Schmeets, 2016: 368). Our comparative approach in this article demonstrates that such differences cease to exist once the data are correctly modelled to take into account the dyadic (i.e. depending on laws in both destination and origin countries) and dynamic (i.e. changing over time) features of dual citizenship acceptance. Furthermore, our heterogeneity analysis of the conditional relevance of dual citizenship confirms previous findings based on cross-sectional data from European countries (Huddleston and Falcke, 2020).

Fourth, in light of these findings, we call for greater context sensitivity when theorizing the determinants of citizenship acquisition among immigrants in destination countries. Naturalization theories should account not only for origin country, life course, socioeconomic status, and policy, but above all for how these interact. Given that, for better or for worse, citizenship policies are frequently characterized by change in requirements or in decision procedure there are ample opportunities for scholars to explore both the heterogeneous impact of policy reform, as well as the differentiated relevance of naturalization predictors under varying institutional contexts.

Our findings also have implications for debates in destination countries about the conditions under which citizenship should be accessible for immigrants. The dramatic long-term naturalization gaps we observe between and within the three countries of our study give ample cause for concern from a perspective that only citizenship provides full legal and political equality with the native citizenry. In Denmark, naturalization rates had by 2015 decreased to such low levels where only one out of six migrants from the 2001 migration cohort acquired Danish citizenship after 14 years. The evidence from the Netherlands shows that the requirements do not have to be prohibitively restrictive for citizenship acquisition to become a real challenge. Hence, legislators discussing an increase in the Netherlands of the required language level from A2 to B1, as included in the coalition agreement of October 2017, should consider that this will depress citizenship acquisition rates, especially among less educated segments of the migration population. The same applies in Sweden, where the coalition agreed in October 2019 to investigate opportunities to introduce a language and integration test as a requirement for naturalization. This matters not only for the political representation of immigrants but also for their ability to

integrate socioeconomically. Research shows that naturalization serves as a catalyst for labour market integration (Peters, Vink and Schmeets, 2018), particularly among most disadvantaged migrant groups (Hainmueller, Hangartner and Ward, 2019). Our finding that restrictive citizenship policies matter especially to migrants with lower levels of education implies that such requirements may deny these migrants an important opportunity to mitigate their disadvantaged position.

On dual citizenship acceptance, our evidence also provides input for ongoing debate in the Netherlands about full liberalization. Whereas it is often assumed that low naturalization rates among migrants from the EU and other highly developed origin countries reflect a lack of interest in Dutch citizenship, evidence from both the Netherlands and Sweden shows that this need not be the case. Given the chance to hold on to their citizenship of origin, also these migrants are interested in full legal and political integration in the destination country.

Civic integration programmes and dual citizenship restrictions are often justified to encourage migrants' participation in society. The evidence from this article demonstrates that under such policies substantial groups are *de facto* excluded from obtaining the status of citizenship that has been precisely shown to foster economic (Peters, Vink and Schmeets, 2018; Peters, Schmeets and Vink, 2019) and long-term political integration (Hainmueller, Hangartner and Pietrantuono, 2015).

Supplementary Data

Supplementary data are available at ESR online.

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