Determinants and Effects of Naturalization.
The Role of Dual Citizenship Laws.

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Abstract

This paper investigates how immigrants in the United States respond to changes in dual citizenship laws in their origin country. In the 1990s Colombia, the Dominican Republic, Ecuador, Costa Rica and Brazil revoked the previous rule that took away nationality of the origin country from those who became citizens of another country. Using data from the 1990 and 2000 censuses, I find a sizable and statistically significant effect of granting dual citizenship on the probability of naturalization in regressions that include controls for other factors (such as welfare reform) that changed the incentives to naturalize over the 1990s. Immigrants recently granted dual nationality rights also experience employment gains, but no widespread earnings gains. The effects of dual citizenship on labor outcomes, when interpreted through naturalization, are consistent with American citizenship providing greater employment opportunities, and a more rapid wage growth that might not have shown its effects yet among recently naturalized immigrants.

1 Introduction

In the 1990s the number of naturalized citizens in the United States rose for the first time in decades, from 6.5 million in 1990 to 7.5 million in the mid-1990s to over 11 million citizens by 2002 (Fix, Passel and Sucher, 2003). This is not only the mechanical result of high levels of immigration during the 1980s and 1990s. Naturalization rates among eligible populations have

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risen as well: the share of legal immigrants who had naturalized rose from 39 percent in 1996 to 49 percent in 2002. These trends in naturalizations and the continuing high levels of legal immigration make it increasingly important that we understand the determinants and consequences of naturalization.

A large amount of research, mostly outside of economics, has documented a positive association between citizenship and immigrants’ levels of formal education, occupational status and family income. Cross-sectional evidence suggests that naturalized citizens experience better labor outcomes than non-citizens even after controlling for years since migration. Immigrants who meet the admission, age and residency requirements for naturalization decide whether or not to apply for citizenship, however, so there could be selection effects that hinder a causal interpretation of cross-sectional evidence. A long-term commitment to residence in the United States may explain both the decision to naturalize and higher wages, due to an investment in U.S.-specific human capital that predates the acquisition of citizenship. Immigrants who naturalize may also have different unmeasured productivity or higher expected wage gains from citizenship than immigrants who do not naturalize (DeVoretz and Pivnenko, 2004, 2005).

On the other hand, for economic, social and psychological reasons, there could be causal effects of citizenship on immigrants’ labor outcomes (Bratsberg, Ragan and Nasir, 2002). First, citizenship may provide greater employment opportunities. Not only is citizenship required for certain jobs in the United States (for example, in many federal agencies and in the public safety industry), but also the act of naturalization may remove employment barriers other than those stated by the law. Discrimination by employers or a concern that non-citizens are less committed to the job and more likely to return to their home country might cause naturalized citizens to be preferred in the hiring process over non-citizens.1 Second, the benefits of citizenship include eligibility for various fellowships and educational programs, so that naturalization may influence employment opportunities and earnings through education. Also, because naturalized citizens gain some selected rights—such as the chance to influence the political outcomes by casting their vote or by running for political offices, full access to public benefits, the right to residential security— their self-esteem may rise and they may feel increased pressure to succeed and more motivation to acquire ad-

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1Citizenship may also be valued by employers as an easy way to assess legal status. For example, there is evidence suggesting that one result of the sanctions for hiring unauthorized immigrants imposed as part of the 1986 Immigration Control and Reform Act was to sensitize employers to the national origin and citizenship status of workers (U.S. General Accounting Office (1990)).
ditional skills valued in the U.S. labor market. So citizenship may foster the development of skills that increase productivity.

In order to explore the causal effect of naturalization, I use presumably exogenous variation in naturalization rates among immigrants residing in the United States caused by the fact that some important sending countries (Colombia, the Dominican Republic, Ecuador, Costa Rica and Brazil) changed their laws to permit dual citizenship during the 1990s. A utility maximizing framework predicts that, everything else being equal, immigrants coming from a country that has recently allowed dual citizenship should be more likely to naturalize because of the decrease in a major cost of naturalization, specifically the need to forfeit rights in the country of origin. This cost is plausibly not related in a systematic way to unmeasured productivity characteristics in the U.S. labor market. If so, it is possible to interpret the effects of dual citizenship on labor outcomes as evidence of the causal effects of naturalization.

I use changes in dual citizenship laws by the five Latin American countries listed above to set up a natural experiment research design that controls for country-of-origin and period effects. First, to assess the effects of the recognition of dual citizenship on the propensity to naturalize I use data from the 1990 and 2000 censuses to compare the change over time in naturalization rates of immigrants coming from countries that newly allowed dual citizenship to the change over time in naturalization rates of immigrants from Latin-American countries that did not change the law. One important estimation issue is that there are other several potential factors that might explain rising naturalizations in the 1990s, such as citizenship outreach programs and legislation that restricted public benefits for the noncitizen population, and I need to rule out that they had differential impacts on the incentive to naturalize by origin country. When looking at administrative data on the number of naturalizations processed per year by the Immigration and Naturalization Service (INS), the growth of naturalizations is found to be steep among immigrants from all countries (Figure 1A). However, when removing country and year fixed effects, it appears there is an increasing residual trend in the treatment group, but not in the control group (Figure 1B). This dif-

2U.S. Citizenship and Immigration Services (USCIS) since 2003.
3Caution should be exercised in drawing conclusions from these data about yearly trends in naturalization given large backlogs in processing applications. Backlogs began to rise significantly in the early 1990s as the number of petitions filed for naturalization exceeded the number of naturalized persons. They dramatically dropped in 1996 as a result of the program Citizenship USA. They exploded once more in 1997 and 1998 because of a slowdown in processing of naturalizations in 1997, but decreased again in 1999-2001.
ference is suggestive of the crucial role that changes in dual citizenship laws might have in explaining differential trends in naturalizations in the 1990s. In this paper I use individual-level data, as opposed to administrative data, and I estimate specifications that further address the critical identification issue: I model and estimate the effects of other factors affecting the incentive to naturalize in the 1990s as a function of socio-demographic characteristics, so that changes in dual nationality policies are arguably the only source of systematic differences over time in the incentive to naturalize by origin country.

After showing that the estimation results provide strong support that changes in dual citizenship laws are correlated with naturalization, I estimate the relationship between dual nationality rights and labor outcomes. The inclusion of socio-demographic characteristics and state of residence by year effects controls for changing local labor market conditions and changing returns to observable skills over the 1990s. Immigrants from countries that newly granted dual citizenship are found to experience employment gains in 2000 relative to immigrants from other countries. They do not experience widespread earnings gains, however, except for some gains among people with less than a high-school diploma. Higher employment among immigrants recently granted dual citizenship rights is consistent with naturalization providing greater employment opportunities. The findings of limited earnings improvements are puzzling in light of evidence of higher employment. One possible explanation for these results is that naturalization leads to more rapid wage growth rather than a one-time boost in pay, as shown to be the case for young male immigrants by Bratsberg, Ragan and Nasir (2002). Wage growth might just have begun, or the costs of starting a new business might still be high relative to revenues for recently naturalized immigrants.

The remainder of the paper is organized as follows. Section 2 illustrates the estimation issues involved in a regression for the returns to naturalization and discusses the role of dual citizenship rights both for the understanding of the decision to naturalize and for the identification of the effects of naturalization. It also provides some details on the practice of dual nationality in the United States and briefly describes recognition of dual nationality by the countries that are the focus of the paper. Section 3 presents the data drawn from the 1990 and 2000 censuses and the sample restrictions. Section 4 reviews other factors besides changes in dual citizenship laws that could explain naturalization trends in the United States in the 1990s and then presents estimation results for the relationship between naturalization and dual citizenship. Section 5 discusses estimates of the effects of dual citizenship on labor outcomes and section 6 concludes.
2 Background

A model for the decision to naturalize

Under U.S. immigration law, immigrants granted legal permanent residence (holding a “green card”) are eligible to naturalize once they are at least 18 years old and have continuously resided in the United States for 5 years (3 years in the case of spouses of U.S. citizens). In the utility maximizing framework, immigrants who fulfill the requirements to naturalize decide to apply for citizenship if the benefits exceed the costs. Citizenship grants immigrants certain political and social rights to which permanent residents are not entitled, such as the ability to vote, and therefore to influence political decisions and outcomes. The importance of citizenship has risen since the mid-1990s, when welfare and illegal immigration reform based access to public benefits and selected rights increasingly on citizenship. Citizenship also makes it easier to sponsor relatives and may provide greater employment opportunities.

Citizenship also entails costs. Depending on the dual citizenship laws in the country of origin, those who naturalize in the United States can be obliged to forfeit rights in the home country. There could be both mechanical and psychological costs arising from being denied dual nationality. Immigrants can be hesitant to give up the instrumental benefits of a second passport, such as the right to travel freely back and forth from the origin country without need of any special visa, the right to work in the origin country and be entitled to public services and social benefits. They might also be reluctant to give up the right to vote and to influence the political outcomes in the home country. Psychologically, they may wish to continue to identify themselves as citizens of their country of birth and to be able to pass the nationality to their children.

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4 Children residing in the U.S. can naturalize with their parents.
5 The welfare legislation passed in 1996 (Personal Responsibility and Work Opportunity Reconciliation Act) restricted foreign-born eligibility for a wide range of public programs, with all restrictions on welfare use by foreign-born persons lifted once an immigrant becomes a naturalized citizen. A consequence of the illegal immigration reform (Illegal Immigration and Immigrant Responsibility Act) is that only foreign-born people who have naturalized are granted the right to “residential security”, i.e. not to be deported for minor crimes or misdemeanors.
6 First, immediate relatives of U.S. citizens are not subject to immigrant quotas, so becoming a citizen moves an immigrant’s immediate relatives up in the queue to get a green card. Second, a citizen can sponsor not only her spouse and unmarried children of any age, as legal permanent residents are allowed to, but also her married children of any age, siblings and parents.
There are also costs related to the naturalization process: to naturalize, applicants must pay a fee,\(^7\) demonstrate the ability to read, write, speak, and understand English, and pass an examination on U.S. government and history. Some immigrants can find the naturalization procedures too complex or be afraid to fail to pass the examination.\(^8\)

**Estimation issues**

For labor outcome variables such as employment or wages, consider the generic estimating equation

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Outcome_{it} = \alpha + \gamma N_{it} + x_{it}\beta + \nu_{it}
\]

for a foreign-born individual \(i\) observed in year \(t\), where \(N_{it}\) is an indicator of whether or not the individual is a naturalized citizen and \(x_{it}\) is a row vector of other explanatory variables. Ordinary Least Squares (OLS) applied to (1) may lead to biased estimates of \(\gamma\) (the return to naturalization) if individual costs and benefits of citizenship, and their weights, vary not only by some observable socio-demographic characteristics, but also by unobserved productivity attributes, such as English proficiency or test-taking skills. The error term \(\nu_{it}\) might also include employment preferences and expected earnings gains from citizenship. For example, if naturalization is sought mostly by immigrants with strong preferences for lines of work where the advantages of citizenship are greater (such as jobs in the public sector or jobs in which international travel is required), then the OLS estimated returns to naturalization would be upward biased.

On longitudinal data that include information on year of naturalization, the returns to citizenship are successfully identified by estimating its effects since the act of naturalization occurs, in specifications that control for individual fixed-effects and wage growth that happens before naturalization (consistent with investments that predate the citizenship acquisition). Unfortunately there is a limited availability of longitudinal datasets suitable for this analysis. Bratsberg, Ragan and Nasir (2002) provide the only longitudinal analysis available in the literature. On data from the Longitudinal Survey of Youth they find evidence that naturalization does facilitate assimilation.

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\(^7\)The current fee for processing a naturalization application (Form N-400) is 320$. There is also an additional fee of 50$ for fingerprinting.

\(^8\)A significant proportion of petitions for naturalization are denied. For example, in fiscal year 1996 the number of petitions for naturalization denied (229,842) are as high as 17% of the number of petitions filed in the same year (1,277,403), and 23% of the number of petitions filed in the previous year (959,963).
into the U.S. labor market, primarily through the removal of employment barriers: following naturalization, young male immigrants are found to gain access to public-sector, white-collar and union jobs, and their wage growth accelerates. Given that these results are drawn from a sample of small size, it is important to investigate alternative ways to test their robustness.

A way to identify the causal relationship of citizenship status on immigrants’ labor outcomes on cross-sectional data is to find a variable that affects the naturalization decision but not the labor outcome-determination process. I propose changes in dual citizenship laws as such a variable. Everything else being equal, immigrants coming from a country that has recently allowed dual citizenship should be more likely to naturalize because of the decrease in a major cost of naturalization, specifically the need to forfeit rights in the country of origin. I provide evidence of the strong relationship between dual citizenship rights and naturalization in section 4.

I argue that the costs of naturalization arising from the fact that a migrant’s origin country denies dual citizenship are not systematically related to her unobserved productivity relevant in the U.S. labor market. In theory, a migrant’s attachment to her own origin country might be either negatively or positively related to a migrant’s attachment to the host country, depending on whether the ties with the two countries are modeled as a sum-zero game or not. Dual citizenship has been traditionally criticized and opposed in receiving countries because it has been thought to impede integration, but empirical evidence on this issue is fragmented. Recent findings on both Latin-American immigrants (Guarnizo et al. (2003)) and Chinese Americans (Lien (2005)) show that transnational activities and homeland political concern are not at odds with assimilation measures and high levels of activism in U.S. politics.

More specifically for our analysis, concerns might arise if the costs of forfeiting rights in the home country are higher for immigrants who plan to return to their country of origin. In this case, we would be worried of systematic differences in human capital investment and labor supply decisions that potentially stem from a higher probability to return to the home country before the retirement age. Little is known though, either conceptually or empirically, about the process guiding the outmigration decision of the foreign-born and about the effects of the reversibility of the migration decision on her performance in the host country. In the presence of a positive probability of return migration, the foreign-born might experience a smaller incentive to invest in U.S.-specific human capital because of the potentially limited horizon of her working life in the host country (Borjas, 1999). But this would not be the case if skills are transferable across countries. Borjas
and Bratsberg (1996) show that if the return migration is planned as part of an optimal life-cycle residential location sequence, then it can only arise because a temporary stay in the United States increases the worker’s earnings in the source country. To explain return migration, Dustmann (1996) makes the explicit assumption that the time the migrant spends working in the host country may enhance her human capital, which becomes earnings effective after re-migration. Given that there is no empirical evidence either on the correlation between attachment to dual citizenship rights and probability of return migration, or on the way in which reversible migration decisions affect a migrant’s productivity and labor supply decisions while in the United States, I propose to use the arguably exogenous changes in naturalization rates caused by recently granted dual citizenship rights as way to identify the effects of citizenship.

Changes in dual citizenship laws in the 1990s

Dual citizenship occurs when a person holds citizenship in more than one country at the same time. There are no statistical surveys of the number of dual nationals in the world or in specific countries, but dual nationality is for sure a growing phenomenon, because of high levels of international migration and because in recent years several countries have amended their nationality laws to allow individuals to retain their original citizenship even when they naturalize in another country.

In this paper I use changes in dual citizenship laws between 1990 and 2000 to set up a natural experiment research design. There are five countries in Latin America that granted dual nationality in the 1990s: Colombia made this change in 1991, the Dominican Republic in 1994, Costa Rica and Ecuador in 1995, Brazil in 1996. As documented in Jones-Correa (2001), there are differences in the process of recognition of dual nationality in these countries. Colombia, Ecuador and the Dominican Republic allowed it mainly as a response to pressures from their overseas compatriots (in particular those residing in New York City), while Brazil and Costa Rica allowed it with little concerted pressure from the immigrant community abroad. Concerns about the internal validity of the research design would arise if immigrants from

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9 This assumption is likely to hold, for instance, if the home country is in the process of industrialization, so that knowledge about working patterns, institutional features, incentive structures, technology advancements and the language of a highly industrialized country may considerably enhance the value of the migrant for his home economy.

10 A notable exception to the general lack of data on multiple nationality is the Canadian Census of Population (Bloemraad (2004)).
the first set of countries expected the law changes to take place and started to naturalize in advance. In practice, Colombian organizations in New York began lobbying for dual nationality not earlier than 1988, so even if there was anticipation it should not have caused large increases in naturalizations by 1990 (given the long processing times). Ecuadorian and Dominican lobbying for dual citizenship began earlier than the Colombian lobbying, but serious discussions about this option only took place since 1990, so that law changes should not have been predicted before then.

There is a further concern of policy endogeneity that needs to be explored. One reason why sending countries might be willing to grant dual citizenship is to foster ties with their expatriates because they hope these ties pay off in terms of current remittances or future investments. If so, both rising naturalizations and improving economic conditions of expatriates might predate the policy changes. Costa Rica passed its dual nationality amendments in response to dismay among the public that the first Costa Rican astronaut was going into space as an American citizen, not as a Costa Rican, so that the exogeneity assumption holds. As a way to address the concern of policy endogeneity for the other countries, I present results from placebo regressions for 1980 and 1990 that show how there is no evidence of systematic trends in naturalizations or labor outcomes among immigrants in the treatment group.

In 1996 Mexico as well granted dual citizenship rights, but only of temporary and limited nature. A non-loss of nationality provision (voted in December 1996) took effect in March 1998 and allowed Mexicans who had become U.S. citizens to apply for dual citizenship until March 20, 2003. Only then, the Parliament extended dual citizenship rights further in time. In the summer of 1996, Mexico also recognized the right of citizens residing abroad to vote, but there were such delays in the implementation of the reform that Mexican citizens in the United States could not exercise their right to vote in the 2000 Mexican presidential elections. The temporary and limited nature of the dual citizenship rights granted to Mexicans suggests that immigrants from Mexico might not belong either to the treatment or control group. For this reason (and a further one I explain in the next section) I drop immigrants of Mexican origin from the main analysis.

There are two other countries in the world that granted dual citizenship

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11 Only about 67,000 Mexican nationals applied to their government for dual nationality during the initial five-year application period, out of almost 3 million Mexican-born persons naturalized and living in the United States in 2000. The small number of applicants may reflect a lack of information about dual-nationality rights.

12 Mexican citizens living in the United States and holding a valid voting card have been recently allowed to vote by mail in the upcoming 2006 presidential elections.
rights in the 1990s, Italy and Hungary. However, to guarantee comparability between treatment and control groups I restrict the analysis to immigrants from Latin American countries.

As regards recognition of dual citizenship in the United States, the Immigration and Nationality Act (INA) does not define dual citizenship or take a position for or against it. The Supreme Court of the United States has stated that dual citizenship is a “status long recognized in the law” and that “a person may have and exercise rights of nationality in two countries and be subject to the responsibilities of both. The mere fact he asserts the rights of one citizenship does not without more means that he renounces the other” (Kawakita v. United States, 343 U.S. 717, 1952). Foreign-born people who naturalize in the United States are still required to state under oath that they are renouncing their old citizenship, but there are no further steps to enforce this declaration.\textsuperscript{13} It is virtually impossible for a naturalized citizen to lose American citizenship by exerting her rights as a citizen of her origin country or of a third country. For example, U.S. naturalized citizens cannot be revoked citizenship for voting in foreign elections (Afroyim v. Rusk, 387 U.S. 253, 1967) or for moving abroad following naturalization (Schneider v. Rusk, 377 U.S. 163, 1964).\textsuperscript{14}

\section{Data}

In this paper I use microdata from the 1990 and 2000 U.S. Census, specifically the Integrated Public Use Microsample Series (IPUMS) files (Ruggles et al. (2004)). I combine the 5 percent samples with the 1 percent samples.\textsuperscript{15} I restrict the analysis to working-age foreign-born people from Latin American countries who were at least 18 when they arrived in the United States and who have been living in the United States for at least 5 years (3 years if married to a U.S. citizen).\textsuperscript{16} Adulthood upon arrival in the United States is imposed to rule out cases of immigrants deriving citizenship from their

\textsuperscript{13}The oath of allegiance taken by all who become U.S. citizens begins: "I hereby declare, on oath, that I absolutely and entirely renounce and abjure all allegiance and fidelity to any foreign prince, potentate, state, or sovereignty of whom or which I have heretofore been a subject or citizen....". However, the United States do not require official notification that naturalized U.S. citizens have formally renounced their nationality of origin.

\textsuperscript{14}Both provisions are further mentioned in the 1978 Citizenship Law Amendments (Pub.L. 95-432).

\textsuperscript{15}They are respectively 1-in-20 and 1-in-100 national random samples of the population.

\textsuperscript{16}Information on length of residence in the United States comes from a question about when a foreign-born individual “first came to stay” (1990 census) or “first came to live” (2000 census) in the United States.
parents’ naturalization, because I want to focus on the voluntary decision to naturalize. Another reason to exclude childhood immigrants is that younger arrivers likely differ from older arrivers along language and other dimensions that also affect labor outcomes (Bleakley and Chin, 2004). The restriction on length of stay in the United States guarantees that legal permanent residents in the sample meet the residency requirements for naturalization included in the U.S. law. When applying these restrictions, we are left with a sample of 509,666 individual observations for immigrants between the ages of 21 and 65, of which 166,362 are immigrants residing in the United States in 1990 since at least 1986, and 343,304 are immigrants residing in the United States in 2000 since at least 1996.

The age and residency restrictions, though, might not be sufficient to identify immigrants eligible to naturalize. Ineligible foreign-born included in census are non-immigrants and undocumented immigrants. The likelihood of including non-immigrants in the sample is reduced by the length-of-residence sample restriction and, further, by limiting the analysis to Latin American immigrants. The inclusion of illegal immigrants in the sample is problematic to the extent that rates of illegal immigration vary over time by country of origin. As shown in Table 1, the five Latin-American countries allowing dual citizenship in the 1990s experienced particularly large increases in the estimated unauthorized resident population from 1990 to 2000, and this should work against finding effects of dual citizenship laws on census data. In the empirical investigation, I address the problem of changing rates of illegal immigration by reweighing individual data on naturalization status by the inverse of the probability of legal status by country of origin and census year. This reweighing procedure allows to get estimates of naturalization rates among the eligible legal population. Probabilities of legal status, conditional on country of origin, census year and at least five years of residence, are obtained from comparison of the immigrant population represented in census, adjusted for estimated undercount (Costanzo et al. (2001), Robinson (2001)), and estimates of the inflows of unauthorized population developed by the INS (Warren (1995), U.S. Immigration and Naturalization Service).

17This is because non-immigrant aliens usually cannot stay in the United States longer than five or six years with the same type of visa. The problem persists, though, for foreign-born individuals who entered the United States as non-immigrants and then adjusted their status to legal permanent residents while residing in the United States.

18Temporary admissions are much less likely among immigrants from Latin America than from the rest of the world. For example, in fiscal year 1996 people from Latin American countries represented 42% of all legal permanent residents admitted to the United States, but only 18% of the almost 2 millions non-immigrants (other than temporary visitors for pleasure or for business).
Service (2003)). The latter estimates exclude from the undocumented population some immigrant groups that received legal status through special amnesties at some point after entering the United States. For this reason, the derived probabilities of legal status are not reliable for our purposes in two cases: first, when involving immigrants from countries granted special temporary amnesties or Temporary Protected Status in the 1980s and 1990s (Guatemala, El Salvador, Honduras, Nicaragua); second, when involving immigrants who legalized under the 1986 Immigration Reform and Control Act (IRCA) provisions (still illegal in 1985, mostly legalized by 1990 but still ineligible to naturalize). Given that of the 2.7 million illegal aliens who applied for legal permanent status under IRCA, 75 percent were from Mexico, and another 9 percent were from El Salvador and Guatemala, excluding from the analysis immigrants from these countries should avoid both problems.

Information on citizenship comes from reported naturalization status. False reporting of citizenship has been shown to be a problem in the Consumer Population Survey (Passel and Clark, 1997), but it appears to be present in census as well. Overreporting of citizenship in CPS is found to be attributable to two groups: recent immigrants—who are excluded from our sample—and long-term immigrants from Mexico—who are excluded as well from the main analysis.

As regards labor outcomes, I consider both employment and earnings measures. Employment measures refer to the previous year, and are defined to capture full-employment (working at least 20 weeks and 15 hours usually per week). A first measure refers to any work for profit or for pay. Naturalization might have a different effect on the probability of working as a self-employed versus working as an employee. So, regressions are also run separately for full-time self-employment and work for wages or salary (further disaggregated in work in the private and public sector). Workers with multiple sources of employment are classified according to the work relationship in which they spent the most time during the reference day or week of the interview. Finally, I look at the relationship between naturalization and the logarithm of earnings. I consider a measure of total earnings, defined as the sum of annual earnings from wage/salary work and self-employment earnings. The reason for this is that an individual may report earnings from both sectors (Lofstrom (2002)). The GDP deflator for personal consumption expenditure is used to convert nominal earnings into 1990 dollars.

The socio-demographic characteristics included in the empirical specifi-
cation are state of residence, education,\textsuperscript{19} age,\textsuperscript{20} gender, cohort of entry in the United States.\textsuperscript{21} Twenty-two specific countries of origin are defined.\textsuperscript{22}

Table 2 reports variable means by country/region of origin and year. Importantly, when excluding Mexico immigrant groups from the five “treated” countries have average characteristics in 1990 that are very similar to those of immigrant groups from other countries that serve as controls.

4 Effects of Dual Citizenship on Naturalization

4.1 A reduced-form model for naturalization

Consider the following model for the decision to naturalize for individual $i$ born in country $j$ residing in state $s$ and observed in year $t = 1990$ or 2000:\textsuperscript{23}

\begin{equation}
N_{ijst} = \alpha + C_j + Y_{00t} + \delta(\Delta DC_j Y_{00t}) + x_{it}\beta + \gamma_s + Y_{00t} x_{it}\gamma_t + \phi + \epsilon_{ijst}
\end{equation}

for where $\Delta DC_j$ is a dummy for those countries that allowed dual citizenship during the 1990s, $C_j$ is a full set of country-of-origin fixed-effects, $Y_{00t}$ is a dummy variable for the year 2000, $x_{it}$ is a vector of individual socio-demographic characteristics (listed in section 3) and $\gamma_s$ are state-of-residence fixed-effects. Standard errors are corrected for heteroskedasticity and adjusted for correlation across observations associated with the same birth country.

The inclusion of country-of-origin fixed-effects controls for systematic differences in the propensity to naturalize among immigrants from different countries that are constant over time. Time effects control for changes in the propensity to naturalize over time that are common to different origin groups.

\textsuperscript{19}I consider 7 possible educational attainments: at most 4\textsuperscript{th} grade, 5\textsuperscript{th} to 8\textsuperscript{th} grade, 9\textsuperscript{th} to 12\textsuperscript{th} grade, high school degree, some college, Bachelor degree and a master or higher degree.

\textsuperscript{20}I consider 7 age classes: less than 30, 31 to 35, 36 to 40, 41 to 45, 46 to 50, 51 to 55 and 56 to 65.


\textsuperscript{22}Mexico, Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Cuba, the Dominican Republic, Haiti, Jamaica, Trinidad and Tobago, British West Indies, Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, British Guyana, Peru and Venezuela.

\textsuperscript{23}I estimate a linear probability model with heteroskedasticity-robust standard errors. In preliminary work, I also estimated probit models and found very similar estimation results.
The DD parameter $\delta$ captures the mean differential 1990-to-2000 change in naturalization rates between immigrants from countries that changed their laws and immigrants from other Latin American countries. One important estimation issue is that shocks other than changes in the laws may have had differential impacts on immigrants coming from different countries. In the next section, I review other shocks in the 1990s and I argue that allowing the effects of socio-demographic characteristics and state of residence to vary over time successfully increases the case for a causal interpretation of the DD parameter.

4.2 Other factors influencing the propensity to naturalize in the 1990s

Besides changes in dual citizenship laws, there are a number of other factors that explain rising naturalizations in the 1990s. The Green Card Replacement Program, begun in 1992 by the Immigration and Naturalization Service (INS), required that long-term permanent residents replace their resident cards with new, more counterfeit-resistant cards. Many immigrants chose to naturalize rather than apply for new cards (U.S. Immigration and Naturalization Service (1997)). There is no clear reason for this factor to differentially affect people coming from different countries, once cohort of entry in the United States is controlled for and its effects on naturalization are allowed to be different between 1990 and 2000.

In August 1995 the INS started the program Citizenship USA, which was aimed at reducing the significant backlog of naturalization applications accumulated in INS offices. The number of petitions for naturalizations filed increased from 206,668 in 1991 to 959,963 in 1995, but INS resources to adjudicate naturalization applications did not evidently keep pace with the increase in filing given that, by summer 1995, the pending caseload was about 800,000 and waiting times in the largest offices exceeded 2 years. The goal of Citizenship USA was to reduce processing times to no more than six months. One of the reasons for the spike in the number of persons naturalized in 1996 (Figure 1A) is the success of the program in reducing backlogs. The key cities identified for the effort were those with the largest number of pending cases: Chicago, Los Angeles, Miami, New York, San Francisco. Different geographical concentration of resources would explain higher naturalization rates as the result of this program among immigrant populations concentrated where the backlogs were higher. But, when controlling for place of residence and its interaction with year 2000, there should not be any scope for this campaign.
to differentially affect the propensity to naturalize by country of origin.\textsuperscript{24}

Also, political events taking place in the 1990s may have led to increased naturalizations among eligible immigrants. Proposition 187 was passed in California in 1994 in an attempt to curtail social services to unauthorized immigrants, and in 1995-96 the nation was debating the virtues of restricting benefits to legal immigrants. The media and some scholars argue that Proposition 187 and a perceived anti-immigrant sentiment encouraged many immigrants to naturalize as a way to protect their rights and cast their vote against anti-immigrant legislation. If the anti-immigrant rhetoric of the early 1990s affected an immigrant’s propensity to naturalize depending on the intensity of anti-immigrant campaigns in the area of residence, then this effect is controlled for by the inclusion of place of residence in equation (2). This factor could still have differential effects by country of origin if the reaction to anti-immigrant sentiments, mainly targeting illegal immigrants, were bigger among immigrant populations with high rates of unauthorized residents.

Finally, the passage of 1996 welfare reform, restricting public benefits for non-citizens, may have increased the incentive to naturalize, as a way to retain access to social programs. If citizenship were indeed sought after welfare reform to protect access to social benefits,\textsuperscript{25} then this effect should mainly depend on place of residence (because different states implemented very different welfare reform programs) and on personal characteristics (such as education, gender, age) that predict eligibility for means-tested categorically-restricted benefits such as the ones offered by the U.S. welfare system.\textsuperscript{26}

To sum up, most of the factors listed in this section should not affect differentially naturalization rates by country of origin once observable sociodemographic characteristics are controlled for and their effects are allowed to vary over time.

\textsuperscript{24}Borjas (2002) mentions that it is possible that the political activists who ran the Citizenship USA initiative targeted particular groups of immigrants: groups that would be the most likely to support the incumbent Democratic administration in the 1996 presidential election. If so and if partisanship was perceived to be related to country of origin, this campaign might have targeted differently immigrants coming from different countries.

\textsuperscript{25}Fix et al. (2003) provide some evidence against the notion that the surge in naturalizations over the 1990s is a response to legislation restricting public benefits for non-citizens: recently naturalized immigrants use public benefits (except for Supplemental Security Income) at slightly lower rates than do the pool of immigrants currently eligible for naturalization.

\textsuperscript{26}The inclusion of cohort of entry by year effects further addresses the possibility that immigrant participation in the welfare system increases with time spent in the United States (Borjas and Trejo, 1991)
4.3 Estimation results

Tables 3, 4 and 5 report difference-in-differences (DD) estimates of the effects of recognizing dual citizenship on the decision to naturalize. The first two columns of Table 3 include people born in Mexico in the treatment and control group respectively. In both cases the DD estimate is positive, but only in the second case it is precisely estimated. I have already discussed why it is problematic to assign people from Mexico to either the treatment or the control group, so that I exclude them from the rest of the analysis. As shown in column 3, when excluding Mexicans, the naturalization rate of immigrants from Colombia, Ecuador, Costa Rica, the Dominican Republic and Brazil is estimated to rise of 4.5 percentage points between 1990 and 2000 relative to the naturalization rate of immigrants from all other countries.

Despite the concentration of illegal immigration among Mexicans, dropping Mexico from the analysis might not be enough to address the potential bias arising from the presence of unauthorized immigrants in census samples. This concern is supported by large differences between estimates obtained for long-term immigrants (very likely to be legal) versus more recent immigrants, given the different likelihood of illegal status in the two groups. As shown in column 4, between 1990 and 2000 there is a rise in the naturalization rate of long-term immigrants in the treatment group, relative to the comparison group, of 6.1 percentage points, or 11% of the baseline naturalization rate. Among immigrants who have resided in the United States for at most 20 years (column 5), the estimated effect of dual citizenship on naturalization is smaller and imprecisely estimated. However in this sample the high growth rates of illegal immigration from countries in the treatment group (Table 1) might downward bias the estimated effects of dual citizenship.

Table 4 and 5 report results from regressions run on samples where individual naturalization status is reweighted by the inverse of the probability of legal status by country of origin and census year. Naturalization rates calculated in these samples are proxies for naturalization rates among the legal foreign-born population. As shown in column 1 of Table 4, the DD estimate of the 1990-2000 change in the “corrected” probability of naturalization is larger, both in absolute and proportional terms, than the one estimated on raw data. The same result holds when restricting the analysis to immi-

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27Long-term immigrants should be legal because they had enough time or opportunity to adjust their status. In particular, immigrants in census 2000 who entered (illegally) before 1982 should have legalized under IRCA and be eligible to naturalize by the middle of the 1990s. This major amnesty suggests to split the sample between immigrants who have been living in the United States for more or less than twenty years as a way to evaluate differences due to the presence of illegal immigrants.
grants who have been in the United States for less than 20 years (column 2). As I mentioned in section 3, the probability of legal status might be imprecisely estimated for those countries that were granted special temporary amnesties in the 1980s and 1990s. To address this concern, in the remaining specifications for the “corrected” probability of naturalization I also drop from the analysis immigrants from Guatemala, El Salvador, Honduras and Nicaragua. As shown in column 3, between 1990 and 2000 there is a rise in the naturalization rate of immigrants from the five countries that granted dual citizenship (relative to the restricted set of other Latin American countries) of 10 percentage points, or 18% of the baseline naturalization rate.

**Robustness checks**

Given that our policy variation is at the country-of-origin level, I test the robustness of the results to the inclusion of other country-level regressors. The estimated effects of dual citizenship stay the same when allowing the country fixed-effects to vary by socio-demographic characteristics, such as age, education and cohort of entry in the United States. Also, the results are robust to the inclusion of controls for some “initial” conditions at the country level that might differentially affect absolute changes in naturalization rates over the 1990s. Column 5 of Table 4 shows how stable the estimates are to the inclusion of interactions between year 2000 and naturalization and welfare participation rates in 1990, and a measure of outmigration rates.28

Given that the incentives to naturalize might differ for men and women, or more or less educated people, I also run the regressions in subsamples defined by gender and level of education. As shown in Table 5, the results are unchanged when splitting the sample by gender or limiting the analysis to immigrants who completed high school. For high school dropouts, though, the DD estimate is smaller and imprecisely estimated.

The results are also robust to different alternative restrictions to the comparison group. First, I exclude those countries that granted dual citizenship in the 1970s and 1980s,29 in order to avoid that lagged effects of changes in dual citizenship laws affect the results for the 1990s. Second, I restrict the comparison group respectively to countries that did or did not allow

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29The excluded countries (and the years in which they granted dual citizenship) are: Belize (1981), Panama (1972), Peru (1980), British West Indies (since independence 1966-1983, except Bahamas that still denies dual citizenship). El Salvador granted dual citizenship in 1983, but it is already excluded from the sample.
dual citizenship in 1990, to address the concern that other factors affecting
the naturalization decision in the 1990s may have had a different impact on
people granted or not dual citizenship rights.

To address the concern of policy endogeneity, I explore trends in natural-
ization rates in the treatment and control groups before the passage of the
laws, that is between 1980 and 1990. As shown in Table 6, between 1980
and 1990 immigrants from the five countries that granted dual citizenship
($\Delta DC_{j}=1$) experience an increase in the probability of naturalization that is
positive but small in magnitude and not statistically different from zero. The
lack of discernible differential trends in naturalization rates before the policy
changes took place is corroborating evidence in favor of the policy exogeneity
assumption that must hold for a causal interpretation of the DD estimates.
Also, results are stable to the exclusion of immigrants living in New York
State. Given that lobbying for dual citizenship among Colombians, Ecuado-
rions and Dominicans was concentrated in New York City (Jones-Correa,
2001), the stability of the results to the exclusion of observations for NY
State is further evidence that lobbying activities should not be correlated
with increases in naturalizations that predate the passage of the laws.

5 Labor Outcomes

The first panel of Table 7 presents OLS estimates of the returns to natu-
ralization on different labor outcomes, that is estimates of $\gamma$ from equations
like:

$$
Outcome_{ijst} = \alpha + \gamma N_{ijst} + C_j + Y00t + x_it\beta + Y00t x_it\theta + \gamma_s
+ Y00t\gamma_s + Y00t x_it\gamma_s\phi + \epsilon_{ijst}
$$

The sample is restricted to immigrants from Latin American countries
excluding Mexico, Guatemala, El Salvador, Honduras and Nicaragua. The
OLS estimates show that naturalization status is associated with a 4.6 per-
centage points increase in the probability to full-time work (7% of the base-
line employment rate). Also, employment gains are concentrated in work
for wages, both in the private and public sector, while the probability to
be self-employed is smaller for naturalized citizens versus non-citizens. As
regards earnings, naturalization status is associated with a 14% increase in
annual total earnings. In regressions that do not include controls for length
of residence in the United States the estimated employment and pay differ-
entials between naturalized and non-naturalized immigrants are larger. The
The fact that the “naturalization premium” remains economically and statistically significant when controlling for how long immigrants have stayed in the United States shows that this premium only partly reflects the fact that naturalized citizens on average have spent more time in the United States than non-citizens. However, there might be selection effects that hinder a causal interpretation of these findings.

The second panel of Table 7 presents DD estimates of the effects of dual citizenship on labor outcomes, that is the estimated $\delta$ from equations like (2) where the dependent variable is an employment or earnings measure. Immigrants from those countries that granted dual citizenship during the 1990s are more likely to be employed in 2000 relative to other Latin-American immigrant groups: they experience a 3.6 percentage points increase in the probability of full-time work, and in particular they are both more likely to be self-employed and work for wages. As a group, they do not experience any earnings gains though.

As shown in Tables 8 and 9, the results remain unchanged when restricting the analysis to men, while there is evidence of a slight increase in earnings in a sample limited to low-educated immigrants. This was the group for which the estimated link between dual citizenship and naturalization was the weakest, so I do not stress this result in what follows.

As reported in Table 10, DD estimates of the effects of dual citizenship on labor outcomes from placebo regressions run for 1980 and 1990 do not show a statistically significant relative trend in any employment measure, but they show a relative drop in the earnings of immigrants from the countries in the treatment group in the 1980s. This finding contradicts the worrisome policy endogeneity scenario discussed in section 2: as a response to improved economic conditions of their expatriates, countries might grant dual citizenship to foster ties that can pay off in terms of current remittances or future investments.

In general, integration into the United States carries a lower cost once dual nationality rights are recognized, and this might in principle promote stronger attachment to the destination country, and stimulate a wide array of behavioral changes, such as an incentive to invest in US-specific skills or an increase in labor supply. As a result, we cannot rule out direct effects of dual citizenship also on those that are not motivated to take up U.S. citizenship at 

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30 In earlier periods, the naturalization premium became statistically insignificant when controlling for length of stay in the United States. On 1970 census data, in his seminal paper on immigrant wage assimilation, Chiswick (1978) dismisses the naturalization effect because it falls from 15% to 7% and loses statistical significance when controlling for years since migration in the wage regression.
the margin. For this reason, I limit my analysis to the reduced-form effects of dual citizenship on labor outcomes, and I propose increased naturalization as an arguable way of explaining the results.

The interpretation of the effects of dual citizenship on labor outcomes through naturalization is supported by the sizable positive estimated effects of dual nationality on the acquisition of citizenship in the United States. Also, our discussion in section 2 shows that it is plausible that the mechanism through which an individual is motivated to take up U.S. citizenship in response to recently granted dual nationality rights is not systematically related to individual unobserved productivity.

If we interpret the results in the second panel of Table 7 as the effects of dual citizenship rights mediated through the acquisition of naturalization, higher employment among immigrants recently allowed dual citizenship rights is consistent with naturalization providing greater employment opportunities. The findings of no earnings improvements are puzzling in light of evidence of higher employment. One possible explanation for these results, however, is that naturalization leads to higher pay primarily through more rapid wage growth rather than a one-time boost in pay. If this is the case, wage gains might not have taken place yet (or the costs of starting a new business might still be high relative to revenues) for recently naturalized immigrants, such as those responding to newly granted dual nationality rights.

6 Conclusions

I find that recognition of dual nationality by some important sending countries positively affects the U.S. naturalization rate among immigrants coming from those countries. The effects are sizable in magnitude, implying an increase of 11 percentage points in the probability of naturalization over the 1990s among immigrants coming from Colombia, the Dominican Republic, Ecuador, Costa Rica and Brazil. This is a very interesting result that sheds some light in the long-standing debate on the pros and cons of dual nationality. From the point of view of receiving states, dual nationality has been traditionally criticized as an intolerable sort of political bigamy, a way of devaluing the meaning of citizenship and impede assimilation in the destination country. On the contrary, my findings support the view that dual nationality might be a means for immigrants to reconcile memberships in both their countries of residence and of origin.

I also show that immigrants coming from countries that recently allowed
dual citizenship experience relative employment gains. This result, if interpreted through the effects of dual citizenship on naturalization, is consistent with naturalization removing employment barriers and facilitating the assimilation into the U.S. labor market. Unveiling the existence of a causal effect of citizenship acquisition on an immigrant’s assimilation in the United States is an important policy question in light of the few existing policies that promote naturalization. If such effect does exist as it is supported by my findings, then policy makers might consider introducing policies that inform immigrants of their eligibility for citizenship and programs that remove barriers to naturalization (such as language and civics classes to help immigrants pass the citizenship exam).

References


Figure 1: Naturalizations in the 1990s: countries newly granting dual citizenship versus other Latin American countries

A- Persons naturalized per year (1990=100)

B- Residuals from regression including year and country effects

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1990</td>
<td>2000</td>
<td>in levels</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>5</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>46</td>
<td>91</td>
<td>45</td>
</tr>
<tr>
<td>Brazil</td>
<td>20</td>
<td>77</td>
<td>57</td>
</tr>
<tr>
<td>Colombia</td>
<td>51</td>
<td>141</td>
<td>90</td>
</tr>
<tr>
<td>Ecuador</td>
<td>37</td>
<td>108</td>
<td>71</td>
</tr>
<tr>
<td>Mexico</td>
<td>2,040</td>
<td>4,808</td>
<td>2,768</td>
</tr>
<tr>
<td>other Central and South America</td>
<td>750</td>
<td>866</td>
<td>116</td>
</tr>
<tr>
<td>excluding El Salvador, Nicaragua</td>
<td>242</td>
<td>374</td>
<td>132</td>
</tr>
<tr>
<td>Guatemala and Honduras</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>other countries</td>
<td>551</td>
<td>892</td>
<td>341</td>
</tr>
<tr>
<td>All countries</td>
<td>3,500</td>
<td>7,000</td>
<td>3,500</td>
</tr>
</tbody>
</table>

Table 2
Selected Variable Means for Foreign-born by Region or Country of origin, 1990-2000

<table>
<thead>
<tr>
<th>Variable</th>
<th>1990</th>
<th></th>
<th></th>
<th></th>
<th>2000</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CR</td>
<td>DR</td>
<td>BZ</td>
<td>CO</td>
<td>EC</td>
<td>MX</td>
<td>other LA</td>
<td>CR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naturalized citizen</td>
<td>0.38</td>
<td>0.30</td>
<td>0.31</td>
<td>0.34</td>
<td>0.30</td>
<td>0.24</td>
<td>0.39</td>
<td>0.48</td>
</tr>
<tr>
<td>Probability legal status</td>
<td>0.86</td>
<td>0.88</td>
<td>0.86</td>
<td>0.79</td>
<td>0.75</td>
<td>0.44</td>
<td>0.75</td>
<td>0.80</td>
</tr>
<tr>
<td>Naturalized citizen / probability legal status</td>
<td>0.44</td>
<td>0.34</td>
<td>0.36</td>
<td>0.43</td>
<td>0.40</td>
<td>0.57</td>
<td>0.55</td>
<td>0.59</td>
</tr>
<tr>
<td>Employed</td>
<td>0.66</td>
<td>0.57</td>
<td>0.69</td>
<td>0.70</td>
<td>0.69</td>
<td>0.63</td>
<td>0.73</td>
<td>0.67</td>
</tr>
<tr>
<td>Self-employed</td>
<td>0.06</td>
<td>0.04</td>
<td>0.10</td>
<td>0.08</td>
<td>0.05</td>
<td>0.05</td>
<td>0.07</td>
<td>0.08</td>
</tr>
<tr>
<td>Private Employee</td>
<td>0.52</td>
<td>0.48</td>
<td>0.53</td>
<td>0.57</td>
<td>0.59</td>
<td>0.56</td>
<td>0.58</td>
<td>0.52</td>
</tr>
<tr>
<td>Public Employee</td>
<td>0.08</td>
<td>0.05</td>
<td>0.07</td>
<td>0.05</td>
<td>0.03</td>
<td>0.03</td>
<td>0.076</td>
<td>0.07</td>
</tr>
</tbody>
</table>

entered in the U.S.
before 1965
1965-1969
1970-1974
1975-1979
1980-1981
1982-1984
1985-1990
1991-1994
1995-1997

Female

Age

Education
at most 4th grade
5th to 8th grade
9th to 12th grade
High School
Some College
Bachelors
Masters

State of residence
California
Florida
Illinois
New Jersey
New York
Texas
other state

Number of observations
961 6,322 1,348 6,942 3,275 80,347 67,167 1,471 16,390 3,867 11,612 6,749 184,731 118,484

Sample. Foreign-born from Latin America less than 65 years old who arrived at least 18 and who resided in the U.S. at least 3 to 5 years.
Notes. To save space, variables means are calculated not for all the variables and/or categories. In particular, in the regression analysis 22 separate countries of origin are defined, all 50 States are separately identified and age is identified by 7 classes.
Sources. Census 1990 (1% and 5%) and Census 2000 (1% and 5%)
### Table 3
#### Difference in Differences for Naturalization Status

<table>
<thead>
<tr>
<th>Sample</th>
<th>Mexico in the treatment group</th>
<th>Mexico in the control group</th>
<th>Exclude Mexico</th>
<th>Exclude Mexico 20 yrs or more in the U.S.</th>
<th>Exclude Mexico Less than 20 yrs in the U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean of dependent var. (citizenship status)</td>
<td>0.33</td>
<td>0.33</td>
<td>0.42</td>
<td>0.71</td>
<td>0.32</td>
</tr>
<tr>
<td>(citizenship status)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

ΔDual * year 2000

- 0.011
- 0.045*
- 0.045*
- 0.061**
- 0.029

<table>
<thead>
<tr>
<th></th>
<th>[0.017]</th>
<th>[0.023]</th>
<th>[0.023]</th>
<th>[0.028]</th>
<th>[0.024]</th>
</tr>
</thead>
</table>

Observations

- 509,666
- 509,666
- 244,588
- 67,236
- 177,352

R-squared

- 0.20
- 0.20
- 0.25
- 0.11
- 0.15

Notes: Robust s.e. (clustered by country of origin) in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1990 and 2000 IPUMS, born in Latin American countries, arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. ΔDual=1 for immigrants born in Costa Rica, Dominican Republic, Brazil, Colombia, Ecuador, and Mexico (only column 1). All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies, a dummy for year 2000 and interaction terms (between year 2000 and state of residence, education, age, gender, cohort of entry, plus year by state by education controls).

### Table 4
#### DD for “Corrected” Naturalization Status

<table>
<thead>
<tr>
<th>Sample</th>
<th>Exclude Mexico</th>
<th>Exclude Mexico, El Salvador, Guatemala, Honduras &amp; Nicaragua</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean of dep. var. (citizenship status divided by probability to be legal)</td>
<td>all</td>
<td>all</td>
</tr>
<tr>
<td>(citizenship status)</td>
<td>0.54</td>
<td>0.54</td>
</tr>
<tr>
<td>(1)</td>
<td>0.42</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>0.25</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td></td>
<td>0.11</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td>(6)</td>
<td>(7)</td>
</tr>
</tbody>
</table>

ΔDual * year 2000

- 0.188***
- 0.159**
- 0.103**
- 0.067*
- 0.102***

<table>
<thead>
<tr>
<th></th>
<th>[0.064]</th>
<th>[0.063]</th>
<th>[0.036]</th>
<th>[0.033]</th>
<th>[0.027]</th>
</tr>
</thead>
</table>

Observations

- 244,588
- 177,352
- 180,566
- 123,458
- 180,566

R-squared

- 0.17
- 0.10
- 0.21
- 0.21
- 0.21

Notes: Robust s.e. (clustered by country of origin) in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1990 and 2000 IPUMS, born in Latin American countries, arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. ΔDual=1 for immigrants born in Costa Rica, Dominican Republic, Brazil, Colombia and Ecuador. All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies, a dummy for year 2000 and interaction terms (between year 2000 and state of residence, education, age, gender, cohort of entry, plus year by state by education controls). The specification in column 5 also includes naturalization and welfare participation rates in 1990 and estimated outmigration rates by country of origin.
### Table 5

**DD for “Corrected” Naturalization Status by gender or education**

<table>
<thead>
<tr>
<th>Sample</th>
<th>Exclude Mexico, El Salvador, Guatemala, Honduras &amp; Nicaragua</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
</tr>
<tr>
<td>Mean of dep. var. (citizenship status divided by probability to be legal)</td>
<td>0.51 (1)</td>
</tr>
<tr>
<td>ΔDual * year 2000</td>
<td>0.100** [0.040]</td>
</tr>
<tr>
<td>Observations</td>
<td>83,877</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Notes: Robust s.e. (clustered by country of origin) in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1990 and 2000 IPUMS, born in Latin American countries, arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. ΔDual=1 for immigrants born in Costa Rica, Dominican Republic, Brazil, Colombia and Ecuador. All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies, a dummy for year 2000 and interaction terms (between year 2000 and state of residence, education, age, gender, cohort of entry, plus year by state by education controls).

### Table 6

**Placebo regressions: 1980-1990 Relative Change in Naturalization Rates**

<table>
<thead>
<tr>
<th>Sample</th>
<th>Exclude Mexico</th>
<th>Exclude Mexico, El Salvador, Guatemala, Honduras &amp; Nicaragua</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Exclude NY state</td>
</tr>
<tr>
<td>ΔDual * year 1990</td>
<td>0.017 [0.015]</td>
<td>0.016 [0.014]</td>
</tr>
<tr>
<td>Observations</td>
<td>138,028</td>
<td>98,850</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.21</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Notes: Dependent variable: citizenship status. Robust s.e. (clustered by country of origin) in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1990 and 2000 IPUMS, born in Latin American countries, arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. ΔDual=1 for immigrants born in Costa Rica, Dominican Republic, Brazil, Colombia or Ecuador. All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies, a dummy for year 2000 and interaction terms (between year 1990 and state of residence, education, age, gender, cohort of entry, plus year by state by education controls).
### Table 7
Effects of Naturalization on Labor Outcomes

<table>
<thead>
<tr>
<th>Dependent variable: Mean</th>
<th>Employed</th>
<th>Self-employed</th>
<th>Employed in the private sector</th>
<th>Employed in the public sector</th>
<th>Log Annual Total Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1 - OLS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naturalized</td>
<td>0.046***</td>
<td>-0.003*</td>
<td>0.014**</td>
<td>0.034***</td>
<td>0.145***</td>
</tr>
<tr>
<td></td>
<td>[0.005]</td>
<td>[0.002]</td>
<td>[0.006]</td>
<td>[0.004]</td>
<td>[0.012]</td>
</tr>
<tr>
<td><strong>2 - DD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔDual * year 2000</td>
<td>0.036***</td>
<td>0.010**</td>
<td>0.016*</td>
<td>0.010***</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>[0.008]</td>
<td>[0.004]</td>
<td>[0.009]</td>
<td>[0.003]</td>
<td>[0.014]</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors (clustered by country of origin) in brackets. Single asterisk denotes statistical significance at the 90% level of confidence, double 95%, triple 99%. Sample: 1990 and 2000 IPUMS, born in Latin American countries (except Mexico, El Salvador, Guatemala, Honduras & Nicaragua), arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. Number of observations: 180,566. ΔDual is a dummy for immigrants born in Costa Rica, the Dominican Republic, Brazil, Colombia or Ecuador. All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies and a dummy for year 2000. All specifications also include interactions between year 2000 and state of residence, education, age, gender, cohort of entry in the U.S., plus year by state by education controls.

### Table 8
Effects of Naturalization on Labor Outcomes; Males

<table>
<thead>
<tr>
<th>Dependent variable: Mean</th>
<th>Employed</th>
<th>Self-employed</th>
<th>Employed in the private sector</th>
<th>Employed in the public sector</th>
<th>Log Annual Total Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1 - OLS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naturalized</td>
<td>0.037***</td>
<td>-0.002</td>
<td>0.002</td>
<td>0.037***</td>
<td>0.150***</td>
</tr>
<tr>
<td></td>
<td>[0.006]</td>
<td>[0.002]</td>
<td>[0.008]</td>
<td>[0.005]</td>
<td>[0.017]</td>
</tr>
<tr>
<td><strong>2 - DD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔDual * year 2000</td>
<td>0.018***</td>
<td>0.003</td>
<td>0.005</td>
<td>0.010**</td>
<td>-0.008</td>
</tr>
<tr>
<td></td>
<td>[0.004]</td>
<td>[0.006]</td>
<td>[0.009]</td>
<td>[0.005]</td>
<td>[0.016]</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors (clustered by country of origin) in brackets. Single asterisk denotes statistical significance at the 90% level of confidence, double 95%, triple 99%. Sample: 1990 and 2000 IPUMS, males born in Latin American countries (except Mexico, El Salvador, Guatemala, Honduras & Nicaragua), arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. Number of observations: 83,877. ΔDual is a dummy for immigrants born in Costa Rica, the Dominican Republic, Brazil, Colombia or Ecuador. All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies and a dummy for year 2000. All specifications also include interactions between year 2000 and state of residence, education, age, gender, cohort of entry in the U.S., plus year by state by education controls.
### Table 9
**Effects of Naturalization on Labor Outcomes; High School Dropouts**

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Employed</th>
<th>Self-employed</th>
<th>Employed in the private sector</th>
<th>Employed in the public sector</th>
<th>Log Annual Total Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.61</td>
<td>0.06</td>
<td>0.51</td>
<td>0.04</td>
<td>9.30</td>
</tr>
</tbody>
</table>

1 - OLS

<table>
<thead>
<tr>
<th>Naturalized</th>
<th>Employed</th>
<th>Self-employed</th>
<th>Employed in the private sector</th>
<th>Employed in the public sector</th>
<th>Log Annual Total Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.046***</td>
<td>0.004</td>
<td>0.027***</td>
<td>0.016***</td>
<td>0.141***</td>
</tr>
<tr>
<td></td>
<td>[0.007]</td>
<td>[0.002]</td>
<td>[0.007]</td>
<td>[0.002]</td>
<td>[0.009]</td>
</tr>
</tbody>
</table>

2 - DD

<table>
<thead>
<tr>
<th>ΔDual * year 2000</th>
<th>Employed</th>
<th>Self-employed</th>
<th>Employed in the private sector</th>
<th>Employed in the public sector</th>
<th>Log Annual Total Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.059***</td>
<td>0.008</td>
<td>0.035***</td>
<td>0.015***</td>
<td>0.033*</td>
</tr>
<tr>
<td></td>
<td>[0.006]</td>
<td>[0.006]</td>
<td>[0.009]</td>
<td>[0.004]</td>
<td>[0.018]</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors (clustered by country of origin) in brackets. Single asterisk denotes statistical significance at the 90% level of confidence, double 95%, triple 99%. Sample: 1990 and 2000 IPUMS, high-school dropouts born in Latin American countries (except Mexico, El Salvador, Guatemala, Honduras & Nicaragua), arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. Number of observations: 66,499. ΔDual is a dummy for immigrants born in Costa Rica, the Dominican Republic, Brazil, Colombia or Ecuador. All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies and a dummy for year 2000. All specifications also include interactions between year 2000 and state of residence, education, age, gender, cohort of entry in the U.S., plus year by state by education controls.

### Table 10

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Employed</th>
<th>Self-employed</th>
<th>Employed in the private sector</th>
<th>Employed in the public sector</th>
<th>Log Annual Total Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔDual * year 1990</td>
<td>-0.008</td>
<td>0.007</td>
<td>-0.011</td>
<td>-0.005</td>
<td>-0.069***</td>
</tr>
<tr>
<td></td>
<td>[0.011]</td>
<td>[0.004]</td>
<td>[0.011]</td>
<td>[0.004]</td>
<td>[0.010]</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors (clustered by country of origin) in brackets. Single asterisk denotes statistical significance at the 90% level of confidence, double 95%, triple 99%. Sample is as follow: 114,743 observations from 1980 and 1990 IPUMS, arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. ΔDual is a dummy for immigrants born in Costa Rica, the Dominican Republic, Brazil, Colombia or Ecuador. All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies and a dummy for year 2000. All specifications also include interactions between year 2000 and state of residence, education, age, gender, cohort of entry in the U.S., plus year by state by education controls.