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Working Paper

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IZA Discussion Papers, No. 3008

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Mazzolari, Francesca (2007) : Dual citizenship rights: do they make more and better citizens?, IZA Discussion Papers, No. 3008, Institute for the Study of Labor (IZA), Bonn

This Version is available at:

<https://hdl.handle.net/10419/34619>

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IZA DP No. 3008

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Do They Make More and Better Citizens?**

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August 2007

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ABSTRACT

Dual Citizenship Rights: Do They Make More and Better Citizens?*

In the 1990s, Colombia, the Dominican Republic, Ecuador, Costa Rica and Brazil passed dual citizenship laws granting their expatriates the right to naturalize in the receiving country without losing their nationality of origin. I estimate the effects of these new laws on naturalization rates and labor market outcomes in the United States. Based on data from the 1990 and 2000 U.S. censuses, I find that immigrants recently granted dual nationality rights are more likely to naturalize. They also experience employment and earnings gains, together with drops in welfare use, suggesting that dual citizenship rights not only increase the propensity to naturalize but may also promote economic assimilation. The effects of dual citizenship on improved economic performance, if mediated through naturalization, are consistent with American citizenship conferring greater economic opportunities.

JEL Classification: F22, J15, J20, J30

Keywords: immigrants, dual citizenship, naturalization, assimilation

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* The author thanks Hoyt Bleakley, Nora Gordon, Roger Gordon, Gordon Hanson, Anne Piehl, Gaku Tsuda and seminar participants at the Second Migrant Ethnicity Meeting, IZA, Bonn, May 2006 for helpful comments. The author acknowledges research support from the Center for Comparative Immigration Studies, University of California San Diego.

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 by 2002 (Fix, Passel and Sucher, 2003). The increase in naturalization was not merely due to high levels of immigration during the 1980s and 1990s. Naturalization rates among eligible populations grew as well: the share of legal immigrants who had naturalized rose from 39 percent in 1996 to 49 percent in 2002.

Immigrants who meet the admission, age and residency requirements for naturalization decide whether or not to apply for citizenship. The decision depends on the perceived benefits and costs of naturalization and the weights attached to them. The importance of citizenship has risen since the mid-1990s, when both welfare and illegal immigration reforms made access to public benefits and other selected rights increasingly dependent on citizenship. These legislative changes are the most commonly cited explanation for the surge in naturalization in the 1990s, but the empirical literature on this issue is limited and offers mixed findings.¹ Besides the alleged incentive to become a citizen in order to retain access to social benefits, there are also a number of other influences—so far largely neglected—that might have affected an immigrant’s propensity to naturalize in the 1990s. For example, between 1991 and 1996 some important sending countries (Colombia, the Dominican Republic, Ecuador, Costa Rica and Brazil) changed their laws and granted their expatriates the right to naturalize in the receiving country without losing their nationality of origin. Immigrants from these countries may be more likely to naturalize because of the decrease in a major cost of naturalization, specifically the need to forfeit rights in their country of origin. Figure 1 provides prima facie evidence suggesting that changes in dual citizenship laws partly determine trends in naturalization in the 1990s. The figure, which is drawn from administrative data on the number of naturalizations processed per year by the Immigration and Naturalization Service (INS),² shows that even if growth in naturalization is steep among

¹ In support of the existence of behavioral responses to welfare reform, Borjas (2002) finds that the national origin groups most likely to receive public assistance in the pre-PRWORA period experienced the largest increase in naturalization after 1996. However, against the notion that immigrants naturalize to retain (or acquire) welfare eligibility, Fix, Passel and Sucher (2003) estimate that in 2001 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.

² U.S. Citizenship and Immigration Services (USCIS) since 2003.

immigrants from all countries (panel A),³ once country and year fixed effects are removed, there is an increasing residual trend in naturalization among immigrants from countries that granted dual citizenship rights in the 1990s, but not among immigrants from other Latin American countries (panel B).

The first goal of this paper is to assess whether recognition of dual citizenship rights has a causal effect on naturalization. To do this, 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. This amounts to comparing the change over time in naturalization rates of immigrants coming from countries that have recently legalized dual citizenship to the change over time in naturalization rates of immigrants from Latin American countries that have not changed the law. For the proposed identification strategy to hold, I need to rule out that other incentives to naturalize during the 1990s (such as welfare reform and citizenship outreach programs) had differential effects by country of origin. To address this identification issue, I use individual-level data from the 1990 and 2000 censuses to model the effects of these other incentives as a function of place of residence and socio-demographic characteristics (not available by year and country of origin in administrative data). In these model specifications, changes in dual nationality policies are arguably the only source of systematic differences over time in the incentive to naturalize by country of origin. For example, if citizenship were indeed sought after welfare reform to protect access to social benefits, 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 and age) that predict eligibility for means-tested categorically-restricted benefits such as the ones offered by the U.S. welfare system.

The estimation results provide strong support for the hypothesis that changes in dual citizenship laws caused naturalization to rise. This finding shows the importance of going beyond unilateral explanations for the surge in naturalization in the 1990s. In the aftermath of welfare reform, the public debate has been centered on whether many immigrants would be led to choose to become citizens not because they want to fully participate in the U.S. political system, but because

³ Caution should be exercised in using these data to draw conclusions about yearly trends in naturalization because of the large backlog in processing applications. INS data reveal that backlogs rose significantly in the early 1990s, dramatically dropped in 1996 as a result of the program Citizenship USA, exploded once more in 1997 and 1998, and decreased again in 1999-2001.

naturalization is the price to pay to receive welfare benefits. If so, immigrants who naturalize would be self-selected to include large numbers of persons who qualify to make claims on the welfare state. In light of the finding that some of the rise in naturalizations in the 1990s can be attributed to changes in dual citizenship rights, a different question becomes of interest: how does recognition of dual citizenship rights by sending countries change the pool of naturalized citizens in the United States? Furthermore, how does it affect the process of economic assimilation of immigrants residing in the United States?

On one hand, one could argue that dual nationality rights are likely to impede assimilation. This notion is the main reason why dual citizenship has been traditionally criticized and opposed by receiving countries. Empirical evidence on this issue is fragmented, but it often points against the notion that a migrant's ties with the country of origin and the country of current residence should be modeled as a zero-sum game.⁴ In fact, integration into the United States carries a lower cost once dual nationality rights are recognized, and this might promote stronger attachment to the destination country, stimulating a wide array of behavioral changes—including not only an increased propensity to naturalize but also an incentive to invest in U.S.-specific skills or to increase work effort. The second part of this paper explores this issue.

First, in an attempt to assess who values dual citizenship rights, I estimate whether the effects of dual citizenship recognition on naturalization are heterogeneous across socio-demographic groups. I find sizable differences by education: dual citizenship rights raised the propensity to naturalize in the target group with high school or higher education, but had a small and statistically insignificant effect on those without a high school degree. This finding suggests that the implied benefits of dual citizenship are larger for more educated immigrants. For instance, education might be correlated with a worker's likelihood of being employed in occupations in which the possibility of being flexibly reassigned to jobs in either country is valued, or with the likelihood of being involved in business transactions with the country of origin.

I then study whether dual citizenship rights affect the economic assimilation of immigrants in the United States by running difference-in-difference estimates of the effects of changes in the laws on employment and income measures. In equations where the time-varying coefficients of

⁴ Findings on both Latin American immigrants (Guarnizo, Portes and Haller, 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.

socio-demographic characteristics and state of residence capture the effects of changing local labor market conditions and changing returns to observable skills over the 1990s, immigrants from countries that recently granted their expatriates dual citizenship rights are found to experience employment gains in 2000 relative to immigrants from other countries. This finding supports the possibility that dual citizenship rights facilitate the process of immigrants' labor market assimilation. When studying differential trends in annual earnings, I find that in the 1990s there is no statistically significant differential change across the two groups. However, when splitting the analysis by education, I estimate a 2.5 percent relative rise in the annual earnings of the target group with at least a high-school degree. Consistent with improved labor market outcomes, estimates show that changes in the laws are associated with a lower probability to receive income from welfare in the target group, and, for those on welfare, with smaller welfare payments.

Evidence presented in this paper shows that dual citizenship rights promote a higher propensity to naturalize and a stronger attachment to the labor force. This result is important in light of the growing number of countries that have altered their laws to permit their citizens to retain nationality despite naturalization elsewhere.⁵ This is relevant from the policy point of view of receiving countries as well, because they are sometimes involved in bilateral agreements with governments of sending countries that are in the process of conferring dual nationality rights to their expatriates.⁶

The estimated sizable positive impact of dual citizenship rights on naturalization rates also suggests that some of the relative employment gains in the treatment group might be at least partly due to American citizenship acquisition. There are different ways in which American citizenship may provide greater employment opportunities, but whether and how naturalization affects labor market performance is still largely an unresolved question. Cross-sectional evidence shows that naturalized citizens experience better labor outcomes than non-citizens, even after controlling for the number of years since migration. However, selection effects hinder a causal interpretation of this evidence.

⁵ For instance, Sweden made this change in 2001, Australia in 2002 and the Philippines in 2003.

⁶ For example, after consultation with the U.S. government, in 2002 Pakistan granted dual nationality rights to its expatriates in the United States (<http://www.pakistan-embassy.org/dual.php>). Before then, these rights were restricted to expatriates living in Australia, Belgium, Canada, Egypt, France, Island, Italy, Jordan, Netherlands, New Zealand, Switzerland, Syria and the United Kingdom. In 2003 India recognized dual nationality rights to its expatriates in the United States (as well as in Australia, Canada, Ireland, Italy, the Netherlands, Finland and the United Kingdom).

Interpreting the effects of dual citizenship on labor outcomes as evidence of the causal effect of naturalization would require maintaining the assumption that the reason 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. Keeping this assumption, we can calculate the implied returns to naturalization when using changes in dual citizenship as a source of variation: we find them to be very large, several order of magnitude larger than the cross-sectional correlations. This result, interpreted as a “local treatment effect” (Angrist, Imbens and Rubin, 1996), would suggest that dual nationality rights predominantly affect the likelihood of naturalization for groups with particularly large employment and career gains from holding American citizenship. For instance, more educated immigrants, who appear to have been mostly affected by the newly granted rights, might experience very large career and income benefits from transnational activities once they hold citizenship in both their country of origin and the United States. However, we cannot rule out the possibility that the large estimated association between naturalization and economic outcomes is driven, at least in part, by omitted variables.

The remainder of the paper is organized as follows. Section 2 discusses the role of dual citizenship rights in understanding the decision to naturalize. It also explains the practice of dual nationality in the United States and describes recognition of dual nationality by the five 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 influences 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 trends in labor outcomes and welfare use for immigrants recently granted dual citizenship rights and Section 6 concludes.

2. Background

2.1 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 old⁷ and have continuously resided in the United States for 5 years (3 years in the case of spouses of U.S. citizens). In a utility

⁷ Children residing in the United States can naturalize with their parents.

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. Citizenship also makes it easier to sponsor relatives. The importance of citizenship has risen since the mid-1990s. 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 illegal immigration reform (the 1996 Illegal Immigration and Immigrant Responsibility Act) is that only foreign-born people who have naturalized are granted the right to "residential security," that is, the right to remain in the country and not be deported for minor crimes or misdemeanors.

Citizenship also entails costs. First, there are costs related to the naturalization process.⁸ Second, depending on the dual citizenship laws in the country of origin, those who naturalize in the United States might be obliged to forfeit rights in their home country. There could be both practical 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 to the country of origin without special visas, the right to work in the country of origin or have full access 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 their home country. Psychologically, they may wish to continue to identify themselves as citizens of their country of birth and to be able to pass their national identity to their children.

2.2 Legislative factors and related estimation issues

There are no statistical surveys of the number of dual nationals in the world, but dual nationality is certainly 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. To assess the effect

⁸ To naturalize, applicants must pay a fee (\$320 in 2006, plus \$50 for fingerprinting); demonstrate the ability to read, write, speak and understand English; and pass an examination on U.S. government and history.

of the recognition of dual citizenship on an immigrant's propensity to naturalize and on her economic assimilation, I calculate differential changes over time in naturalization and economic outcomes of immigrants coming from countries that have recently allowed dual citizenship versus immigrants from similar countries that have not changed the law.

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 and 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 decided to recognize dual nationality primarily 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 the first set of countries expected the legal changes to take place and started to naturalize in advance. But Colombian organizations in New York began lobbying for dual nationality no earlier than 1988, so the expectation of legal changes should not have caused substantial increases in naturalization by 1990 (given the long processing times). Likewise, even if Ecuadorian and Dominican lobbying for dual citizenship began earlier than the Colombian lobbying, serious discussions about this option started taking place only in 1990.

There is a further concern of policy endogeneity that needs to be explored. Sending countries might be willing to grant dual citizenship to foster ties with their expatriates, hoping these ties pay off in terms of current remittances or future investments. If so, rising naturalizations or improving economic conditions of expatriates might predate the policy changes, and this would invalidate the research design. 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 the exogeneity assumption should hold. 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 there is no evidence of differential trends in outcomes across treatment and comparison groups that are consistent with the above policy endogeneity scenario.

In 1996, Mexico also granted its citizens dual citizenship rights, but only of a temporary and limited nature. A non-loss of nationality provision (passed 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. After that date, Parliament subsequently extended the dual citizenship rights. 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 the control group. For this reason (and a further reason explained 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 rights in the 1990s, Italy and Hungary. However, to increase comparability between treatment and control groups, I restrict the analysis to immigrants from Latin American countries.

Finally, 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 that he asserts the rights of one citizenship does not without more mean that he renounces the other" (*Kawakita v. United States*, 343 U.S. 717, 1952). Foreign-born migrants who naturalize in the United States are formally required to state under oath that they are renouncing their old citizenship, but there are no further steps to enforce this declaration.⁹

3. Data

In this paper I use microdata from the 1990 and 2000 U.S. censuses, specifically the Integrated Public Use Microdata Series (IPUMS) files (Ruggles et al., 2004).¹⁰ I restrict the analysis to working-age, foreign-born individuals 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

⁹ 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 does not require official notification that naturalized U.S. citizens have formally renounced their nationality of origin.

¹⁰ I combine the 5 percent sample with the 1 percent sample: they are independent 1-in-20 and 1-in-100 national random samples of the population.

(3 years if married to a U.S. citizen). Adulthood upon arrival in the United States is imposed to rule out cases of immigrants deriving citizenship from their parents' naturalization, in order to focus on the voluntary decision to naturalize. Another reason to exclude childhood immigrants is that younger arrivers likely differ from older arrivers with respect to language acquisition and other experiences affecting labor outcomes (Bleakley and Chin, 2004). The restriction on length of stay in the United States is imposed in light of the residency requirements for naturalization included in the U.S. law.

The age and residency restrictions might not be sufficient to identify immigrants eligible to naturalize. There are ineligible foreign-born individuals in the census, such as non-immigrants and undocumented immigrants. The likelihood of including non-immigrants in the sample is reduced by the length-of-residence sample restriction¹¹ and, further, by limiting the analysis to Latin American immigrants.¹² 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. 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 (INS, 2003), and this should work against finding effects of dual citizenship laws on naturalization in samples drawn from census data. In the empirical investigation, I address the problem of changing rates of illegal immigration by dividing individual data on naturalization status by the probability of legal status by country of origin and census year. This procedure allows for 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 in the United States, are obtained from comparisons of the immigrant population represented in the census, adjusted for the estimated undercount (Costanzo, 2001; Robinson, 2001), with estimates of the inflows of the unauthorized population developed by the INS (Warren, 1995; INS, 2003). The latter estimates exclude from the undocumented population some immigrant groups that received legal status through special

¹¹ Non-immigrant aliens (admitted as students, temporary workers or foreign diplomats) usually cannot stay in the United States longer than 5 or 6 years with the same type of visa. The problem persists, though, for foreign-born individuals who enter the United States as non-immigrants and then adjust their status to legal permanent residents while residing in the United States. As shown in section 4.4, estimation results are robust to increasing the length of residence restriction.

¹² Temporary 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 percent of all legal permanent residents admitted to the United States but only 18 percent of the almost two million non-immigrants admitted, other than temporary visitors for pleasure or for business (INS, 1997).

amnesties at some point after entering the United States. For this reason, the derived probabilities of legal status might not be reliable 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 and Nicaragua); second, when involving immigrants who were legalized under the 1986 Immigration Reform and Control Act (IRCA) provisions. (These latter immigrants, still illegal in 1985, were mostly legalized by 1990 but at that time were still ineligible to naturalize). 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 immigrants from these countries from the analysis should alleviate the problems posed by special temporary amnesty programs and by IRCA when deriving probabilities of legal status.

Information on citizenship comes from reported naturalization status. False reporting of citizenship has been shown to be a problem in the Current Population Survey (Passel and Clark, 1997), and it appears to be present in the census as well. Overreporting of citizenship in the CPS, however, 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 most of the analysis.

Among the economic outcomes, I consider employment, welfare use and income measures (they all refer to the year before the interview). Employment measures are defined to capture employment above a minimum threshold (working at least 20 weeks per year and 15 hours per week). A first measure of employment is the reporting of any work for profit or for pay. Separate regressions are also run for self-employment and for work for wages or salary. The latter is further disaggregated into private and public sector employment. Workers with multiple sources of employment are classified according to the work relationship in which they spent the most time during their last employment spell. I define two income measures: total earnings from work and total income from welfare. The first includes annual earnings from wage/salary work and self-employment earnings, given that an individual may report earnings from both sectors (Lofstrom, 2002); the second includes payments from Supplemental Security Income, Aid to Families with Dependent Children (or Temporary Assistance to Needy Families) and General Assistance. The GDP deflator for personal consumption expenditure is used to convert nominal amounts into 1989 dollars. Finally, I define a dummy variable for welfare use equal to one if the respondents received any positive income from public assistance programs.

The socio-demographic characteristics included in the empirical specification are state of residence, education,¹³ age,¹⁴ and gender. Also, nine cohorts of entry in the United States¹⁵ and twenty-three specific countries of origin are defined.¹⁶

Table 1 presents descriptive data on the characteristics of immigrants from different countries in 1990. Excluding Mexico and other Central American countries notably increases the comparability between average characteristics of immigrant groups from the five "treated" countries and immigrant groups from other Latin American countries that serve as controls. Still, immigrants in the treatment group have lower naturalization rates (the difference somewhat shrinks once we correct for probability of legal status) and worse economic outcomes. Immigrants in the treatment group are also more likely to be female, younger and less educated, while the two groups have almost the same proportion of immigrants that arrived in the United States more than 20 years ago and a similar geographic distribution across states. The treatment group consists of 5 percent Costa Ricans, 33 percent Dominican Republicans, 7 percent Brazilians, 37 percent Colombians and 17 percent Ecuadorians (not shown in the Table).

A serious empirical issue related to the use of cross-sectional data is that changes in sample composition, arising from new immigrants' inflows or return migration, might affect the comparison of the treatment and control group over time. Restricting the analysis to Latin American countries helps controlling for economic and political shocks that were common to the region in the 1990s, and that might have affected immigrant inflows and outflows. Also, a comparison of the socio-demographic characteristics in the 1990 and 2000 samples reveals that the observable characteristics of the treatment and comparison group have remained fairly stable in the two periods.¹⁷ For our identification strategy to hold, however, we need to keep the assumption

¹³ I consider six possible educational attainment levels: at most 4th grade, 5th to 8th grade, 9th to 12th grade, high school degree, some college, and a bachelor's (or higher) degree.

¹⁴ I consider seven age classes: less than 30, 31 to 35, 36 to 40, 41 to 45, 46 to 50, 51 to 55 and 56 to 65.

¹⁵ Before 1965, 1965-1969, 1970-1974, 1975-1979, 1980-1981, 1982-1984, 1985-1990, 1991-1994, 1995-1997. In a sample of foreign-born immigrants obtained by pooling two cross-sections, aging effects (as captured by years spent in the United States) cannot be separately identified from cohort of entry effects, because of perfect collinearity among these two variables and the year effects.

¹⁶ 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.

¹⁷ The only statistically significant differences over time are a reduction in the proportion of immigrants without a high-school degree, and a higher concentration in states other than California, Florida, Illinois, New Jersey, New York and Texas. Given that these differences are common to treatment and control

that between 1990 and 2000 there were no differential changes across treatment and control group in the sample composition of unobservable characteristics correlated with the propensity to naturalize and with economic outcomes.

4. Dual citizenship and naturalization

4.1 Empirical model

I estimate the following model of the decision to naturalize for individual i born in country c residing in state s and observed in year $t=1990$ or 2000 :

$$(1) \quad N_{icst} = \alpha + \gamma_c + \gamma_t + \delta(\Delta DC_c \gamma_t) + \gamma_s + X_{it} \Gamma_1 + X_{it} \gamma_t \Gamma_2 + \gamma_t \gamma_s + X_{it} \gamma_t \gamma_s \Gamma_3 + \varepsilon_{icst}$$

where N_{icst} is a dummy variable indicating whether the individual is a naturalized citizen, γ_c is a country-of-origin fixed effect, γ_t is a dummy for year 2000, ΔDC_c is a dummy for those countries that allowed dual citizenship during the 1990s, γ_s is a state-of-residence fixed effect, and X_{it} is a vector of individual socio-demographic characteristics (listed in the previous section). Standard errors are corrected for heteroskedasticity (naturally arising in a linear probability model) and adjusted for correlation across observations for immigrants from the same country and interviewed in the same census year.

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. The difference-in-differences (DD) parameter δ 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 effects on immigrants coming from different countries. In the next section, I review other shocks in the 1990s and I discuss why allowing the effects of socio-demographic characteristics and state of residence (and their interactions) to vary over time should strongly increase the case for a causal interpretation of the DD parameter.

groups, they should at least be partly explained by the general increase in education during this period, and a general change in immigrants' location patterns.

4.2 Other influences on the propensity to naturalize in the 1990s

Besides changes in dual citizenship laws, there are a number of other factors that explain rising naturalization 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 (INS, 1997). There is no clear reason for the Green Card Replacement Program to differentially affect people coming from different countries, once cohort of entry in the United States is controlled for, and the cohort's 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 naturalization increased from 206,668 in 1991 to 959,963 in 1995, but INS resources to adjudicate naturalization applications evidently did not keep pace with the increase in filing given that, by summer 1995, the pending caseload was nearly 800,000 and waiting times in the largest offices exceeded two years. The goal of Citizenship USA was to reduce the processing time per petition to no more than six months. One of the reasons for the spike in the number of persons naturalized in 1996 (Figure 1) is the success of the program in reducing the backlog. The key cities identified for the effort were those with the largest number of pending cases: Chicago, Los Angeles, Miami, New York and San Francisco. A 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 the year 2000, there should not be any reason for this campaign to differentially affect the propensity to naturalize by country of origin.

Political events taking place in the 1990s may have led to increased naturalization 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 the perceived anti-immigrant sentiment encouraged many immigrants to naturalize 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 state of residence, then this effect is controlled for by the inclusion of

place of residence (and its interaction with the year 2000) in Equation 1. However, this factor could nevertheless lead to 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 federal public benefits for non-citizens, may have increased the incentive to naturalize, as a way of retaining access to social programs. If citizenship were indeed sought after welfare reform to protect access to social benefits, then this effect should mainly depend on state of residence (because different states implemented specific welfare reform programs)¹⁸ and on personal characteristics (such as education, gender and age) that predict eligibility for means-tested categorically-restricted benefits such as the ones offered by the U.S. welfare system.¹⁹

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

4.3 Estimation results

Tables 2, 3 and 4 report difference-in-differences (DD) estimates of the effects of recognizing dual citizenship on the decision to naturalize. The first two columns of Table 2 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 is it precisely estimated. As discussed in section 2.2, it is problematic to assign people from Mexico to either the treatment or the control group, so I exclude them from the rest of the analysis. As shown in column 3, when excluding the Mexican-born population, the naturalization rate of immigrants from Colombia, Ecuador, Costa Rica, the Dominican Republic and Brazil is estimated to rise 4.5 percentage points between 1990 and 2000

¹⁸ For a summary of the differences in the immigrant provisions included in state welfare reform laws, see Zimmermann and Tumlin (1999). Many states provided state assistance to immigrants made ineligible for federal assistance by PRWORA. Several states also added to their safety nets for immigrants various initiatives encouraging them to become citizens. The effects of welfare reform and of citizenship outreach programs are expected to vary at the state level.

¹⁹ 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). If so, in the aftermath of welfare reform, the incentive to naturalize to retain access to social benefits might vary by length of residence.

relative to the naturalization rate of immigrants from other Latin American countries.

Even if most illegal immigrants are from Mexico (INS, 2003), dropping the Mexican-born population 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 versus more recent immigrants, given the different likelihood of illegal status in the two groups.²⁰ As shown in column 4 of Table 2, 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 percent 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 (INS, 2003) might contribute a downward bias on the estimated effects of dual citizenship.

Tables 3 and 4 report results from regressions run on samples where individual naturalization status is divided by the probability of legal status by country of origin and census year. As shown in column 1 of Table 3, the DD estimate of the 1990-2000 change in the adjusted 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 immigrants who have been in the United States for less than 20 years (column 2). As explained 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 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 percent of the baseline naturalization rate. When restricting the analysis to immigrants who have been in the United States for less than 20 years (column 4), we estimate a rise in the naturalization rate of immigrants in the treatment group

²⁰ Long-term immigrants are more likely to be legal because they have had time and opportunities to adjust their status. In particular, immigrants in census 2000 who entered illegally before 1982 should have been legalized under IRCA and been eligible to naturalize by the middle of the 1990s. Because of IRCA, it is helpful to split the sample between immigrants who have been living in the United States for more or less than twenty years as a way of evaluating the differences due to the presence of illegal immigrants.

of 7 percentage points, or 17 percent of the baseline naturalization rate.

4.4 Specification checks

To address the concern that changes in the laws are correlated with other country-of-origin factors that affect the likelihood of naturalization over the 1990s, I test the robustness of the results 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 in Table 3 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.²¹ 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 granted) dual citizenship rights, I restrict the comparison group either to countries that did allow dual citizenship in 1990 or to countries that did not, and find stable estimation results (not reported). The results are also robust to excluding those countries that granted dual citizenship in the 1970s and 1980s, and for which lagged effects of changes in dual citizenship laws might affect the results for the 1990s.²²

Column 1 in Table 4 presents estimates obtained from a sample of immigrants who have resided in the country for at least eight years but for less than fifteen. On one hand, I increase the minimum number of years of residence because the 5-year residency requirement included in the law applies to legal permanent residents, but every year only around half of the those newly granted legal permanent resident status are new entrants. The others adjust their status while already residing in the United States. On the other hand, limiting the length of residence to at most fifteen years guarantees that respondents from the 2000 census could not have already been citizens in 1990, and addresses the concern that the results in Table 3 are mechanically driven by different naturalization rates across treatment and control countries in 1990. Estimates are remarkably similar to the ones obtained in a sample of immigrants who stayed between five and twenty years (column 4 of Table 3): dual citizenship recognition is associated with a 6.1

²¹ Naturalization and welfare participation rates are calculated using 1990 census data. I use estimates of the outmigration rate of 1970-1974 arrivals by 1980, calculated in Borjas and Bratsberg (1996).

²² The excluded countries (and the years in which they granted dual citizenship) are: Belize (1981), Panama (1972), Peru (1980) and the British West Indies (since independence, from 1966 to 1983, except for the Bahamas which still denies dual citizenship). El Salvador granted dual citizenship in 1983, but it is already excluded from the sample.

percentage point increase (15 percent of the baseline) in the naturalization rate among immigrants from treatment countries.

I also estimate Equation 1 on sub-samples defined by gender and level of education. Splitting the sample by observable characteristics is problematic because it takes away some of the variation we rely on to control for the effects of welfare reform and other factors contemporaneous with changes in dual citizenship laws. However, to the extent that welfare reform primarily affected low-income families headed by single mothers,²³ estimation results obtained on samples of males or more-educated immigrants are less likely to be confounded by the effects of the reform. As shown in Table 4 (columns 2 through 5), the results are unchanged when splitting the sample by gender, while they differ by education. Dual citizenship rights raised the propensity to naturalize in the target group with at least a high school degree, but had a small and statistically insignificant effect on those without a high school degree. This finding suggests that the implied benefits of dual citizenship are higher for more educated immigrants, as we would expect if education were correlated with higher career and income benefits from transnational activities.²⁴

To address the concern of policy endogeneity, I explore trends in naturalization rates in the treatment and control groups before the passage of the laws, that is, between 1980 and 1990. As shown in Table 5, between 1980 and 1990 immigrants from the five countries that granted dual citizenship ($\Delta DC_c=1$) 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, the results are stable to the exclusion of immigrants living in the state of New York. Given that lobbying for dual citizenship among Colombians, Ecuadorians and Dominicans was concentrated in New York City (Jones-Correa, 2001), the stability of the results to the exclusion of observations for the state of New York is further evidence that lobbying activities should not be correlated with increases in the number of naturalizations that predate the passage of

²³ The program for which eligibility rules changed more dramatically (Aid to Families with Dependent Children) was primarily offered to single parent families.

²⁴ This result is consistent with findings in Bloemraad (2002): using a unique feature of the Canadian censuses—that ask respondents to report multiple citizenship—she finds that those with higher human capital are more likely to identify themselves as dual citizens. She notices that higher education might correlate with a greater sense of personal political efficacy. If so, people with more education might perceive a higher implied cost in naturalization when dual citizenship rights are denied.

the laws.

5. Dual citizenship and labor outcomes

Table 6 presents DD estimates of the effects of dual citizenship on labor outcomes, that is, the estimated δ 's from specifications like Equation 1 where the dependent variable is an employment or income measure. The sample is restricted to immigrants from Latin American countries, except from Mexico, Guatemala, El Salvador, Honduras and Nicaragua. Interactions between year effects and socio-demographic characteristics and state-of-residence effects control for changing local labor market conditions and changing returns to observable skills over the 1990s.

As shown in panel A, immigrants from the countries that granted dual citizenship during the 1990s experience a 3.6 percentage point increase in the probability of full-time work relative to other Latin American immigrant groups (column 1). The gains are evenly distributed between self-employment activities (column 2) and increased work for wages, either in the private or public sector (columns 3 and 4). Immigrants in the treatment group experience a statistically insignificant 1 percent earnings gain (column 5). Finally, they experience a 1.5 percentage points relative drop in the probability to receive income from public assistance programs (column 6), and, if on welfare, a 17 percent relative drop in payments (column 7).

I also estimate the effects of law changes on economic outcomes on sub-samples defined by gender and level of education. As already mentioned, given that welfare reform mostly affected low-income families headed by single mothers, the effects of welfare reform are less likely to confound the estimated impact of law changes among males (panel B of Table 6) or more-educated immigrants (panel C). A notable finding is that dual citizenship law changes raised the earnings of the treatment group with a high school degree by a statistically significant 2.5 percent. This finding is striking in light of the fact that an analysis of data drawn from the 1980 and 1990 censuses (Table 7) reveals that law changes in the 1990s are correlated with large earnings drops in the 1980s, both in the full sample (panel A) and in the sub-sample of more educated immigrants (panel C). On one hand, earnings drops (and welfare payments increases) in the treatment group in the 1980s seem to rule out the policy endogeneity scenario discussed in section 2.2—if countries granted dual citizenship to foster ties that could pay off in terms of remittances or investments, then we would expect to observe improved economic conditions among their expatriates that

predate changes in the laws. On the other hand, they support the possibility that the estimated impact of law changes on economic outcomes are biased against finding a positive impact on earnings, of which we nevertheless find evidence among more educated immigrants.

The effects of American citizenship acquisition

There are different ways in which American citizenship may provide greater employment opportunities. Not only is American citizenship required for certain jobs (for example, in many federal agencies and in the public safety industry), but the act of naturalization may also remove employment barriers other than those stated by law. Discrimination by employers or concerns that non-citizens are less committed to jobs might cause naturalized citizens to be preferred in the hiring process over non-citizens. Employers may also value American citizenship as an easy way to assess legal status.

Cross-sectional evidence shows that naturalized citizens experience better labor outcomes than non-citizens, even after controlling for the number of years since migration,²⁵ but selection effects hinder a causal interpretation of this evidence. On panel data, Bratsberg, Ragan and Nasir (2002) find that—consistent with the removal of employment barriers—young male immigrants gain access to public-sector, white-collar and union jobs after they naturalize, and they also experience more rapid wage growth. The results are robust to the inclusion of controls for individual unobserved productivity, and they support that naturalization does facilitate assimilation into the U.S. labor market. Because it is difficult to find exogenous sources of variation in naturalization, no study, however, has attempted to isolate the effects of naturalization on labor market assimilation using large and representative cross-sectional data. Can changes in dual citizenship laws be used to improve our understanding of the causal effects of American citizenship acquisition?

Interpreting the effects of dual citizenship on labor outcomes as evidence of the causal effect of

²⁵ Ordinary Least Squares estimates in regressions that control for the socio-demographic characteristics also included in Equation 1 show that in 2000 naturalization status is associated with a 4.8 percentage point increase in the probability to work full-time, a 0.3 percentage point drop in the probability to be on welfare, and a 14 percent increase in annual earnings. As opposed to earlier periods (see Chiswick, 1978, for an analysis on data from the 1970 census), the “naturalization premium” is statistically significant even if the models control for length of stay in the United States. Separate regressions by education show statistically insignificant differences across immigrant groups with or without a high school degree.

naturalization would require maintaining the assumption that the reason 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. Keeping this assumption, we can calculate the implied returns to naturalization when using changes in dual citizenship as a source of variation: we find them to be very large, several order of magnitude larger than the cross-sectional correlations.²⁶ This result, interpreted as a “local treatment effect” (Angrist, Imbens and Rubin, 1996), would suggest that dual nationality rights predominantly affect the likelihood of naturalization for groups with especially large employment and career gains from holding American citizenship. In particular, more educated immigrants, who appear to have been mostly affected by the newly granted rights, might experience very large career and income benefits from transnational activities once they hold citizenship in both their country of origin and the United States.

However, we cannot rule out the possibility that the large estimated association between naturalization and economic outcomes is driven, at least in part, by omitted variables. For instance, if those that care about dual citizenship laws have a strong sense of patriotism, and if this is in turn correlated with a sense of responsibility that increases labor performance, then after the country of origin allows for double nationality we might observe an improvement in the employment and earnings of naturalized citizens versus those of non-citizens, even if American citizenship per se has no effect on labor market performance.

6. Conclusions

This paper finds that the new dual citizenship laws enacted by five important sending countries in the 1990s positively affected the U.S. naturalization rate among immigrants from those countries. The effects are sizable in magnitude, implying an increase of 10 percentage points in the probability of naturalization over the 1990s among immigrants coming from Colombia, the Dominican Republic, Ecuador, Costa Rica and Brazil. This result shows that the surge in naturalization in the 1990s—predominantly interpreted in the public debate as a response to

²⁶ Instrumental Variables estimates from a sample of immigrants with high school or higher education (the group for which the instrument is relevant) show that naturalization is associated with a 77 percentage points increase in the probability of full-time employment and with a 58 percent increase in annual earnings.

welfare legislation restricting access to benefits for non-citizens—is a phenomenon that might have multiple explanations, not exclusively related to changes in U.S. policy.

Immigrants coming from countries that have recently allowed dual citizenship are also found to experience relative employment and earnings gains, and to lower their reliance on welfare. These findings contribute to the long-standing debate over the pros and cons of dual nationality. From the point of view of receiving states, dual nationality has been criticized as a sort of political bigamy, a way of devaluing the meaning of citizenship and impeding assimilation in the destination country. The findings in this paper support the view that dual nationality might instead foster economic assimilation in the receiving country.

This paper also relates to the very limited literature on the effects of naturalization on an immigrant's economic assimilation: the effects of dual citizenship on improved economic performance, if mediated through naturalization, are consistent with American citizenship conferring greater economic opportunities. In particular, the very large implied effects of naturalization on the employment and earnings of immigrants with a high school degree or more suggest that more educated immigrants might experience sizable career and income benefits from transnational activities once they hold citizenship in both their country of origin and the United States. A closely related literature is the one that studies the effects of legal status on immigrants' labor market assimilation. Variation induced by amnesty programs shows that legalization positively affects labor market performance, and also in this case the effects are found to be larger among immigrants with higher skills (Kossoudji and Cobb-Clark, 2002; Kaushal, 2006). Further research is needed to uncover how legal and citizenship status affect immigrants' economic assimilation, because the answer to this question should play a role in the design of immigration/naturalization policies.

There is one further behavioral effect of dual nationality rights that is not considered in the present paper. For those holding American citizenship (either because they naturalized or obtained it through their parents' naturalization), dual citizenship rights might increase return migration. The option to return to one's country of origin might in turn affect subsequent human capital investments. On one hand, immigrants might experience a smaller incentive to invest in U.S.-specific human capital because of the potentially limited horizon of their working life in the host country (Borjas, 1999). This would not be the case, however, if skills are transferable across countries. Borjas and Bratsberg (1996) show that if 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. There is only limited evidence on the way in which reversible migration decisions affect a migrant's productivity and her labor supply decisions while in the United States (Cortes, 2004),²⁷ and no empirical evidence on the correlation between dual citizenship rights and probability of return migration. Future work will address these issues.

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²⁷ In favor of the hypothesis that differences in time horizons affect human capital investments and economic assimilation, Cortes (2004) finds that refugee immigrants experience faster growth in total earnings and higher rates of human capital accumulation than economic immigrants.

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Table 1
Selected Descriptive Statistics for Foreign-born by Country of Origin, 1990

	CR, DR, BZ, CO and EC	MX, ES, GU, HO and NI	other Latin America
Naturalized citizen	0.33	0.24	0.45
Probability legal status	0.82	0.41	0.89
Self-employed	0.06	0.05	0.08
Private Employee	0.54	0.57	0.56
Public Employee	0.05	0.03	0.09
Log total earnings	9.50	9.23	9.66
Welfare use	0.07	0.04	0.04
Log welfare payments	8.10	7.77	7.78
Living in the United States	0.65	0.65	0.67
> 10 years			
Female	0.56	0.47	0.52
Age	43.6	41.1	46.9
Education			
< 12 years	0.37	0.72	0.29
>= 12 years	0.63	0.28	0.71
State of residence			
CA	0.10	0.56	0.10
FL, IL, NJ, NY, TX	0.76	0.32	0.76
other states	0.14	0.12	0.14
Number of observations	58,620	328,024	121,222

Sample: 1990 and 2000 IPUMS, born in Latin American countries, less than 65 years old, arrived in the U.S. at least 18 years old and stayed for at least 5 years. The sample sizes pertain to the combined total for 1990 and 2000. Legend: CR: Costa Rica, DR: Dominican Republic, BZ: Brazil, CO: Colombia, EC: Ecuador, MX: Mexico, ES: El Salvador, GU: Guatemala, HO: Honduras, NI: Nicaragua

Table 2
Difference-in-difference Estimates of Dual Citizenship on Naturalization Status

Sample	Mexico in the treatment group	Mexico in the control group	Excluding Mexico	Excluding Mexico 20 yrs or more in the U.S.	Excluding Mexico Less than 20 yrs in the U.S.
<i>Mean of dependent variable</i>	0.33 (1)	0.33 (2)	0.42 (3)	0.71 (4)	0.32 (5)
Δ Dual*year 2000	0.012 [0.012]	0.044** [0.018]	0.045** [0.017]	0.060*** [0.022]	0.020 [0.017]
Observations	507,847	507,847	243,685	67,236	176,449
R-squared	0.20	0.20	0.25	0.11	0.15

Notes: Dependent variable: naturalization status. Standard errors (clustered by country of origin and census year) are in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1990 and 2000 IPUMS, born in Latin American countries, less than 65 years old, arrived in the U.S. at least 18 years old and stayed for at least 5 years. Δ Dual=1 for immigrants born in Costa Rica, Dominican Republic, Brazil, Colombia, Ecuador (and Mexico in column 1 only). All specifications include controls for state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth, census year, and interaction terms between year 2000 by: state of residence, education, age, gender, cohort of entry; year 2000 by state by education; year 2000 by state by gender).

Table 3
Difference-in-difference Estimates of Dual Citizenship on Adjusted Naturalization Status

Sample	Excluding Mexico		Excluding Mexico, El Salvador, Guatemala, Honduras and Nicaragua		
	All	Less than 20 yrs in U.S.	All	Less than 20 yrs in the U.S.	All
<i>Mean of dependent variable</i>	0.54 (1)	0.42 (2)	0.54 (3)	0.41 (4)	0.54 (5)
Δ Dual * year 2000	0.188*** [0.048]	0.159*** [0.047]	0.104*** [0.027]	0.068** [0.025]	0.104*** [0.020]
Observations	243,685	176,449	179,839	122,731	179,839
R-squared	0.17	0.10	0.21	0.13	0.21

Notes: Dependent variable: naturalization status divided by probability of legal status (by country of origin and year). Standard errors (clustered by country of origin and census year) are in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1990 and 2000 IPUMS, born in Latin American countries, less than 65 years old, arrived in the U.S. at least 18 years old and stayed for at least 5 years. Δ Dual=1 for immigrants born in Costa Rica, Dominican Republic, Brazil, Colombia and Ecuador. All specifications include controls for state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth, census year, and interaction terms (year 2000 by: state of residence, education, age, gender, cohort of entry; year 2000 by state by education; year 2000 by state by gender). The specification in column 5 also includes interactions between year 2000 and: naturalization and welfare use rates in 1990, and estimated outmigration rates by country.

Table 4
Difference in Differences Estimates of Dual Citizenship on Adjusted Naturalization Status, by Length of Residence in the United States, Gender and Education

Sample	Excluding Mexico, El Salvador, Guatemala, Honduras and Nicaragua				
	8-15 years in the U.S.	Males	Females	Less than high school degree	High school degree or more
<i>Mean of dependent variable</i>	0.40 (1)	0.51 (2)	0.58 (3)	0.43 (4)	0.61 (5)
$\Delta Dual$ * year 2000	0.061** [0.026]	0.100*** [0.031]	0.105*** [0.026]	0.043 [0.032]	0.129*** [0.024]
Observations	60,007	83,547	96,292	48,531	131,308
R-squared	0.08	0.20	0.22	0.19	0.20

Notes: Dependent variable: naturalization status divided by probability of legal status (by country of origin and year). Standard errors (clustered by country of origin and census year) are in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1990 and 2000 IPUMS, born in Latin American countries, less than 65 years old, arrived in the U.S. at least 18 years old and stayed for at least 5 years. $\Delta Dual=1$ for immigrants born in Costa Rica, Dominican Republic, Brazil, Colombia and Ecuador. All specifications include controls for state of residence, education, age, gender (not columns 2 and 3), cohort of entry in the U.S., country-of-birth, census year, and interaction terms: year 2000 by: state of residence, education, age, gender (not columns 2 and 3), cohort of entry; year 2000 by state by education (not columns 4 and 5); year 2000 by state by gender (not columns 2 and 3).

Table 5
1980-1990 Relative Changes in Naturalization Rates

Sample	Excluding Mexico		Excluding Mexico, El Salvador, Guatemala, Honduras and Nicaragua	
	All (1)	Excluding NY (2)	All (3)	Excluding NY (4)
$\Delta Dual$ * year 1990	0.016 [0.011]	0.016 [0.013]	0.017 [0.011]	0.016 [0.012]
Observations	137,129	98,106	114,019	77,406
R-squared	0.20	0.22	0.20	0.21

Notes: Dependent variable: naturalization status. Robust standard errors (clustered by country of origin and census year) in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1990 and 2000 IPUMS, born in Latin American countries, less than 65 years old, arrived in the U.S. at least 18 years old and stayed for at least 5 years. $\Delta Dual=1$ for immigrants born in Costa Rica, Dominican Republic, Brazil, Colombia or Ecuador. All specifications include controls for state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth, census year, and interaction terms (year 1990 by: state of residence, education, age, gender, cohort of entry; year 1990 by state by education; year 1990 by state by gender).

Table 6
Difference-in-difference Estimates of Dual Citizenship on Employment and Income Measures

Dependent variable:	Employed				Log Annual Earnings	Welfare use	Log Income from Welfare
	Any work for pay	Self-empl.	Private sector	Public sector			
<i>Mean</i>	0.70 (1)	0.07 (2)	0.54 (3)	0.08 (4)	9.61 (5)	0.05 (6)	7.78 (7)
A. Full sample							
$\Delta Dual$ * year 2000	0.036*** [0.006]	0.011*** [0.004]	0.015** [0.007]	0.010*** [0.002]	0.012 [0.010]	-0.015** [0.005]	-0.174*** [0.042]
Observations	179,839	179,839	179,839	179,839	139,425	179,839	8,651
R-squared	0.10	0.03	0.05	0.05	0.18	0.05	0.07
B. Males							
$\Delta Dual$ * year 2000	0.018*** [0.005]	0.004 [0.005]	0.003 [0.009]	0.011*** [0.003]	-0.008 [0.011]	-0.002 [0.002]	-0.160* [0.088]
C. High school degree or more							
$\Delta Dual$ * year 2000	0.035*** [0.007]	0.010** [0.004]	0.015* [0.008]	0.009*** [0.003]	0.025** [0.010]	-0.006* [0.004]	-0.166*** [0.052]

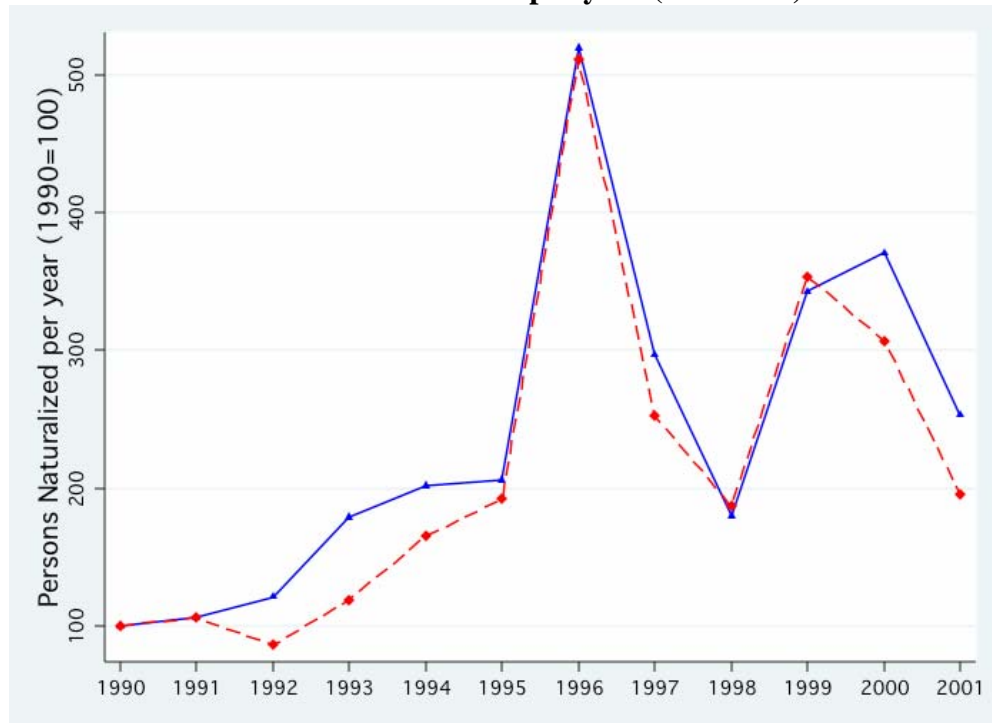
Notes: Dependent variables are listed in column headings. Standard errors (clustered by country of origin and census year) are in brackets. Single asterisk denotes statistical significance at the 90% level of confidence, double 95%, triple 99%. Sample: 1990 and 2000 IPUMS, born in Latin American countries, less than 65 years old, arrived in the U.S. at least 18 years old and stayed for at least 5 years. $\Delta Dual$ 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 (except in panel B), 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 (except in panel C), age, gender (except in panel B), cohort of entry in the U.S., plus year by state by education controls (except in panel C).

Table 7
1980-1990 Relative Changes in Labor Outcomes

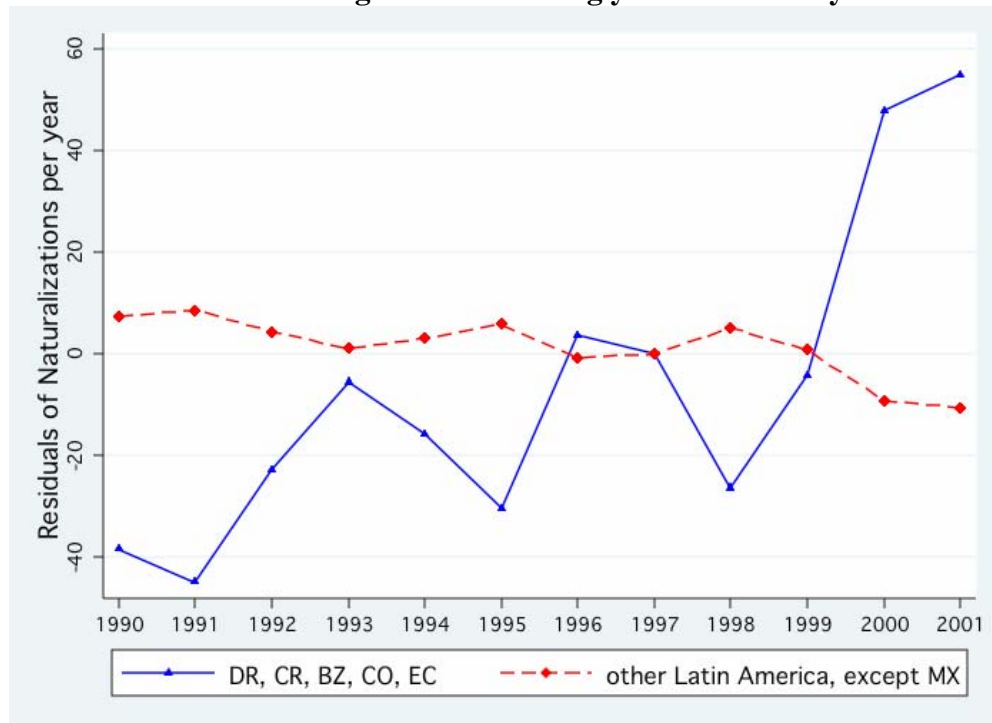
Dependent variable:	Employed				Log Annual Earnings	Welfare use	Log Income from Welfare
	Any work for pay	Self-empl.	Private sector	Public sector			
<i>Mean</i>	0.70 (1)	0.07 (2)	0.56 (3)	0.08 (4)	9.61 (5)	0.05 (6)	7.99 (7)
A. Full sample							
$\Delta Dual$	-0.008	0.007	-0.010	-0.006**	-0.047***	-0.002	0.190***
* year 1990	[0.010]	[0.006]	[0.010]	[0.004]	[0.015]	[0.005]	[0.057]
Observations	114,019	114,019	114,019	114,019	88,984	114,019	5,557
R-squared	0.12	0.05	0.05	0.05	0.20	0.05	0.09
B. Males							
$\Delta Dual$	-0.010	0.013	-0.009	-0.013***	-0.023	-0.006**	0.286***
* year 1990	[0.011]	[0.009]	[0.013]	[0.004]	[0.019]	[0.003]	[0.062]
C. High school degree or more							
$\Delta Dual$	0.108	0.007	-0.006	-0.006**	-0.059***	-0.001	0.346***
* year 1990	[0.065]	[0.005]	[0.009]	[0.002]	[0.018]	[0.003]	[0.060]

Notes: Robust standard errors (clustered by country of origin and census year) in brackets. Single asterisk denotes statistical significance at the 90% level of confidence, double 95%, triple 99%. Sample: 1980 and 1980 IPUMS, born in Latin American countries, less than 65 years old, arrived in the U.S. at least 18 years old and stayed for at least 5 years. $\Delta Dual$ 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 (except in panel B), cohort of entry in the U.S., country-of-birth dummies and a dummy for year 1990. All specifications also include interactions between year 2000 and state of residence, education (except in panel C), age, gender (except in panel B), cohort of entry in the U.S., plus year by state by education controls (except in panel C).

**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



Notes: Data on the number of naturalizations processed per year, by country of origin of the persons who naturalized. Data are normalized to 100 in 1990. Panel B plots the residuals of a regression that includes country of origin and year fixed effects. Source: U.S. Immigration and Naturalization Service, 2001 *Statistical Yearbook*.