# Should They Stay or Should They Go? Immigration and Municipal Bonds

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January 2025

**Abstract**

Immigration stimulates economic growth, but it also increases the demand for local public resources. This paper causally examines the impact of immigration on the local government's access to finance to evaluate this trade-off. I find that immigration inflows improve local government access to finance, as evidenced by a decline in municipal bond yields. I instrument for current immigrants' settlement decisions using historical migration patterns of immigrants from 1880 onward, interacted with the flow of incoming immigrants. These effects are stronger for communities located further from the border and with a higher likelihood of labor shortages. Immigrants of higher education levels provide stronger benefits to the communities they settle in, but even reducing the stock of low-skilled, undocumented immigrants results in increased borrowing costs in the presence of labor shortages. The positive impact of immigration is driven by an expansion in the local labor market which results in long-term increases in profitability for the local government and an enhanced ability to fund collateral. These findings provide evidence of the positive benefits immigrants bring to local communities.

Keywords: Municipal Bonds, Immigration, Public Finance

*I thank Niklas Augustin, Fred Bereskin, Abhishek Bhardwaj, Matteo Binfarè, Kristin Butcher, Alyssa Carlson, Tiago Bernardino (discussant), Jess Cornaggia, Kimberly Cornaggia, Hans Degryse, Pengjie Gao, Camilo Garcia-Jimeno, Abhinav Gupta, Matthew Gustafson, Valentin Haddad, Peter Haslag, Sabrina Howell, Ryan Israelsen, Ivan Ivanov, Jessica Jeffers, Diego Jimenez-Hernandez, Ezra Karger, Hyunseob Kim, Cory Koedel, Du Nyugen, Michael O'Doherty, Shanthi Ramnath, Adam Yore, Michael Young, and seminar participants at the FMA Doctoral Consortium, Nova Finance PhD Final Countdown, University of Missouri, Bentley University, University of Arkansas, Oklahoma State University, Miami University, Colorado State University, University of Nebraska, University of Mississippi, and Tulane University. Kyle E. Zimmerschied (kzimmerschied@mail.missouri.edu) is at the University of Missouri, Robert J. Trulaske, Sr. College of Business. This paper is dedicated to the memory of Angela Skrzypczak.

*"The arrival of Joseph, Oreus, and as many as 15,000 other immigrants from Haiti over roughly the last three years has reshaped this city of 58,000, offering some promise of economic revival along with growing pains... Enrollment in Medicaid and federal food assistance and welfare programs surged... [But] 'We needed a workforce,' said Amy Donahoe, director of workforce development with the Greater Springfield Partnership. 'They are coming in and they are working hard and they want to make money.'"*

– Reuters, September 11, 2024[1]

There is a longstanding debate on whether immigrants benefit the communities they settle in. On the one hand, immigration can promote both short- and long-term economic growth by increasing the local labor supply and fostering new business creation (Bernstein et al., 2022; Burchardi et al., 2020; Peri, 2012). On the other hand, immigration can place a greater strain on local public resources such as healthcare, education, infrastructure, and social services as immigrants assimilate into their new communities (Borjas, 1999; Mackie and Blau, 2017). These contrasting impacts of immigration have become increasingly relevant as the United States faces the largest inflow of immigrants in its history and the U.S. welfare system continues to expand.[2]

In this paper, I causally examine the impact of immigration on the local governments' access to finance to test this trade-off. While these trade-offs have been difficult to test simultaneously, I use the municipal bond market as a laboratory, building on the notion that municipal bond yields reflect the markets' forward-looking expectations of risks to local economies.[3] This market has grown from $200 billion issued in 1990 to nearly $800 billion issued in 2020 as county governments replace aging infrastructure and offset declines in state support (Randall, 2020). Examining borrowing costs reveals how immigrant inflows support or hinder a community's access to finance, which is crucial

[1] Schneider (2024)

[2] Milton Friedman highlighted the economic concerns associated with immigrants "freely immigrating to welfare rather than jobs" nearly 50 years ago but this debate remains largely unsettled (Friedman, 1978).

[3] I use the term county, municipality, and local community interchangeably throughout the paper

for its long-term development. I link this with extensive data from U.S. counties on labor market, income statement, and balance sheet data to explore the channels through which immigration affects the local economy and local government.

I first show in descriptive models that immigrant inflows are associated with significant declines in the cost of borrowing, suggesting that immigration improves their access to finance. This link could reflect the fact that immigrants choose where they settle inducing an upward bias if immigrants settle in areas where economic conditions are improving or a downward bias if immigrants settle where the provision of public and social goods is increasing. Consistent with a bias from selection, I find that immigrants tend to settle in areas with increasing public and social goods expenses (e.g., healthcare and welfare). To address this issue and identify the causal effects of immigration on public finance, I build on the framework of Burchardi et al. (2019, 2020) to construct an instrument for where immigrants of a certain national origin settle within a given time period.

The exogenous variation in my instrument for immigrant inflows into a given county over a given time period arises from differences in counties' exposures to various ancestry groups. These differences stem from (1) historical patterns of when immigrants were leaving their home country and (2) the desirability of a given county at that time. For example, large waves of Chinese immigration occurred around 1880, a period when San Francisco was a relatively desirable area to settle in, as evidenced by contemporaneous European immigration settlement patterns. Conversely, Mexican immigration became more prominent in the early 1900s as Los Angeles grew in popularity among European immigrants, largely due to developing infrastructure that made it increasingly accessible (Sequeira et al., 2020). These historical migration and settlement patterns have had lasting effects on the ancestral composition of counties; for instance, San Francisco County has a large composition of residents with Chinese ancestry, while Los Angeles County has a large composition of residents with Mexican ancestry. Combined with the preference of individuals to live among others of similar ethnic backgrounds, this implies that counties with historically higher exogenous shares of Mexican

ancestry—such as Los Angeles—are more exposed to subsequent Mexican immigrant inflows than counties with differing ancestral compositions, such as San Francisco.

In practice, my instrumental variables design proceeds in two steps using data from the U.S. Census from 1880 onward. First, I predict a county's number of residents of a given ancestry (e.g., Mexican) in a given year (e.g., 1985) building instruments around the *predicted* number of Mexican immigrants that would have been expected to settle into that county based on the interaction of: (1) the flow of Mexican immigrants arriving in the U.S. in that time period and (2) how desirable the county was in that Census period. For example, I predict that many Mexican immigrants settled in Los Angeles in 1920 because a large number of Mexicans were arriving in the United States and many non-Mexican immigrants were settling in Los Angeles at that time. Iterating through every Census period allows for the isolation of quasi-random variation in ancestry distribution *across* counties, with the aid of origin country $\times$ destination region and continent of origin $\times$ destination fixed effects, and other time-invariant controls for country $\times$ county characteristics. Next, I use these predicted, instrumented ancestry weights interacted with the flow of Mexican immigrants to predict the number of Mexican immigrants into a given county over the last period. For example, if Los Angeles County had a high predicted Mexican ancestry in 1985 and many Mexican immigrants were arriving in other U.S. regions between 1985 and 1990, I would predict a large inflow of Mexican immigrants to Los Angeles in 1990. This Bartik-instrumental variables approach satisfies the relevance condition with a first-stage F-statistic exceeding 200. To support the exclusion restriction, I build the *predicted* immigrant inflows using a strict, leave-out information approach to construct the plausibly exogenous ancestry weights and modern-day immigrant inflows (Goldsmith-Pinkham et al., 2020).

The instrumental variables (IV) approach provides strong evidence that increasing immigration improves a county's access to finance by lowering its municipal bond yields. Consistent with the downward bias in OLS due to immigrants settling in areas with rising social welfare spending, I find

larger effects in the IV setting. A one-standard deviation increase in immigration inflows (about 20,000 people) reduces a county's borrowing cost by about 5 basis points. These effect sizes are closer to 15 basis points for larger counties where the majority of immigration inflows occur which reflects about a 10 percent increase relative to its standard deviation. These findings imply that, on average, the benefits immigrants bring to local communities outweigh their consumption of public goods and social services.

Thus far, I have documented the positive effects of immigration in improving local communities' access to finance. However, a potential limitation of my main design, which uses respondents from the U.S. Census, is that it might not fully capture the effects of undocumented immigration due to biases in reporting. To address this concern, I exploit the staggered adoption of the Secure Communities Act from 2008 to 2014, which increased local law enforcement collaboration with the Department of Homeland Security and led to the detainment of over 450,000 undocumented immigrants, primarily from Mexico. This policy reduced both the stock and flow of undocumented immigration (East et al., 2023). I find that the reduction in the undocumented immigrant population led to higher borrowing costs for counties, particularly those with a higher likelihood of labor shortages. The removal of low-skilled, undocumented immigrants increased borrowing costs by approximately 8 basis pointsâan effect similar in magnitude to that found in my main design indicating reporting biases are likely small. These results are consistent with East et al. (2023) which find the passage of the Secure Communities Act resulted in increased labor costs that reduced employment and wages for both undocumented and native residents and a reduction in local consumption.

While, on average, immigration improves a county's access to finance, it is likely that immigration is particularly valuable to counties in need of additional labor supply or counties that are better able to help immigrants assimilate into their communities. I find that counties that are both further from the southern border and coasts benefit more from immigration inflows providing evidence the marginal benefit of immigrant inflows is higher in areas less exposed to traditional migration paths.

Consistent with counties with more financial slack and resources being able to help immigrants assimilate, I find stronger effects of immigration inflows in counties with a smaller proportion of residents below the poverty line. Immigrant inflows are also particularly valuable in communities with a higher likelihood of labor shortages proxied by a county having a low unemployment rate or aging demographics where younger immigrants can fill gaps in the labor force. Regarding the skill complementary of county labor forces, I find stronger benefits of immigration to counties with a lower proportion of labor-intensive employment showing the importance of immigration in augmenting high-skilled labor.

Significant differences exist across immigrant characteristics that are also important to consider. For example, the U.S. Conference of Mayors recently endorsed the Heartland Visa, which is a bipartisan immigration proposal designed to attract skilled foreign professionals and entrepreneurs to struggling urban areas.[4] In contrast, there is much debate about welcoming lower-skilled immigrants.[5] Instrumenting for a county's inflow of immigrants using variation in exposure across *individual* country immigration flows of varying education levels, I find immigrants with higher levels of education further improve a county's access to finance. The effects of education are stronger for college attendance than general years of education indicating additional benefits for exposure to immigrants with a higher likelihood of white-collar work or are more likely to become entrepreneurs. While the strongest benefits of immigration stem from exposure to highly-educated immigrant inflows, these positive effects of access to finance remain even for immigrants of average educational levels.

Overall, I find that immigration enhances productivity which results in long-term increases in profitability and improves a county's ability to fund collateral which reduces borrowing costs for

[4]See https://www.boundless.com/blog/mayors-endorse-heartland-visa-to-boost-struggling-cities/

[5]For example, the city of Wichita, Kansas has been seeking to attract incoming Mexican immigrants to help offset a labor shortage and aging demographic curve while the state of West Virginia facing similar labor and demographic tensions has been largely opposed to immigration https://www.wsj.com/us-news/the-american-city-with-a-message-for-migrants-we-want-you-69ef7049 and https://www.wsj.com/politics/policy/west-virginia-workers-migrants-jobs-0be74c9f

communities. I find that increasing immigration not only drives employment growth but also boosts the number of new businesses, as immigrants both start their own businesses and alleviate labor constraints for other entrepreneurs. These productivity gains translate into higher local government revenues through increased tax collection, general charges collected, and intergovernmental transfers. In the short-term, expense growth exceeds revenue growth, but in the long-term immigration exposure leads to long-term profitability gains for local county governments as the benefits diffuse. Much of this short-term expense growth is due to county governments spending on capital projects and infrastructure indicating that immigrants provide additional growth opportunities at the local county level which also serve as collateral to help them negotiate lower borrowing costs and secure more debt.

My work joins a growing literature on determinants of municipal access to finance (Butler and Yi, 2022; Cornaggia et al., 2022; Gao et al., 2020; Goldsmith-Pinkham et al., 2023; Painter, 2020). Gustafson et al. (2023) finds that Covid-induced, primarily white-collar internal migration increases county bond yields and reduces access to finance for counties losing these residents. In contrast, my paper provides evidence that increases in population due to international migration, including those beyond native white-collar workers, enhance a community's access to finance as more immigrants settle in a given area. My paper is closely related in spirit to Cornaggia et al. (2024), which examines the effects of unauthorized immigration from 2010 onward using U.S. court records on unauthorized immigrant inflows. They find that increasing exposure to unauthorized immigration benefits areas where labor demand exceeds labor supply resulting in reduced borrowing costs, while areas with typical labor market conditions experience higher yields. Using data on aggregate immigrant inflows from the U.S. Census from 1985 to 2010, I find the benefits of immigration are concentrated in areas where labor shortages are more likely, and I also document heterogeneous impacts based on immigrant education, with higher-educated immigrants delivering stronger economic benefits.

My paper also contributes to understanding the effects of immigration and local government

finance. Prior research has explored immigration's impact on local labor markets and productivity (Burchardi et al., 2020; Card, 2001; Doran et al., 2022; Peri, 2012; Piyapromdee, 2021; Tabellini, 2020), foreign direct investment and international trade (Burchardi et al., 2019; Cohen et al., 2017; Eghbali et al., 2024), innovation (Bernstein et al., 2022; Burchardi et al., 2020), labor and housing prices (Cortes, 2008; Saiz, 2003), long-term community impacts (Sequeira et al., 2020), and the consumption of public goods by immigrants (Borjas, 1999; Chalfin, 2015; Mackie and Blau, 2017). Cornaggia et al. (2024) find that increasing exposure to unauthorized immigration leads to higher expenditures on local public amenities without corresponding increases in tax revenues. In contrast, my paper finds that exposure to total immigration flows improves the long-term profitability of local governments as revenue growth exceeds expense growth. In a related work, Burchardi et al. (2020) show that immigration leads to an increase in the production of innovation and wage growth in counties receiving immigrant flows. However, the overall impact of immigration on public finance remains unclear, as the consumption of public goods and social services by immigrants could offset their economic benefits. By analyzing how immigration affects county revenues, expenses, and balance sheets, my paper enhances our understanding of its implications for public finance.

# 1 Data Sources and Sample

## 1.1 Bond Issuance Data

I begin with a sample of all municipal bond issuances from Refinitiv's SDC Platinum from 1985 to 2010 which returns 374,971 bond issuances. I am able to link 90 percent of these issuances to the ultimate county issuer resulting in 338,959 matched issuance. As my research design uses flows of immigration over five year periods, I keep only bonds issued at five year endpoints (e.g., 1985 and 1990) which returns 72,744 bond issuances. Conditioning down to bonds that have non-missing

information related to the bond's yield, lagged characteristics, and are issued by a non-state authority returns 40,502 bond issuances.[6] My primary measure of borrowing cost for a given bond issuance is the tax-adjusted bond yield minus the maturity-matched Treasury bond yield, which, following Garrett et al. (2023), is calculated as:

$$Spread_{i,c,t} = \frac{Yield_{i,c,t}}{(1-\tau_{c,t})} - r^{f}_{m,t} \tag{1}$$

where $r^{f}_{m,t}$ is the yield of treasury bill of maturity $m$ issued at time $t$, $\tau_{c,t}$ is the marginal tax rate on personal income calculated as $\tau_{c,t} = \tau_t^{Federal} + \tau_{c,t}^{State} \times \mathbf{1}[Exemption^{State}]_{c,t}$ where $\tau_t^{Federal}$ is the federal tax rate for top earners after adjusting for the deductability of state income taxes at the federal level and $\tau_{c,t}^{State}$ is the state income tax rate for top earners with both measures provided by NBER Taxsim (Feenberg and Coutts, 1993).

Table 1 Panel A presents summary statistics on key variables at the bond issuance level. The average bond has a yield spread of 2.33 percent in excess of the maturity-matched, treasury bond yield implying that investors demand a sizable default and illiquidity premium for holding municipal bonds. Cross-sectionally, there is significant variation across municipalities despite the low, observed default rates as the inter-quartile range between the 25th and 75th percentile of issuances is about 2 percent. The average bond has a maturity of 15 years and an issue amount of almost $20 million suggesting many municipal projects are large in scope and duration. About 30 percent of bonds are revenue bonds backed only by the cash flows of the underlying project itself and 89 percent of bonds are tax-exempt.

[6] I keep only the longest maturity bond within a given bond issuance as the information required to compute the yield on shorter-dated bonds within the same issuance is not available until 2003.

## 1.2 County Census Data

I link this bond issuance level data with U.S. Census data on population, immigration, and other county characteristics. The average population of bond-issuing counties in my sample is about 200,000 residents. These counties receive about 4,000 immigrants over the five-year intervals measured in the Census data with about 90 percent of these immigrants migrating from non-European countries. These immigrant inflows have significant cross-sectional dispersion as the median U.S. county receives inflows of about 300 immigrants while the standard deviation is about 20,000 immigrants. These immigrant inflows are a significant part of the population sustainment and growth in the United States as the average population change over the same interval is only 10,000 residents. Figure 1 shows the stock and flow of immigrants in the United States over time. Panel A documents that the United States had an increase in the stock of immigrants from 15 million immigrants in 1980 to nearly 40 million in 2010. Immigrants also make up a much larger relative proportion of the U.S. population increasing from about 5 percent in 1980 to nearly 15 percent in 2010 near a record high.[7] Panel B of Figure 1 shows the increasing flow of U.S. immigrants from other North American, Asian, and South American countries over time.[8]

Regarding demographics, about 60 percent of residents are between the working ages of 18 to 65 and about 12 percent of residents live below the poverty line. The average county has 71,000 employed individuals with 71 percent of these individuals working in more labor-intensive, blue-collar lines of work.[9]

Lastly, I include two data sources of county financial data. The first comes from the Quarterly

[7]The Appendix provides a historical overview of U.S. immigration policy which has contributed to these trends.

[8]Figure IA.1 plots the flow of immigrants by continent in absolute and relative magnitudes showing the growth of non-European immigration from less than 5 percent of immigrant inflows in 1900 to nearly 90 percent in 2010.

[9]I classify 2-digit NAICS codes into blue or white-collar work based on the nature of work and education required for the position. These county-level employment data are from the County Business Pattern Files (Eckert et al., 2020).

Census of Employment and Wages which includes data on the number of establishments, employees, and total pay within a given county. Table 1 Panel C shows that the average county has about 5,000 establishments, 80,000 employees, and an average annual CPI-adjusted pay of about $35,000 in 2010 dollars. The second source provides government financial data from the Government Finance Database which aggregates data primarily from the US Census Bureau's Census of Governments and Annual Survey of State and Local Government Finances (Pierson et al., 2015).[10] These data provide comprehensive information on the income statements and balance sheets of local county governments. Table 1 Panel D shows that the median county has revenues of about $40 million consisting of total taxes, intergovernmental revenue, and other miscellaneous revenue. Regarding expenses, the average county has comparable expenses which are dispersed broadly across public goods for local citizens such as infrastructure and roads, police, judicial, and public welfare spending.[11] The average county government has about $140 million in debt outstanding while financial assets represent about $350 million which is spread across a mix of cash, trust cash securities, and other securities. The average municipality has a leverage ratio of about 0.36 when scaling its total debt by its financial assets while some distressed counties have leverage ratios exceeding 2.[12]

[10]I use the most recent observation from the County Business Pattern Files as these data are provided comprehensively in years ending in the digit 2 or 7. I focus on local county governments in my main analysis to understand the economic trade-off of immigration more clearly. I provide supplementary analysis in the Internet Appendix which studies the impact of immigration on the entire county by aggregating all county authorities together (e.g. school districts, townships, municipalities, and county governments).

[11]Figure A.1 shows the decomposition of a county's revenue and expense sources.

[12]In comparison, the ratio of total debt to equity of U.S. corporations was nearly 85 percent at the end of 2023.

# 2 Empirical Approach

## 2.1 Yield Spread Changes Following Immigration

To examine the impact of immigration on municipal bond yields, I first estimate the following regression specification:

$$\begin{aligned}\text{Yield Spread}_{i,c,t} = \beta_0 + \beta_1 Immigration_{c,[t-5,t]} + \tau' \times \text{Bond Controls}_{i,t} \\ + \rho' \times \text{County Controls}_{c,t-5} + \delta_t + \gamma_c + \epsilon_{i,c,t}\end{aligned} \tag{2}$$

where $\text{Yield Spread}_{i,c,t}$ is the municipal bond's tax-adjusted issue yield less the yield on a maturity-matched treasury bond.[13] $\text{Immigration}_{c,[t-5,t]}$ is the inflow of immigrants into county $c$ over the last five years. $\text{Bond Controls}_{i,t}$ includes the total issue amount of the bond, the time to maturity, whether the bond is callable, insured, a negotiated bid, taxable, the rating of the bond, whether the bond has a sinking fund, and whether the bond is used to refinance existing issuances. $\text{County Controls}_{c,t-5}$ is a vector of lag county controls from five years prior which includes the population, percent of the population between 18 and 65, percent below the poverty line, the average income, median age, the number of employed people, and the proportion of employees working in labor intensive fields. $\delta_t$ is a time fixed effect to account for differences between observed time units, and $\gamma_c$ is a county fixed effect to capture time-invariant differences across issuing counties.

Table 2 examines how changes in immigration affect municipal bond yield spreads. Increases in immigration consistently lead to lower issuing yields for counties across the OLS estimator. In columns (1) to (5), I regress the yield spread directly onto immigration, and I find that a one-standard deviation increase in immigration leads to about a 4 basis point decline in an issuing county's yield

[13] I also use $\Delta\text{Yield Spread}_{i,c,t}$ as a measure of yields where $\Delta\text{Yield Spread}_{i,c,t} = \text{Yield Spread}_{i,c,t} - \overline{\text{Yield Spread}}_{c,t-5}$

spread on average. These effect sizes are closer to 12 basis points in the larger counties where the majority of immigration occurs. Columns (6) to (8) provide similar evidence when modeling *changes* in the yield spread with an estimated effect of about 4 basis points. These results are robust across the inclusion of bond and county controls, and the inclusion of county fixed effects providing initial evidence of a link between immigration and reduced borrowing costs for communities.

This link between immigration and reduced municipal bond yields might simply reflect that additional population increases or additional internal migration to counties improve their access to finance and reduce their municipal bond yield spreads. To understand whether immigration has a similar or distinct link from population changes and internal migration, I examine the link between the latter two on bond yields. First, I regress measures of a municipality's yield spread on population changes in Panel A of Table A.1, and I find only one specification results in a significant reduction in borrowing costs. Next, I examine the link between a municipality's issuing yield spread and the inflows of native residents using data from the IRS. In contrast, I find no evidence that increasing internal migration improves a county's cost of borrowing as shown in Panel B of Table A.1. These estimates provide preliminary evidence that population changes or internal migration are not mechanically linked to lower costs of borrowing.

Although, the OLS estimator provides initial evidence that immigration leads to lower yields, it is possible these estimates do not recover the *true* average treatment effect for two reasons. The first, is due to the non-random selection of immigrants into communities as they typically decide where to settle. For example, immigrants might settle into communities where the marginal productivity of labor is increasing from enhancements to the total factor productivity (positive selection) or communities might provide generous public welfare benefits that attract immigrants seeking welfare benefits rather than employment (negative selection) the coefficient estimate might suffer from bias in either direction. Additionally, county-country specific factors can also bias these estimates as workers from a specific country might settle into counties which have concentrated exposure to a

specific sector (e.g., Indians settling in Silicon Valley in Santa Clara County due to tech exposure). Productivity shocks in this sector will lead to both improvements in the financial situation of these communities and more immigrant inflows leading to a spurious correlation between immigration and a community's financial situation.

## 2.2 Instrumental Variables and Bartik-Instrument Approach

While immigrants typically choose their settlement location, I follow Burchardi et al. (2020) in exploiting the fact immigrants are more likely to settle into communities where others of the same ethnic group have previously settled. Applying the framework of Burchardi et al. (2020), I use historical migration and settlement patterns from the U.S. Census from 1880 onward to provide quasi-random, ex-ante variation in the settlement decision of current immigrants. Using migration and settlement decision of historic migrants to determine the exposure of counties to ongoing immigrant flows helps to guard against the settlement decision of immigrants reflecting private information connected to a county's time-varying financial performance (e.g., immigrants end up in only improving or declining counties). Additionally, to guard against country-county connections inducing a spurious correlation, immigrant inflows from a specific country are predicted to a specific county using information independent of the county-country time pairing.

The framework of Burchardi et al. (2020) proceeds in two steps which I provide the estimating equations and intuitions through a stylized example.

## 2.3 Predicting Ancestry

In the first step, I predict the number of people of a specific ancestry in a given county in a given year by instrumenting for the historic flow of immigrants using plausibly exogenous variation in the migration and settlement patterns of historic immigrants.

$$Ancestry_{o,c,t} = \sum_{\tau=1880}^{t} a_{r(c),\tau} Imm_{o,-r(c),\tau} \frac{Imm_{Europe,.,c,\tau}}{Imm_{Europe,\tau}} + v_{o,c,t,} + \delta_{o,r(c)} + \delta_{c(o),c} + X'_{o,c}\varsigma \qquad (3)$$

For example, Ancestry$_{o,c,t}$ is the number of people of Mexican origin ($o$), in Los Angeles County ($c$), in 1985 ($t$). The instruments are constructed using the interaction of two sources of variation based on: (1) a *push* factor consisting of variation in the magnitude of when immigrants leave their home countries and (2) a *pull* factor consisting of how desirable these areas are to immigrants settling in the same time period. For example, $Imm_{o,-r(c),\tau}$ is the total number of immigrants *Imm* from Mexico that settle in U.S. regions outside the West Coast in 1880 (*-r(c),*$\tau$) capturing the *push* of immigrants from Mexico. $\frac{Imm_{Europe,.,c,\tau}}{Imm_{Europe,\tau}}$ is the proportion of European immigrants settling in Los Angeles County in 1880 reflecting the *pull* of this area to attract immigrants in this period. $\delta_{o,r(c)} + \delta_{c(o),c}$ are a series of origin country $\times$ destination region and continent of origin $\times$ destination county interacted fixed effects, and $X'_{o,c}$ contains a series of time-invariant controls for country $\times$ county characteristics.

These instruments are constructed for each Census period with immigration data from 1880 onward with the intuition that many immigrants end up in areas as a function of their timing of leaving their home country and the short-term draw of an area. Figure 2 shows large variation in the flow of immigrants (*push*) from the top five sender countries over time while Figure 3 show variation in the short-term desirability (*pull*) of U.S. counties over time. For example, I would *predict* a large number of Mexican immigrants ended up in Los Angeles as this county was very desirable in the early 1900s when Mexican immigration spiked which is used to explain the large composition of people of Mexican ancestry in Los Angeles *today*. In contrast, I predict that few counties in the Midwest region of the United States have a high concentration of Mexican ancestry as these counties were largely settled in the late 1800s before Mexican immigration spiked. Initial immigrant settlement patterns even when driven by quasi-random forces and devoid of county $\times$ country information are strong predictors of subsequent settlement patterns of ethnic peers as

immigrants tend to cluster in similar areas.

I estimate Equation 3 separately for each time period $t$ = *1980,1985,1990,1995,2000,2005,2010* using all non-European countries in the sample.[14] From this estimation, I derive predicted ancestry

$$\widehat{Ancestry}_{o,c,t} = \sum_{\tau=1880}^{t} \hat{a}_{r(c),\tau}(Imm_{o,-r(c),\tau}\frac{Imm_{Europe,c,\tau}}{Imm_{Europe,.,\tau}})^{\perp} \tag{4}$$

where $\hat{a_{r(c),\tau}}$ are the coefficients estimated from Equation 3 and $\perp$ denotes that the interaction of the push and pull factors has been residualized on the controls and fixed effects from Equation 3, isolating the variation in predicted ancestry driven by these instruments.

Figure 4 provides evidence to support the relevance of using historical migration patterns to explain subsequent immigration waves. Due to sticky immigration patterns and the fact that immigration patterns and policies are centered around the family unit, the composition of immigrant flows into a given county are quite persistent. The composition of inflows of immigrants by country into a given county in 1880 have a 30 percent correlation with the composition of the inflow of immigrants in 2010, and this correlation at the country-county level increases to more than 50 percent in 1920.

## 2.4 Predicting Immigration

Second, I use these *predicted* ancestry compositions interacted with the subsequent flow of immigrants to ultimately predict how many immigrants from a given origin country recently settled in a given county $c$ at time $t$. I use information on the broader flow of immigrants which leaves out the focal county's Census region to exclude the impact of within region $\times$ country migration.

[14] I focus on non-European immigration as this comprises about 85 percent of immigration during my sample period and non-European immigrants exhibit a higher likelihood to settle where their ethnic peers have previously settled. Focusing on non-European immigration also allows me to use the same leave-out immigrant group to proxy for the desirability of a given county.

$$Imm_{o,c,t} = \delta_{o,r(c)} + \delta_{c(o),c} + \delta_t + X'_{o,c}\theta + b_t \times [\widehat{Ancestry}_{o,c,t-5} \times \tilde{Imm}_{o,-r(c),t}] + u_{o,c,t} \quad (5)$$

For example, I would predict that Los Angeles county received a large flow of Mexican immigrants in 1985 *(*$Imm_{o,c,t}$*)* if Los Angeles County had a high *predicted* level of Mexican ancestry in 1980 $\hat{\text{Ancestry}}_{o,c,t-5}$, and many Mexicans were migrating to regions in the United States outside the West Coast between 1980 and 1985($\tilde{Imm}_{o,-r(c),t}$).[15] Similar to before, the $\delta$'s are time, country $\times$ region, and continent $\times$ county fixed effects, $X'_{o,c}$ observable controls. Table A.2 shows the results from estimating Equation 5 to explain the flow of immigrants across countries to different counties over time within the sample of bond issuing counties. The regression $R^2$ is above 0.70 when including the interaction of predicted ancestry $\widehat{Ancestry}_{o,c,t-5}$ with broader, national immigration waves $\tilde{Imm}_{o,-r(c),t}$ providing evidence for a strong first-stage. As additional controls are added for country $\times$ county controls, location interactive fixed effects, and contemporaneous immigration flows, the coefficient estimates of instruments remains stable.

To predict the total flow of immigrants to Los Angeles from 1980 to 1985, I sum across all a given county's *predicted* ancestry weights in 1980 and the flow of the respective immigrant group over the last five years as follows:

$$\hat{Imm}_{.,c,t} = \sum_o \hat{b_t} \times [\hat{Ancestry}_{o,c,t-5} \times \tilde{Imm}_{o,-r(c),t}] \quad (6)$$

Adding up across foreign origins, I derive the main instrument for the total number of migrants settling in county $c$ in period $t$, $\text{Immigration}_{c,t}$. The use of a Bartik-instrument design allows me to estimate the effects of immigration on two areas with similar proportions of immigrant ancestry but different compositions of immigrant ancestry (e.g. Chinese versus Mexican) as additional immigrants

[15] $\tilde{Imm}_{o,-r(c),t} = I_{o,-r(c),t} \frac{I_{Europe,r(c),t}}{I_{Europe,-r(c),t}}$ the scaled push factor from $o$. Because Burchardi et al. (2020) leave out from $\text{I}_{i,-r(c),t}$ all migrants from $o$ who settle in $c$'s region, scaling by $\frac{I_{Europe,r(c),t}}{I_{Europe,-r(c),t}}$ corrects for differences in region sizes.

are drawn to settle where others of their ethnic group have previously settled. An important feature of this design is that U.S. counties have varying exposures to immigrant inflows over time which results in significant variation within the *same* county *over* time as the research design partially relies on variation in the *flow* of immigration over time for identification. In heterogeneity tests of immigrant characteristics on local communities' access to finance, I also use these *individual* country instrumented flows to understand the varying effects of immigrants by their level of education.

## 2.5 Identification Assumption

A sufficient condition for the validity of this instrument is that predicted ancestry $\hat{Ancestry}_{o,c,t-5}$ is exogenous in Equation 4 which in combination with the baseline regional and continental leave-outs implies the condition can be written as:

$$Imm_{o,-r(c),\tau}\frac{Imm_{Europe,c,\tau}}{Imm_{Europe,.,\tau}} \perp \epsilon_{c,t} \forall o, \tau \leq t. \tag{7}$$

This requires that any confounding factors that drive temporary increases in a given county's financial situation post-1985 ($\epsilon_{c,t}$) do not systematically correlate with pre-1985 immigration from a given origin to other regions with the United States ($\mathrm{I}_{o,-r(c)}$) interacted with the simultaneous settlement of European migrants in that US destination ($\frac{I_{Europe,c,\tau}}{I_{Europe,\tau}}$).[16] Satisfying this condition implies the ancestry variable used to predict immigration in Equation 6 is exogenous.

Combining the previous two steps, to correct for the non-random flows of immigration into county $c$, I instrument for immigration into a given county using an instrumental variables framework with the following first-stage equation:

[16] I use the first difference in yield spread as a robustness measure as it has a weaker exogeneity assumption in implying the interaction of the historic push and pull instruments cannot be correlated with *changes* in financial conditions rather than the *levels* of financial conditions.

$$Immigration_{c,[t-5,t]} = \beta_0 + \beta_1 \hat{Immigration}_{c,[t-5,t]} + \tau' \times \text{Bond Controls}_{i,t} + \rho' \times \text{County Controls}_{c,t-5} + \delta_t + \gamma_c + \epsilon_{i,c,t} \tag{8}$$

While the second-stage regression below identifies the effect of immigration on municipal bond yields.

$$\text{Yield Spread}_{i,c,t} = \beta_0 + \beta_1 \widehat{Immigration}_{c,[t-5,t]} + \tau' \times \text{Bond Controls}_{i,t} + \rho' \times \text{County Controls}_{c,t-5} + \delta_t + \gamma_c + \epsilon_{i,c,t} \tag{9}$$

# 3 Main Results

The results in Table 3 examine the effects of immigration on municipal bond yields using the instrumental variables (IV) approach. The IV approach provides strong evidence that increasing immigration improves a county's access to finance by lowering its municipal bond yields. The baseline specification in column (5) shows that a one-standard deviation increase in immigration inflows (about 20,000 people) reduces a county's borrowing cost by about 5 basis points. These effect sizes are closer to 15 basis points for larger counties where the majority of immigration inflows occur. The first stage F-statistics are nearly 200 indicating the predicted ancestry linked with the flow of country specific immigrants are strong predictors of subsequent immigrant inflows. The effects are also robust to modeling the change in municipal bond yields as shown in columns (6) to (8) which has a weaker exclusion restriction than modeling the level of municipal bond yields.

In terms of economic magnitude, the average issuer experiencing a one-standard deviation increase in the flow of immigrants would save nearly $150,000 in interest expense payments over the lifetime of its average bond issuance. With the average county issuer, issuing 6.65 bond issuances per year, the estimated annual savings are close to $1 million in interest payments over the lifetime of

these issuances.[17] It is important to note these estimated effect sizes of immigration reflect investors pricing in both potential increased economic growth and increased expenses on public and social goods. These positive effects stemming from increased labor supply might be particularly beneficial for counties facing labor shortages or where the labor skill mix of immigrants better matches leading to further reduction in yields. Similarly, the increased costs of immigration stemming from the provision of public goods and social services might be less costly in areas insulated from immigrants seeking to immigrate for welfare rather than jobs.

## 3.1 Secure Communities Event Study

Thus far, I have documented the positive effects of immigration in improving local communities' access to finance; however, it is possible that my design understates the potential downsides of undocumented immigration.[18] To support the inference of my main design, I exploit the staggered roll-out of the Secure Communities Act from 2008 to 2013 to understand the impact of undocumented immigrants on local communities. The Secure Communities Act increased information sharing between the local county police and the Department of Homeland Security resulting in an additional detainment of over 450,000 undocumented immigrants (primarily Mexican) during this period. This act decreased the stock and flow of subsequent immigration, and was rolled out nationwide based primarily on a county's distance to the border and proportion of Mexican residents rather than changing, time-varying economic conditions (East et al., 2023). Figure 5 shows the nationwide adoption timing of the Secure Communities Act implemented by the Department of Homeland Security.

[17] This saving in interest payments is computed as 5 basis points × \$18.66 million (mean bond issue amount for county issuers) × 14.46 years = \$134,912.

[18] Pew Research Center (2019) estimates the gap of undocumented immigrants to be between 5 to 15 percent of Census respondents from countries with more undocumented individuals. The U.S. Census Bureau found in a simulated headcount across administrative records that about 20 percent of non-citizens had addresses that couldn't be matched in the 2020 Census versus 5.4 percent for citizens (Stephen and Lo Wang, 2024).

I estimate the following model exploiting the staggered roll-out of the Secure Communities Act to understand how a reduction in the population of undocumented immigrants affects the borrowing costs of the local community.

$$\text{Yield Spread}_{i,c,t} = \beta_0 + \beta_1 Treat_{i,c} \times Post_t + \tau' \times \text{Bond Controls}_{i,t} + \rho' \times \text{County Controls}_{c,t} + \delta_t + \gamma_c + \epsilon_{i,c,t} \tag{10}$$

$\text{Yield Spread}_{i,c,t}$ and $\text{Bond Controls}_{i,t}$ are defined as before, while $\text{County Controls}_{c,t}$ are related to the presence of a county's collaboration with Immigration Customs and Enforcement (ICE) through the 287(g) program or the presence of E-verify employment verification. The regressions include time and county fixed effects with time fixed effects now demeaning at the year $\times$ month level.[19]

The regression results are displayed in Table 4. The results in columns (1) and (2) provides some evidence that reducing the population of undocumented immigrants increases local borrowing costs rather than reduces them. This result suggests that reporting biases from undocumented immigrants in the US Census likely have a minimal impact on the coefficient estimates from Table 3. To examine the relationship between county labor markets and undocumented immigration, I split the sample by lagged unemployment rates and the proportion of the population of working age (18-65). I would expect for the removal of undocumented immigrants to be particularly costly for communities with low unemployment rates and a lower proportion of working age population as labor market shortages are more common. The results in column (3) show that the increases in borrowing costs following a shock to undocumented immigrants are concentrated in counties with lower lagged unemployment rates while column (5) shows these effects are also driven by counties with a lower labor supply. The magnitude of these effects is comparable to the main results, with the policy adoption increasing municipal bond yield spreads by approximately 8 basis points. Figure

[19]Since the Department of Homeland Security did not mandate U.S. counties' compliance with the Secure Communities Act, my coefficient estimates reflect an intent-to-treat effect rather than an average treatment effect.

6 shows the policy led to increases in a county's cost of borrowing beginning about six months after the passage of the policy with fairly stable effects in the longer term.[20] These results are consistent with East et al. (2023) which find the passage of this policy resulted in increased labor costs that reduced employment and wages for both undocumented and native residents and a reduction in local consumption which all represent a reduction to local county revenues.

## 3.2 Heterogeneous County Effects

While, on average, immigration improves a county's access to finance, it is likely that immigration is particularly valuable to counties in need of additional labor supply or counties that are better able to help immigrants assimilate into their communities. Table 5 examines the heterogeneous impact of immigration on a county's yield spread interacting different county characteristics with the instrumented flow of immigrants.[21] The results in column (1) show that there are stronger effects of immigration for counties located further away from the southern border indicating the marginal benefit of the flow of immigrants is higher in areas less exposed to traditional migration paths.[22] The results in column (2) find no difference across counties based on their level of social capital while column (3) shows that the benefits of immigration are concentrated in counties that have passed sanctuary policies to protect immigrants. I find that wealthier counties benefit more from immigration proxied through the percent of residents below the poverty line (column (4)). Consistent with the benefits immigrants provide in filling labor shortages and augmenting an aging labor force, I find stronger effects of immigration in reducing a county's borrowing cost in areas with low unemployment rates (column (6)) and a smaller proportion of the population of working

[20] This figure also confirms the pre-trends of the policy are relatively stable as shown in East et al. (2023).

[21] The instrumental variables model, now includes two exogenous terms to instrument for the main effect of the immigrant inflow and the immigrant flow × county characteristic. The instruments are constructed as the exogenous inflow of immigrants over the last five years as described in Equation 6 and the interaction of this term with the county characteristic.

[22] I find similar effects using a county's distance to any border of the United States.

age (column (7)). Regarding the skill complementary mix, I find stronger effects of immigration in areas with a lower proportion of workers in labor-intensive industries (column (8)) showing the benefits of immigration in augmenting higher-skilled labor.

## 3.3 Heterogeneous Immigrant Effects

The ability level of immigrants is also an important factor that impacts the effect of immigrants on the communities they settle in. Significant debate exists surrounding the impact of low-skilled, immigrant labor (Colas and Sachs, 2024), while the impact of higher-skilled immigrants is perceived to have fewer downsides. To proxy for an immigrant's ability, I use an immigrants' level of education conditioning my sample down to only older residents whose level of education is likely fixed upon entering the United States.[23] I modify my design to use variation in a county's exposure to varying ancestry groups which have different levels of education. For example, a county with higher Asian ancestry weights would be exposed to immigrants with higher average education levels than a comparable county with higher Mexican weights. In practice, I now use *individual* instruments from the top-20 sending countries to instrument for the flow of immigrants over 25 years old, the immigrants' average level of education, and interaction of the two.

Table 6 displays the heterogeneous effects of immigrant inflows across varying levels of education on a county's yield spread. The results in columns (1) and (2) replicate the baseline result with state and year fixed effects and county and year fixed effects, respectively using the *individual* country instruments and find similar results. Consistent with immigrants of higher education providing additional benefits to the counties they enter, column (3) finds a significant reduction in the cost of borrowing per additional year of immigrant schooling while these effects are more muted in

[23]I use an immigrant's education rather than occupation to proxy for ability as an immigrant's listed job status might be endogenously determined by the community they enter. For example, immigrants might end up in higher-skilled occupations if there are better jobs available within a community due to improving financial conditions while they might enter lower-quality occupations if a county's economic environment is declining.

column (4) when including county fixed effects. When examining effects for immigrants' level of college education, I find much stronger effects in reducing borrowing costs with an additional year of immigrants' level of college education reducing yields by about an additional 40 to 75 percent relative to the conditional effect at the average level of education indicating the strongest benefits of immigration are concentrated for areas exposed to immigrants of higher education levels.[24,25]

## 3.4 Robustness & Additional Tests

I run several robustness tests to ensure that my results are not sensitive to my sampling choices and variable construction. Table A.3 presents the results. I indicate my baseline result in the top row for easy comparison to the robustness test results. Turning first to sampling choices, I show that my results are robust to using the logarithm of yield spread as the dependent variable in row 2A. In row 2B, I weight the regression by the initial county population to not allow population growth or the propensity of counties to access financial markets to positively bias my estimates, and I find economically similar results. In row 2C, I control for the Census flow of internal migration and similarly find that the results remain largely unchanged. In row 2D, I backfill immigration data (e.g. fill 1981 bond issuances with the total immigration from 1985) which expands the sample, and I still find a strong effect of immigration in improving counties' access to finance.[26]

Next, I examine the robustness of the design to instrument choices in row 3. In rows 3A and 3B I provide evidence that although counties with larger immigration flows are the strongest driver of the relationship, the relationship between immigration and reduced bond yields holds when

[24] I demean the level of an immigrants' years of schooling and years of college. This results in the main effect being interpretable as the average effect of immigration for immigrants at the average level of education and the interaction term being the effect of an additional year of education above the mean.

[25] Tables IA.1 and IA.2 estimate the effects of immigrants from different regions and countries, respectively. I find that communities exposed to Asian immigrants experience stronger benefits compared to those exposed to Central American immigrants.

[26] The coefficient estimate is about half the magnitude as the main result due to an attenuation bias from measurement error.

excluding the counties in the top percentile of absolute immigration flows or scaling immigration by the county's initial population in 1970. In row 3C, I use the inverse hyperbolic sine transformation to scale yields and immigration. I examine the robustness of the construction of the instrumented immigration inflows in rows 3D to 3H. I find similar results in row 3D when allowing for spatial spillovers to nearby counties. Rows 3E and 3F modify the *push* and *pull* factors, respectively, by excluding counties with correlated immigration patterns when constructing the *push* factor and by excluding immigrant flows from the same continent when constructing the *pull* factor. Row 3G uses predicted ancestry from 1975 for all periods as the Bartik shares, while row 3H limits the *push* $\times$ *pull* factor interactions to before 1960, providing further evidence that the exclusion restriction is likely to hold.

How does the effect of immigrant inflows vary across bond types, effect the use of proceeds, and do existing revenues truly benefit from immigration? The results in Table A.4 show that immigration has stronger effects for uninsured bonds (column (2)) and general obligation bonds (column (4)) implying immigration improves the desirability and perceived credit worthiness of a county's bond issuances. Additionally, I find stronger effects for bonds issued as part of a new issuance (column (6)) and bonds that are part of a competitive bidding process rather than a negotiated bid (column (8)). The results in Table A.5 show that the explicit use of proceeds raised in bond issuances remains largely unchanged with only a significant decline in the proportion of housing-related bond issuances. While changes in the cost of borrowing for local communities provides only one aggregate financial measure for the impact of immigration on county residents, I find in Table A.6 that domestic residents are more likely to stay in a given county following immigration inflows rather than leave perhaps because economic and county financial conditions are improving. I find some offsetting decline in internal migration while overall immigration increases the overall county population.

# 4 County Real Outcomes

Thus far, I have shown that counties exposed to increasing immigration benefit from improved access to finance as evidenced by a reduction in borrowing costs. I find evidence of heterogeneous impacts across communities with counties with more likely labor shortages and more financial slack experiencing stronger effects. Additionally, these positive effects of immigration are higher for immigrants with higher levels of education with additional years of college education being particularly valuable. Building on the notion that municipal bond yields reflect the markets' expectations of future financial risks to local economies, immigration might improve the credit risk of a given county through several different channels. For example, immigration might improve the local economy and taxable base sufficiently to offset increased spending on public goods and social services. It is also possible that immigrant inflows lead to an improvement in a county's financial margins as many of the county's expenses might be fixed while revenue growth expands. The inflows of immigrants might allow counties to make additional investments in physical capital and infrastructure which serves as collateral for the county to take out cheaper debt and more debt.

The results in Table 7 provide evidence that immigration results in significant growth in the local labor market. Consistent with immigrants being more likely to serve as entrepreneurs and innovators (Bernstein et al., 2022), a one standard deviation increase in immigrants leads to a 3.31 percent increase in the number of establishments as shown in column (1).[27] Overall, I find a larger effect of immigration on employment (column (2)) and total wages (column (3)) in the community with an estimated effect size increase of 5.30 percent and 5.56 percent, respectively. In terms of economic magnitude, the effects of immigration are quite large with an estimated creation of about 160 additional establishments, 4,300 additional employees, and additional wages of $190 million for the average county. The results in column (4) estimates wage growth increases by a statistically insignificant amount of 1.3 percent. The inflow of immigrants also leads to a growth in the financial

[27] $3.31\% = 0.169 \times 100\% \times 19{,}500/100{,}000$ immigrants.

sector as I show using county-level data from the IRS that interest and dividends received by county residents both increase by about 5 percent as shown in columns (5) and (6).

How do these gains in the local labor market ultimately flow back to the financial operations of the local county government? Table 8 examines the impact of immigration on a county's key income statement and balance sheet items, including total revenues, expenses, profit margin, total debt, financial assets, and leverage. The results in column (1) finds that increasing immigration flows lead to about a 3.9 percent increase in total revenues which are offset by expense growth of about 4.8 percent as shown in column (2). This leads to a decline in a county's net income margin in the short-term, though this effect is statistically insignificant (column (3)). Over longer periods, immigration exposure increases the profitability of the local county government as shown in column (5) implying the cash-flow benefits diffuse over time. I find in column (6) that counties take on more debt in response to immigrant inflows with a one-standard deviation increase in the number of immigrants leading to a 8.6 percent increase in the outstanding debt a county carries. Financial assets also increase in column (7) which leaves an overall county's leverage only slightly increased as shown in column (8). These results indicate that immigration causes short-term declines in profitability, partially offset by debt use, but ultimately leads to long-term increases in profitability for local county governments.

The results in Table 9 decompose how these immigrant inflows appear in a county's revenues. The composition of a county's government revenue base is made up of about 40 percent taxes from property and sales taxes, 40 percent intergovernmental transfers which are allocated from other governmental levels back to the local county (primarily the state government) based on revenue sharing or need-based formulas, and the rest is composed of general charges to local residents. The results in columns (1) to (3) examine the impact of immigration on taxes. I find that tax revenue collected increases in response to immigrant inflows as shown in column (1), and this increase is primarily driven by increases in property taxes (column (2)) than sales and recreational expenses in

the local county (column (3)). The results in column (4) show that counties have a slightly higher sensitivity to general charges received following immigrant inflows than taxes. Lastly, the results in column (5) to (8) examine the impact on intergovernmental transfers which help to understand the degree to which other levels of government are helping local communities bear some of the costs from additional immigrant inflows. The results in column (5) shows that intergovernmental transfers increase by about 5 percent with the largest sensitivity estimated for federal (column (6)) and local intergovernmental transfers (column (8)) as opposed to state transfers which make up about 90 percent of intergovernmental transfers.

Table 10 examines how immigration affects the expense patterns of county governments which are spent on various public goods such as infrastructure targeted towards capital projects and roads and more general public goods such as judicial courts, police, and public welfare spending. One key benefit of immigration inflows to a local community is that it might allow the county to spend on long-lasting, infrastructure projects which might increase the productivity and capacity of the local business environment that benefit both incoming immigrants and native residents. The results in column (1) document that a one-standard deviation increase in immigration leads to about an 11 percent increase in capital expenses and column (2) also finds a significant increase in road spending. Columns (3) to (7) examine whether public good expenditures increase at a similar rate in response to immigration. Only judicial spending (column (4)) and police spending (column (6)) have statistically significant increases in spending while the effect sizes are only about half the magnitude of the capital spending sensitivity.[28]

In summary, these results indicate that counties benefit from increasing immigration with its spillover to the local economy stemming from both increases in establishment and employment growth. Rather than immigrants taking jobs or reducing wages for native workers, their inflows lead

[28]I also find evidence consistent with the OLS main estimates from Table 2 being biased downward compared to the IV estimates from Table 3. Table A.7 shows that immigrants endogenously settle in places with higher intergovernmental transfers, health related, and public welfare spending compared to the analogous IV estimates in Tables 9 and 10.

to *increases* in both establishment, wage, and growth of the financial sector. The improved access of counties to finance following immigrants inflows stems partially from spillovers from economic growth leading to an increase in property tax collection and increasing intergovernmental transfers collected from other levels of government that are distributed back to the local government. In the short-term, expense growth exceeds revenue growth, but in the long-term immigration exposure leads to long-term profitability gains for local county governments as the benefits diffuse. Much of this short-term expense growth is due to counties spending on capital projects and infrastructure implying that immigrants provide additional growth opportunities at the county level which also serve as collateral to help them negotiate lower borrowing costs and secure more debt.[29]

# 5 Conclusion

The United States is facing the largest influx of immigrants in its history and many of the effects surrounding immigration remain unclear, especially at the local level. While local officials often argue that immigrants strain public resources, research indicates that they contribute to the economy. These trade-offs have been challenging to evaluate simultaneously due to the complex cash-flow and discount rate assumptions needed to estimate them.

In this paper, I causally examine the impact of immigration on the local governments' access to finance to test this trade-off. I find that increases in immigrant inflows lead to improvement in a county's access to finance evidenced by a reduction in borrowing costs. I instrument for current immigrants' settlement decisions using historical migration patterns of immigrants from

[29]In Internet Appendix Tables IA.3-IA.5 I find economically similar improvements in county profitability when aggregating all local county government authorities together (e.g. school districts, townships, municipalities, and county governments). These effects are driven by increases in property tax collection and general charges while intergovernmental transfers remain largely unchanged. I find smaller spending increases on capital-related expenditures and stronger increases in public goods expenses suggesting more of these short-term costs might be borne by other local governmental authorities.

1880 onward, interacted with the flow of incoming immigrants. I find that a one-standard deviation increase in immigrant inflows reduces borrowing costs by approximately 6 basis points, with larger counties—where immigrant inflows are concentrated—experiencing a reduction of nearly 15 basis points. Consistent with immigration helping to offset labor shortages and having stronger effects where free-riding incentives of immigrants are weaker, I find stronger effects of immigration for counties with a lower proportion of working age population, lower unemployment rates, and in counties further away from border.

Immigrant inflows lead to robust changes in the local labor market with significant growth in the number of establishments and employment while average wages experience slight increases. These economic gains spillover into the revenue collection of the local county government through an increase in property tax collection and an increase in intergovernmental transfers from other levels of government. While immigration causes short-term profitability declines due to costs exceeding immediate benefits, it leads to long-term profitability gains for local county governments as the benefits diffuse. I find that counties increase their spending on capital projects and infrastructure in response to immigration exposure which also serve as collateral to help them negotiate lower borrowing costs and secure more debt. Understanding other risks that municipalities face, and the broader effects of immigration on the local economy represent interesting future areas of work.

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**Figure 1: Immigration to the United States Over Time**

This figure shows the stock of immigrants in the United States and the flow of immigrants by region over time. Panel A shows the stock of US immigrants over time as a percent of the total population (left-hand axis) and in absolute magnitude (right-hand axis). Panel B provides the composition of the flow of immigrants by their birth continent. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey.

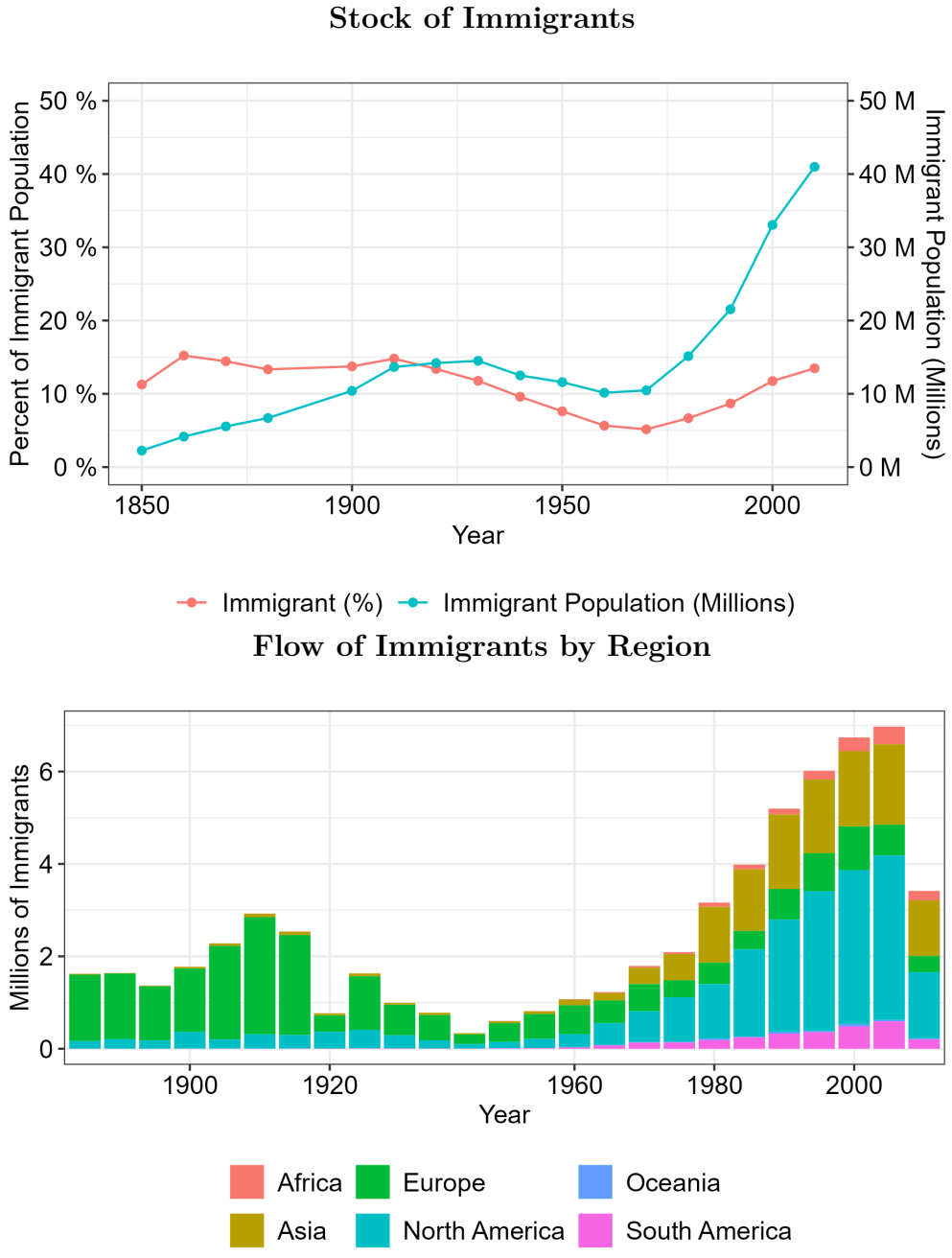


**Figure 2: *Push Factor:* Variation in Country-Level Immigration Flows**
This figure shows the flow of immigration across the five largest sender countries in the sample. Immigrants are defined as individuals born outside of the United States. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey.

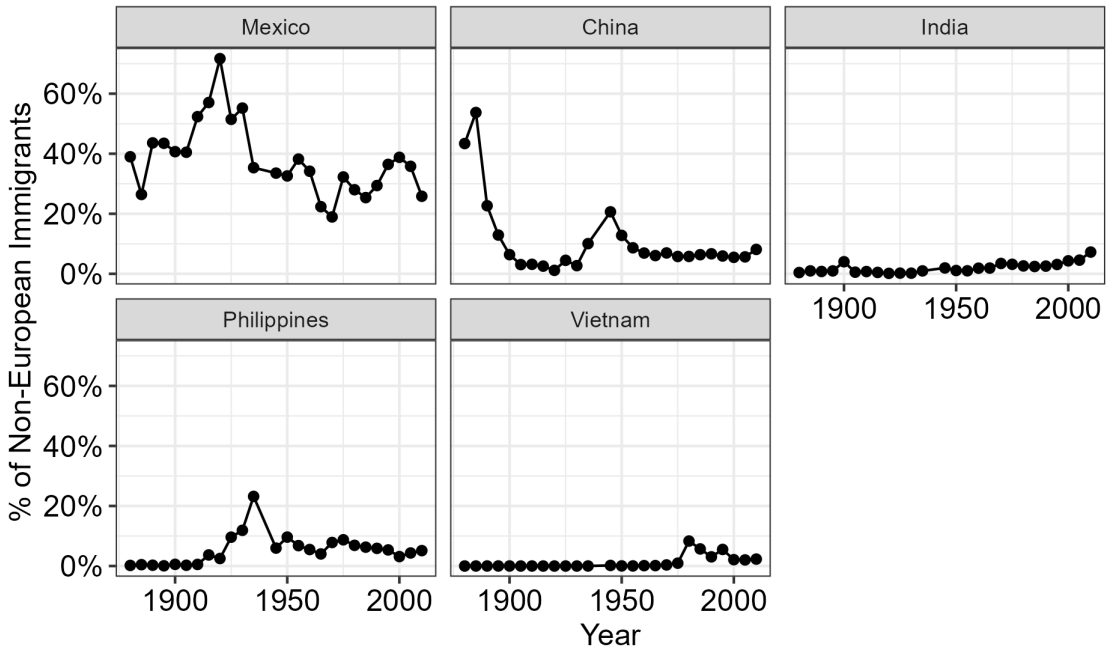


**Figure 3: *Pull Factor:* Variation in County-Level Immigration Settlement**
This figure shows the desirability of a county to immigrants over time. I regress the number of immigrants into a given county ($c$) at time ($t$) onto county and year fixed effects, and calculate the residuals across counties and within Census periods into 20 bins. Darker colors indicate a higher ranking. Immigrants are defined as individuals born outside of the United States. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey.

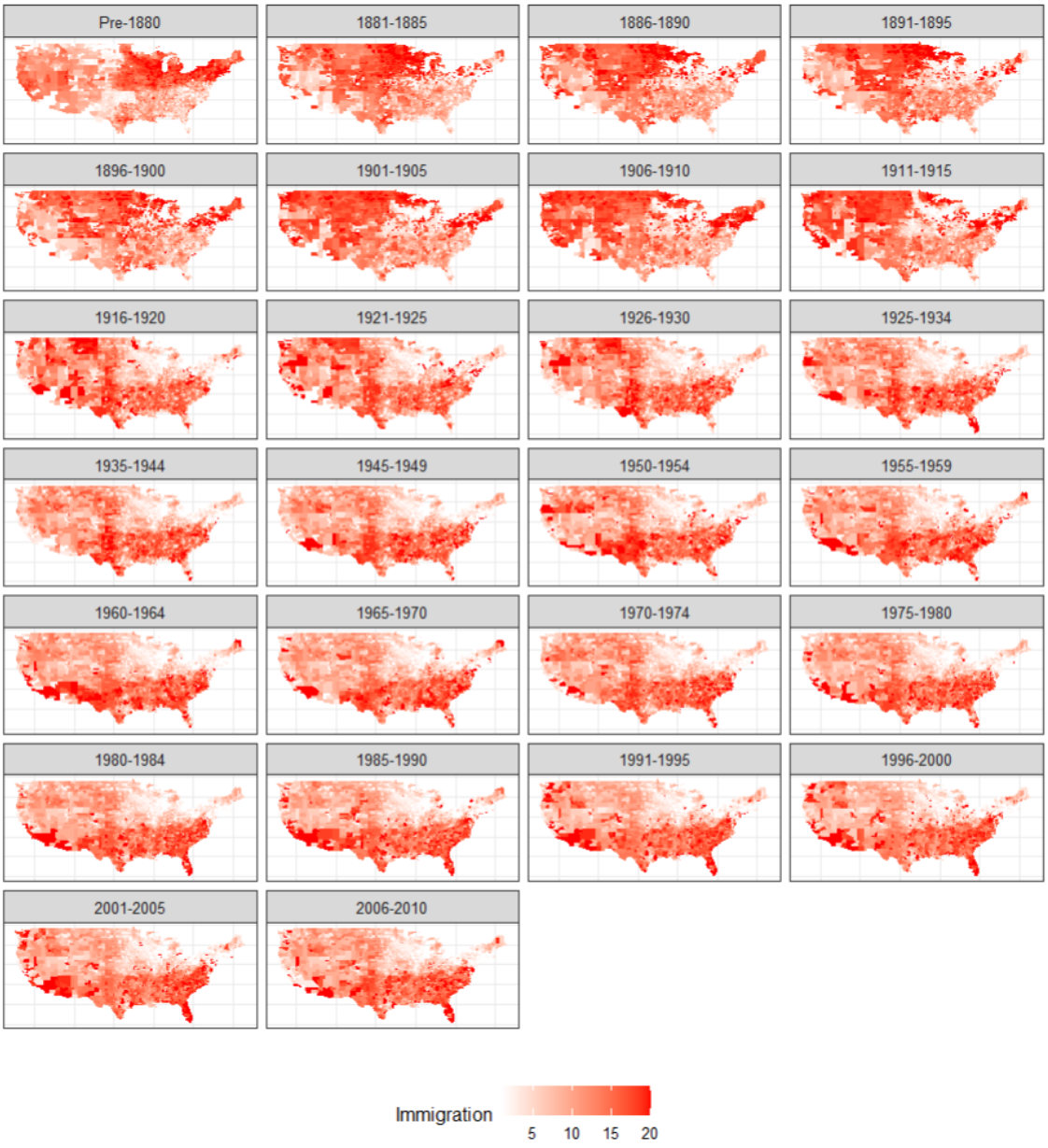


**Figure 4: Persistence of Immigration Patterns**

This figure shows the persistence of immigration patterns within county and ethnicity over time. Each bar represents the correlation between the proportion of immigrants from a given origin country $o$ in the listed Census period (e.g. 1880) to a given county and the analogous measure in 2010. Immigrants are defined as individuals born outside of the United States. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey.

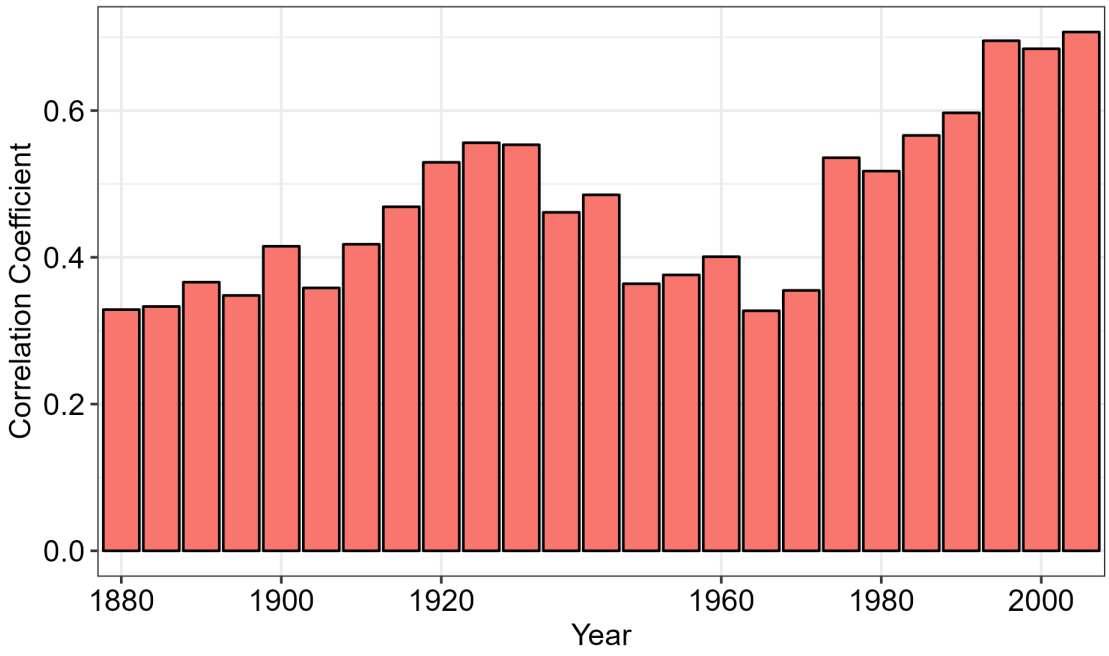


**Figure 5: Secure Communities Adoption**

This figure shows the timing of adoption of the Secure Communities Act across U.S. counties over time. This act created a partnership between U.S. local law enforcement and the Department of Homeland Security which led to additional detainment of primarily Mexican, undocumented immigrants. The Secure Communities Act was launched as a pilot in 2008 and rolled out nationwide as the Department of Homeland Security was unable to implement it simultaneously nationwide (East et al., 2023). County-level adoption date data are provided by East et al. (2023).

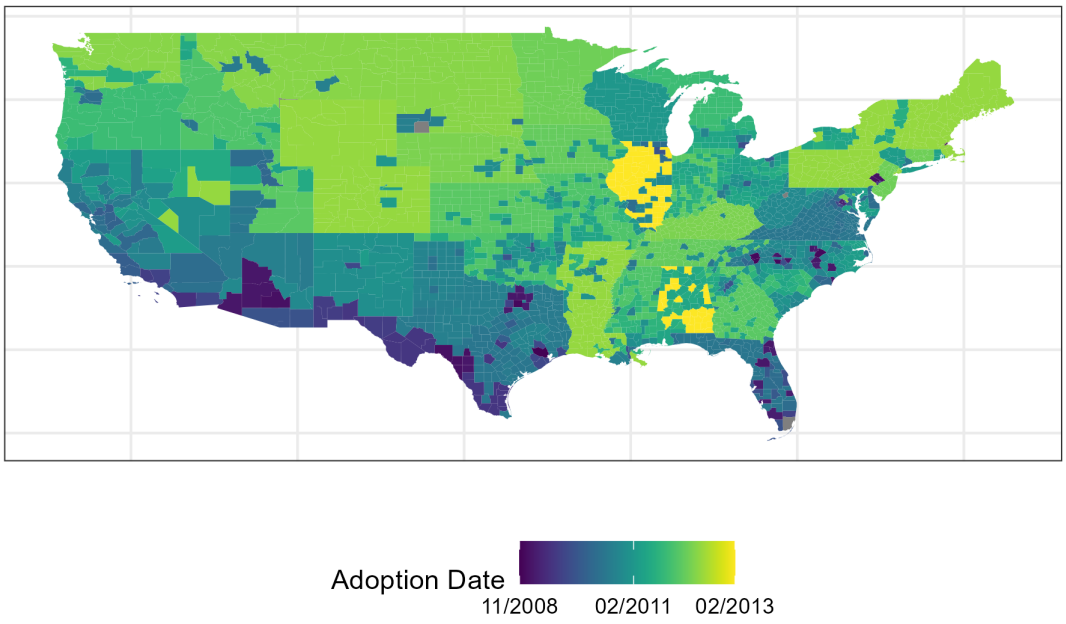


**Figure 6: Secure Communities Time-Varying Effect**

This figure shows the effect of the Secure Communities Act on municipal bond yield spreads over time. The coefficient estimates and 95 percent confidence intervals are obtained from regressing a municipal bond's *Yield Spread* onto ranges of time before and after the policy with the omitted group at the time of passage of the Secure Communities Act. The sample conditions on counties with lagged unemployment rates below the median comparable to column 3 of Table 4. The confidence intervals include primarily individual months while *-12+* groups all coefficient estimates 12 months prior to passage and *12+* groups all coefficient estimates 12 months after its passage. The regressions include county and issue month × issue year fixed effects. Standard errors are clustered at the county level. County-level adoption dates of the Secure Communities Act are provided by East et al. (2023).

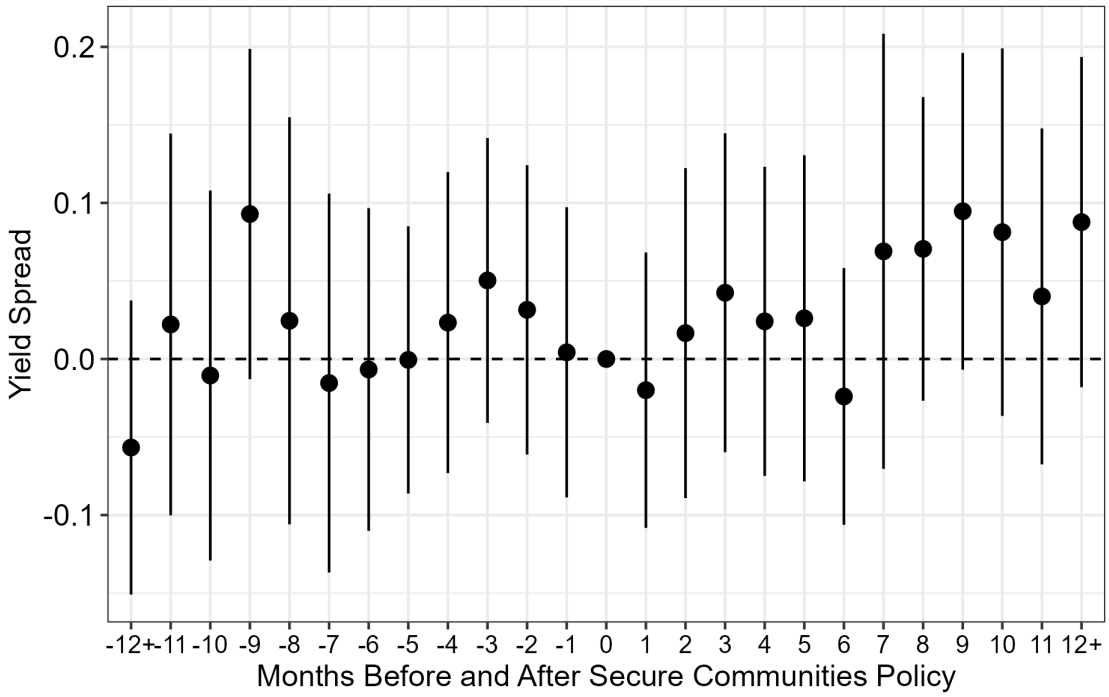


**Table 1: Summary Statistics**

This table presents the summary statistics for the sample of bond issuances and the underlying county issuer. Panel A describes the characteristics at the bond issuance level including its yield, features, and rating. Panel B describes the characteristics of county issuer including its demographics, average income, and labor-force composition at the county × year level. Panel C contains information on employment including establishments, number of employees, average annual pay, and total wages at the county × year level. Panel D contains information on the income state and balance sheet of county governments at the county × year level.

| | Panel A: Bond Characteristics | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | p1 | p25 | Median | p75 | p99 |
| Yield Spread | 40502 | 2.33 | 1.38 | -0.18 | 1.37 | 2.14 | 3.06 | 6.92 |
| Δ Yield Spread (%) | 40502 | -0.56 | 2.00 | -4.94 | -1.57 | -0.53 | 0.70 | 4.35 |
| Years to Maturity | 40502 | 14.46 | 9.15 | 0.75 | 7.17 | 15.00 | 20.01 | 34.60 |
| Amount Final Maturity | 40502 | 4.03 | 11.24 | 0.00 | 0.00 | 0.03 | 2.75 | 77.31 |
| Issue Amount | 40502 | 18.66 | 49.04 | 0.20 | 2.11 | 5.55 | 14.97 | 241.19 |
| Callable Issue | 40502 | 0.68 | 0.47 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Insured | 40502 | 0.27 | 0.45 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| Negotiated Bid | 40502 | 0.56 | 0.50 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Revenue Bond | 40502 | 0.30 | 0.46 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| Tax-Exempt | 40502 | 0.89 | 0.31 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ratings Combined | 40502 | 3.64 | 3.16 | 0.00 | 0.00 | 5.00 | 7.00 | 7.00 |
| Sinking Fund | 40502 | 0.27 | 0.45 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| Refinancing Flag | 40502 | 0.27 | 0.44 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| | Panel B: County Census Characteristics | | | | | | | |
| Total Population (000'000s) | 6302 | 1.79 | 4.32 | 0.06 | 0.32 | 0.66 | 1.60 | 15.45 |
| Total Immigration (000's) | 6302 | 3.82 | 21.09 | 0.01 | 0.11 | 0.33 | 1.48 | 53.06 |
| Non-European Immigration (000's) | 6302 | 3.39 | 19.50 | 0.01 | 0.09 | 0.27 | 1.23 | 48.48 |
| Population Change (000's) | 6302 | 10.05 | 32.26 | -11.74 | 0.13 | 1.97 | 8.70 | 128.76 |
| IRS Net Flow (000's) | 6065 | 0.17 | 4.68 | -8.73 | -0.17 | 0.04 | 0.45 | 9.59 |
| Total Employment (000'000s) | 6302 | 0.72 | 1.90 | 0.01 | 0.09 | 0.20 | 0.57 | 7.35 |
| % Below Poverty | 6302 | 0.12 | 0.05 | 0.03 | 0.08 | 0.11 | 0.14 | 0.27 |
| Average Income | 6302 | 16.66 | 5.03 | 7.26 | 12.89 | 16.78 | 19.34 | 32.40 |
| % Ages (18-65) | 6302 | 0.61 | 0.04 | 0.54 | 0.58 | 0.61 | 0.63 | 0.72 |
| Median Age | 6302 | 35.84 | 4.23 | 27.00 | 33.00 | 36.00 | 38.00 | 47.00 |
| % Labor-Intensive | 6302 | 0.71 | 0.08 | 0.51 | 0.66 | 0.72 | 0.77 | 0.86 |

*(Continued on next page)*

**Table 1** (*continued*)

| | Panel C: County Census Employment and Wages | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | p1 | p25 | Median | p75 | p99 |
| Establishment Count (000's) | 6302 | 4.80 | 12.68 | 0.20 | 0.76 | 1.61 | 4.15 | 47.13 |
| Number of Employees (000's) | 6302 | 81.14 | 205.81 | 1.93 | 10.58 | 24.59 | 66.92 | 789.85 |
| Total Annual Wages ($ Billions) | 6302 | 3.47 | 10.24 | 0.05 | 0.33 | 0.83 | 2.47 | 39.48 |
| Average Annual Pay (000's) | 6302 | 34.74 | 6.96 | 24.99 | 30.07 | 33.46 | 37.93 | 58.39 |
| | Panel D: County Financial Characteristics ($ Millions) | | | | | | | |
| *Revenue Composition* | | | | | | | | |
| Total Revenue | 6302 | 174.06 | 632.44 | 3.54 | 15.67 | 39.93 | 121.18 | 2,324.79 |
| Total Taxes | 6302 | 61.47 | 181.78 | 1.45 | 5.53 | 14.01 | 43.20 | 852.24 |
| Property Taxes | 6302 | 43.58 | 133.81 | 0.73 | 4.06 | 9.98 | 30.54 | 571.03 |
| Total Sales & Recreation Tax | 6302 | 12.60 | 50.05 | 0.00 | 0.00 | 0.95 | 7.12 | 195.62 |
| Total Intergovernmental | 6302 | 60.43 | 294.13 | 0.38 | 3.77 | 11.26 | 35.47 | 830.62 |
| Federal Intergovernmental | 6302 | 4.75 | 17.46 | 0.00 | 0.00 | 0.41 | 2.60 | 73.22 |
| State Intergovernmental | 6302 | 52.51 | 268.05 | 0.15 | 3.06 | 9.10 | 29.70 | 752.40 |
| Local Intergovernmental | 6302 | 3.11 | 14.98 | 0.00 | 0.00 | 0.22 | 1.34 | 56.56 |
| *Expense Composition* | | | | | | | | |
| Total Expenses | 6302 | 171.93 | 590.35 | 3.71 | 15.79 | 40.44 | 120.00 | 2,211.97 |
| Capital Outlays | 6302 | 17.07 | 50.63 | 0.00 | 0.80 | 3.29 | 11.45 | 233.43 |
| Total Highway Expenses | 6302 | 9.84 | 22.60 | 0.00 | 2.13 | 4.36 | 9.24 | 94.91 |
| Parks & Recreation | 6302 | 3.37 | 14.83 | 0.00 | 0.00 | 0.21 | 1.27 | 57.56 |
| Judicial Expenses | 6302 | 8.57 | 38.10 | 0.00 | 0.52 | 1.50 | 5.11 | 114.05 |
| Health Expenses | 6302 | 13.64 | 56.50 | 0.00 | 0.39 | 1.91 | 8.96 | 200.06 |
| Police Expenses | 6302 | 10.18 | 40.65 | 0.00 | 0.92 | 2.41 | 6.84 | 133.35 |
| Public Welfare Expenses | 6302 | 23.49 | 136.49 | 0.00 | 0.10 | 1.67 | 11.50 | 392.66 |
| *Profitability* | | | | | | | | |
| Net Income Margin | 6302 | -0.01 | 0.14 | -0.50 | -0.08 | -0.00 | 0.07 | 0.34 |
| *Balance Sheet* | | | | | | | | |
| Total Debt | 6302 | 139.75 | 467.55 | 0.00 | 1.95 | 14.63 | 78.41 | 2,287.67 |
| Total Long-Term Debt | 6302 | 136.32 | 457.11 | 0.00 | 1.91 | 14.33 | 76.25 | 2,236.07 |
| Financial Assets | 6302 | 354.94 | 1,395.68 | 0.47 | 18.15 | 57.16 | 214.31 | 4,830.52 |
| Total Cash Securities | 6302 | 182.61 | 896.18 | 0.20 | 6.57 | 22.00 | 90.61 | 2,643.16 |
| Non-Insured Trust Cash Securities | 6302 | 118.24 | 365.16 | 0.00 | 6.09 | 19.83 | 78.94 | 1,736.33 |
| Other Non-Insured Trust Cash Securities | 6302 | 52.43 | 169.64 | 0.00 | 4.48 | 12.29 | 37.23 | 717.48 |
| Leverage | 6252 | 0.36 | 0.41 | 0.00 | 0.08 | 0.27 | 0.48 | 2.43 |

**Table 2: OLS: Effect of Immigration on Municipal Bond Yield Spreads**

This table presents OLS estimates of the relationship between immigration and a municipal bond's yield spread. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate used in columns (1) to (5) and $\Delta$ *Yield Spread* is the bond's yield spread less the county's average yield spread from 5 years prior. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Yield Spread | | | | | $\Delta$ Yield Spread | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Immigration | -0.080*** | -0.038*** | -0.066*** | -0.096*** | -0.212*** | -0.022** | -0.032 | -0.195* |
| | [0.012] | [0.014] | [0.017] | [0.029] | [0.035] | [0.009] | [0.083] | [0.101] |
| Observations | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 |
| State F.E. | Yes | Yes | Yes | Yes | No | Yes | Yes | No |
| County F.E. | No | No | No | No | Yes | No | No | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Bond Controls | No | Yes | No | Yes | Yes | No | Yes | Yes |
| County Controls | No | No | Yes | Yes | Yes | No | Yes | Yes |

**Table 3: IV: Effect of Immigration on Yield Spreads**

This table presents estimates of the relationship between immigration and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate used in columns (1) to (5) and $\Delta$ *Yield Spread* is the bond's yield spread less the county's average yield spread from 5 years prior. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Yield Spread | | | | | $\Delta$ Yield Spread | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Immigration | -0.089*** | -0.052*** | -0.119*** | -0.134*** | -0.249*** | -0.054** | -0.114*** | -0.457*** |
| | [0.007] | [0.006] | [0.036] | [0.025] | [0.081] | [0.020] | [0.041] | [0.120] |
| F-Statistic | 2647.61 | 2774.91 | 195.61 | 196.27 | 458.90 | 2647.61 | 196.27 | 458.90 |
| Observations | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 |
| State F.E. | Yes | Yes | Yes | Yes | No | Yes | Yes | No |
| County F.E. | No | No | No | No | Yes | No | No | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Bond Controls | No | Yes | No | Yes | Yes | No | Yes | Yes |
| County Controls | No | No | Yes | Yes | Yes | No | Yes | Yes |

**Table 4: Differences-in-Differences: Effects of the Secure Communities Act on Municipal Bond Yields**
This table presents estimates of the relationship between the passage of the Secure Communities Act and a municipal bond's yield spread. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate. The Secure Communities Act is an indicator denoting the interaction of policy passage in a given county *Treat* and the given bond being issued following the policy *Post*. Columns (1) and (2) use the full sample of bond issuance data surrounding the passage of the Secure Communities Act. Columns (3) and (4) split the sample into counties with lagged unemployment rates below and above the median rate, respectively. Columns (5) and (6) split the sample into counties with the lagged proportion of the population of working age (between ages 18-65) below and above the median rate. The policy created a partnership between U.S. local law enforcement and the Department of Homeland Security which led to additional detainment of primarily Mexican, undocumented immigrants. The Secure Communities Act was launched as a pilot in 2008 and rolled out nationwide as the Department of Homeland Security was unable to implement it simultaneously nationwide (East et al., 2023). County-level adoption date data are provided by East et al. (2023). Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are related to the presence of a county's collaboration with Immigration Customs and Enforcement (ICE) through the 287(g) program or the presence of E-verify employment verification. Fixed effects and controls are denoted in the table while standard errors are clustered at the county level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Yield Spread | | | | | |
|---|---|---|---|---|---|---|
| Sample: | Full Sample | | Unemployment Rate | | % Ages 18-65 | |
| Split: | All | All | Low | High | Low | High |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Secure Communities Act | 0.084** | 0.051 | 0.091** | 0.002 | 0.078** | 0.017 |
| | [0.036] | [0.034] | [0.039] | [0.036] | [0.036] | [0.052] |
| Observations | 172323 | 172323 | 88927 | 83182 | 94490 | 77538 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Month × Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Bond Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | No | Yes | Yes | Yes | Yes | Yes |

**Table 5: IV: Heterogeneous County Effects of Immigration on Yield Spreads**

This table presents estimates of the heterogeneous relationship between immigration and a municipal bond's yield spread across different county characteristics. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the inflow of immigrants, *Immigration*, and *Immigration* × *County Characteristic*, which are instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6 and the interaction of the exogenous inflow of immigrants and the county characteristic, respectively. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate. County characteristics include whether a county is above the median county characteristic across measures of location, social capital, immigration policy adoption, county wealth, labor, and demographic characteristics. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Yield Spread | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Distance | Pro-Immigration | | County Wealth | | Labor & Demographics | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Immigration | -0.155*** | -0.138*** | 0.199* | -0.350*** | -0.179 | -0.398*** | -0.378*** | -0.198*** |
| | [0.026] | [0.026] | [0.106] | [0.103] | [0.150] | [0.058] | [0.078] | [0.031] |
| Immigration × 𝕀(Distance to Border) | -0.234*** | | | | | | | |
| | [0.062] | | | | | | | |
| Immigration × 𝕀(Social Capital) | | 0.027 | | | | | | |
| | | [0.049] | | | | | | |
| Immigration × 𝕀(Sanctuary Policy) | | | -0.289*** | | | | | |
| | | | [0.091] | | | | | |
| Immigration × 𝕀(% Below Poverty) | | | | 0.214* | | | | |
| | | | | [0.107] | | | | |
| Immigration × 𝕀(Net Income Margin) | | | | | 0.040 | | | |
| | | | | | [0.151] | | | |
| Immigration × 𝕀(Unemployment Rate) | | | | | | 0.235*** | | |
| | | | | | | [0.049] | | |
| Immigration × 𝕀(% Ages 18-65) | | | | | | | 0.235*** | |
| | | | | | | | [0.064] | |
| Immigration × 𝕀(Labor Intensive) | | | | | | | | 0.088*** |
| | | | | | | | | [0.018] |
| F-Statistic | 76.56 | 88.08 | 16.29 | 249.47 | 22.04 | 53.18 | 53.07 | 153.88 |
| Observations | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 |
| State F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Bond Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

**Table 6: IV: Heterogeneous Immigrant Effects on Yield Spreads**

This table presents estimates of the heterogeneous relationship between immigration education and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto *Immigrants over 25*, *Immigrants over 25* × *Education Level*, and *Education Level*, which are instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6 at the origin country $o$ × county $c$ level for the top 20 origin nations as a joint set of instruments. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate. *Years School* and *Years College* are demeaned so that the interacted effect is for an additional year of education above the average, and the main effect of *Immigrants over 25* reflects the average effect per immigrants over 25 at the average level of education. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Yield Spread | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Immigrants over 25 | -0.247*** | -0.501*** | -0.778*** | -0.696*** | -0.718*** | -0.734*** |
| | [0.064] | [0.129] | [0.154] | [0.074] | [0.162] | [0.085] |
| Immigrants over 25 × Years School | | | -0.236*** | -0.082 | | |
| | | | [0.053] | [0.062] | | |
| Immigrants over 25 × Years College | | | | | -0.551*** | -0.295* |
| | | | | | [0.151] | [0.169] |
| F-Statistic | > 200 | > 200 | 39.46 | 55.62 | 37.25 | 58.69 |
| Observations | 40241 | 40241 | 40241 | 40241 | 40241 | 40241 |
| State F.E. | Yes | No | Yes | No | Yes | No |
| County F.E. | No | Yes | No | Yes | No | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Bond Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes |

**Table 7: IV: Effect of Immigration on Labor Market, Saving, and Investing**

This table presents estimates of the relationship between immigration and a municipality's labor market and household finances. The table displays the IV second-stage results from regressing a municipality's labor market and household finances onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variables include the logarithm of the number of *Establishments*, *Employment*, *Total Wages*, *Average Wages*, *Dividends*, and *Interest*. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Data from the local labor market come from the Quarterly Census of Employment and Wages while saving and investing data comes from the IRS' county-level data. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Labor Market | | | | Saving & Investing | |
|---|---|---|---|---|---|---|
| | Log( Establishments) | Log( Employment) | Log(Total Wages) | Log(Avg. Wages) | Log( Interest) | Log( Dividends) |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Immigration | 0.169** | 0.272*** | 0.285*** | 0.013 | 0.242** | 0.252** |
| | [0.064] | [0.083] | [0.082] | [0.009] | [0.111] | [0.122] |
| F-Statistic | 257.07 | 257.07 | 257.07 | 257.07 | 114.51 | 114.51 |
| Observations | 6302 | 6302 | 6302 | 6302 | 6062 | 6062 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes |

**Table 8: IV: Effect of Immigration on Operating Margin and Balance Sheet**

This table presents estimates of the relationship between immigration and a municipality's operating margin and balance sheet. The table displays the IV second-stage results from regressing a municipality's operating margin and balance sheet items onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variables include the logarithm of a county's *Total Revenues*, *Total Expenses*, *Net Margin*$_t$, *Net Margin*$_{t+5}$, *Net Margin*$_{t+10}$, *Total Debt*, *Financial Assets*, and *Debt/Financial Assets*. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Log(Total Revenues) | Log(Total Expenses) | Net Margin$_t$ | Net Margin$_{t+5}$ | Net Margin$_{t+10}$ | Log(Total Debt) | Log(Fin. Assets) | Debt/ Fin. Assets |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Immigration | 0.200*** | 0.248** | -0.046 | 0.025 | 0.043** | 0.443*** | 0.215* | 0.129 |
| | [0.068] | [0.095] | [0.036] | [0.020] | [0.020] | [0.160] | [0.126] | [0.092] |
| F-Statistic | 257.88 | 257.88 | 257.88 | 258.75 | 258.38 | 265.09 | 258.03 | 258.03 |
| Observations | 6302 | 6302 | 6302 | 6285 | 6278 | 5347 | 6237 | 6237 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

**Table 9: IV: Effect of Immigration on County Revenues**

This table presents estimates of the relationship between immigration and a municipality's revenue sources. The table displays the IV second-stage results from regressing a municipality's revenue sources onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variables include the logarithm of a county's *Total Taxes*, *Property Taxes*, *Sales Tax*, *Total Intergovernmental Transfers*, *Federal Intergovernmental Transfers*, *State Intergovernmental Transfers*, and *Local Intergovernmental Transfers*. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Log(Taxes) | | | Log(General) | Log(Intergovernmental Transfers) | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Property | Sales & Rec | General | Total | Fed | State | Local |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Immigration | 0.230* | 0.264* | 0.085 | 0.275** | 0.261*** | 0.613*** | 0.150* | 0.496** |
| | [0.133] | [0.153] | [0.145] | [0.129] | [0.070] | [0.176] | [0.078] | [0.232] |
| F-Statistic | 258.07 | 258.14 | 312.00 | 258.08 | 258.06 | 280.66 | 258.06 | 277.70 |
| Observations | 6280 | 6272 | 4136 | 6258 | 6265 | 4592 | 6263 | 4314 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

**Table 10: IV: Effect of Immigration on County Expenses**

This table presents estimates of the relationship between immigration and a municipality's expense sources. The table displays the IV second-stage results from regressing a municipality's expense sources onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variables include the logarithm of a county's spending on *Capital*, *Roads*, *Parks*, *Judicial*, *Health*, *Police*, and *Public Welfare*. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Log(Infrastructure) | | Log(Public Goods Expenses) | | | | |
|---|---|---|---|---|---|---|---|
| | Capital | Roads | Parks | Judicial | Health | Police | Welfare |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Immigration | 0.593* | 0.294** | 0.115 | 0.313*** | 0.118 | 0.218** | 0.283 |
| | [0.300] | [0.138] | [0.192] | [0.115] | [0.120] | [0.097] | [0.172] |
| F-Statistic | 259.82 | 261.09 | 270.32 | 258.12 | 262.59 | 259.23 | 290.61 |
| Observations | 5946 | 5998 | 4631 | 6186 | 5831 | 6194 | 5438 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

# Appendix

## History of U.S. Immigration Policy

Although the United States has often been described as a "country of immigrants" or a "melting pot" to reflect the significant role immigrants have played in its development, restrictions on immigration extend back to its origins. The 1790 Naturalization Act required individuals seeking citizenship to have at least one year of residence in the country, be of "good moral character", and be a "free white person" excluding Native Americans, indentured servants, enslaved people, free Africans, Pacific Islanders, and non-White Asians from becoming citizens. In 1798, the Federalist Party aiming to limit immigrant influence, passed the Alien and Sedition Acts, which allowed the president to deport any non-citizen deemed dangerous and allowed the deportation of any non-citizen who came from a country at war with the United States. During the mid-1800s, the United States adopted more welcoming immigration policies to address labor shortages. For example, the Immigration Act of 1864 allowed labor contracts with foreign workers and established a commissioner of immigration. These more open immigration policies were largely restricted to European immigrants as the Chinese Exclusion Act of 1882 banned Chinese laborers from immigrating for the following 10 years, which was later extended until 1943, and authorized deportation of unauthorized, recent Chinese immigrants. From 1850 to 1910, pro-immigration policies led to a rise in the foreign-born population from about 10 percent in 1850 to nearly 15 percent in 1910.

Following this period of time, immigration policy became more restrictive as evidenced by the 1921 Emergency Quota Act which capped annual, total immigration at 350,000 (later reduced to 165,000 in the Immigration Act of 1924) and also created country quotas. During this period, the percent of the U.S population that is foreign born declined to just 4.7 percent in 1970. Immigration policy took another turn following the Immigration and Nationality Act of 1965 which abolished the quota system, created a preference system prioritizing family reunification, skilled immigrants, and

refugees which resulted in significantly higher immigration from Asia, Latin America, and Africa. This era of pro-immigration policy in the modern era created pathways to permanent residency to unauthorized immigrant workers and protection from deportation through the Immigration Reform and Control Act of 1986. Additionally, the Immigration Act of 1990, created H-1B visas for highly skilled temporary workers and H-2B for seasonal, non-agricultural workers while seeking to limit illegal immigration through increasing enforcement at the border and fences built along the Southwest border (Pew Research Center, 2015). Figure 1 summarizes these historical immigration patterns since 1850 and shows that the United States had its highest absolute number of immigrants in 2020 at nearly 50 million individuals and is also near the maximum proportion of US immigrants in recent history at nearly 15 percent of total residents.

**Figure A.1: Composition of County Revenues and Expenses**

This figure shows the average composition of revenues and expenses across counties. Panel A provides a decomposition of revenue sources while Panel B provides a decomposition of expense sources.

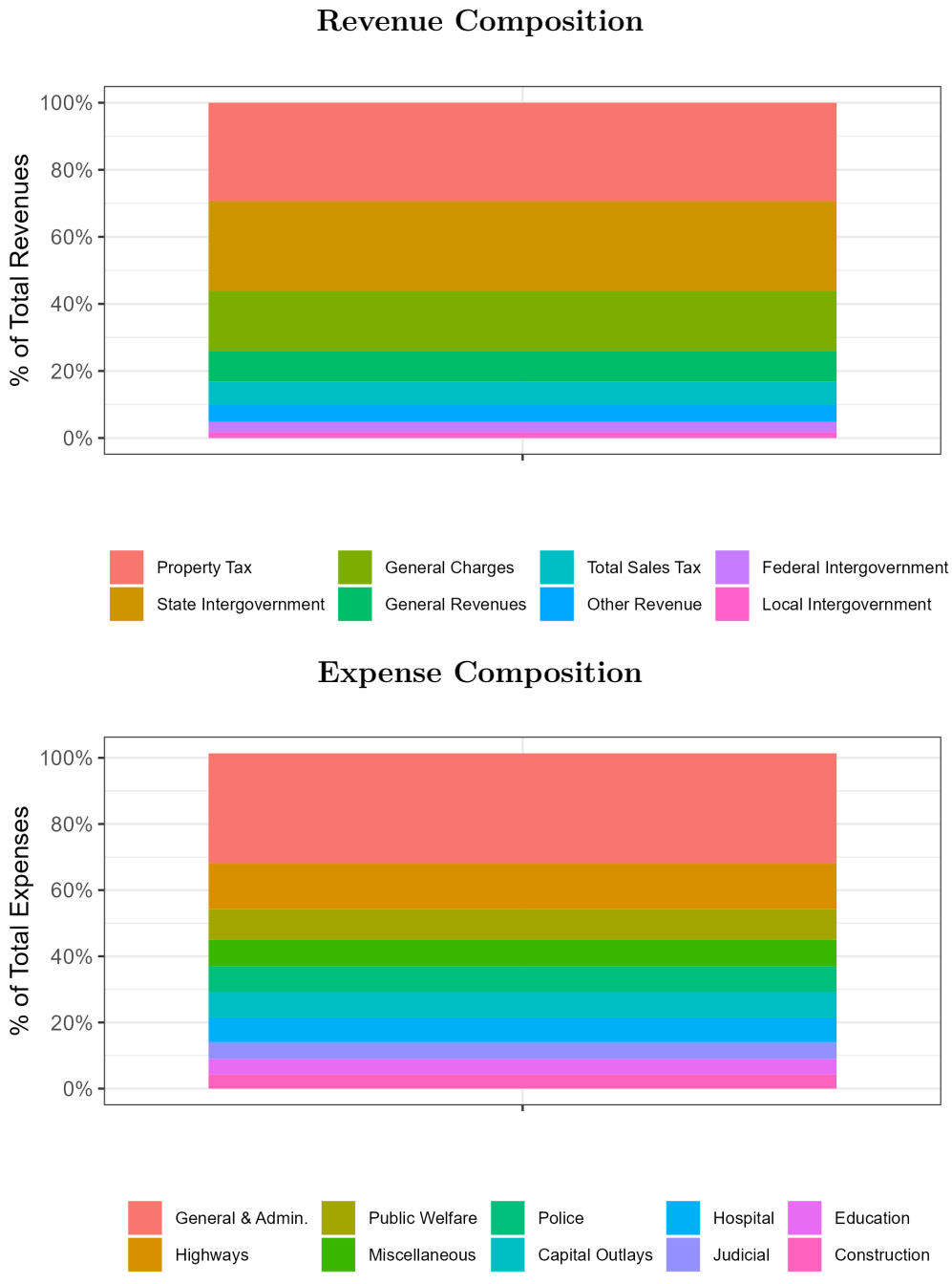


**Table A.1: OLS:**
**Effect of Population Changes and Internal Migration on Municipal Bond Yield Spreads**
This table presents OLS estimates of the relationship between population change and internal migration flows and a municipal bond's yield spread. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate used in columns (1) to (5) and $\Delta$ *Yield Spread* is the bond's yield spread less the county's average yield spread from 5 years prior. The independent variable of interest in Panel A is *Population Change* which is the change in population at five year intervals and in Panel B is *IRS Inflows* which is the inflow of IRS filers into the county over the last five years. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| Panel A: OLS: Effect of Population Changes | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Yield Spread | | | | | $\Delta$ Yield Spread | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Population Change | -0.015 | -0.030 | 0.020 | -0.025 | -0.102*** | -0.012 | -0.043 | -0.078 |
| | [0.025] | [0.029] | [0.027] | [0.033] | [0.034] | [0.034] | [0.062] | [0.063] |
| Observations | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 |
| State F.E. | Yes | Yes | Yes | Yes | No | Yes | Yes | No |
| County F.E. | No | No | No | No | Yes | No | No | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Bond Controls | No | Yes | No | Yes | Yes | No | Yes | Yes |
| County Controls | No | No | Yes | Yes | Yes | No | Yes | Yes |
| Panel B: OLS: Effect of IRS Net Flows Residents | | | | | | | | |
| | Yield Spread | | | | | $\Delta$ Yield Spread | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| IRS Inflows | -0.017 | 0.004 | 0.070*** | 0.037** | 0.004 | 0.002 | 0.043 | 0.122 |
| | [0.012] | [0.008] | [0.023] | [0.018] | [0.050] | [0.010] | [0.048] | [0.090] |
| Observations | 39626 | 39626 | 39626 | 39626 | 39626 | 39626 | 39626 | 39626 |
| State F.E. | Yes | Yes | Yes | Yes | No | Yes | Yes | No |
| County F.E. | No | No | No | No | Yes | No | No | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Bond Controls | No | Yes | No | Yes | Yes | No | Yes | Yes |
| County Controls | No | No | Yes | Yes | Yes | No | Yes | Yes |

**Table A.2: Country-County Level Regressions of Immigration on Push-Pull Factors**
This table presents coefficient estimates for the instrument construction shown in equation 5 to explain immigration at the country × county level. Each coefficient estimate is estimated from a separate regression. For example, in column (1) $Immigration_{o,d}^{1985}$ loads on $\hat{A}_{o,d,1980} \times \tilde{Imm}_{o,-r(d),1985}$ with a coefficient of 0.0017 while $Immigration_{o,d}^{1990}$ loads on $\hat{A}_{o,d,1985} \times \tilde{Imm}_{o,-r(d),1990}$ with a coefficient of 0.0005. *County × Country Controls* includes time-invariant controls such as the distance between the two locations and the distance in latitude. *Contemporaneous European Immigration* controls for the flow of European immigrants into county $c$ in year $t$ and *Contemporaneous Push-Pull* controls for the interacted flow of immigrants from origin country $o$ to other Census regions with the proportion of European immigrants settling in county $c$ in year $t$. Fixed effects include Census region × county fixed effects, county × continent fixed effects, and year fixed effects. Standard errors are clustered at the country level. The sample includes only county × year observations appearing in the municipal bond sample. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | $\text{Immigration}_{o,c,t}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $\hat{A}_{o,c,1980} \times \tilde{Imm}_{o,-r(d),1985}$ | 0.0017*** | 0.0017*** | 0.0016*** | 0.0016*** | 0.0016*** |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $\hat{A}_{o,c,1985} \times \tilde{Imm}_{o,-r(d),1990}$ | 0.0018*** | 0.0018*** | 0.0018*** | 0.0018*** | 0.0018*** |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $\hat{A}_{o,c,1990} \times \tilde{Imm}_{o,-r(d),1995}$ | 0.0005*** | 0.0005*** | 0.0005*** | 0.0005*** | 0.0005*** |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $\hat{A}_{o,c,1995} \times \tilde{Imm}_{o,-r(d),2000}$ | 0.0004*** | 0.0004*** | 0.0004*** | 0.0004*** | 0.0003*** |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $\hat{A}_{o,c,2000} \times \tilde{Imm}_{o,-r(d),2005}$ | 0.0002*** | 0.0002*** | 0.0002*** | 0.0002*** | 0.0002*** |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $\hat{A}_{o,c,2005} \times \tilde{Imm}_{o,-r(d),2010}$ | 0.0002*** | 0.0002*** | 0.0002*** | 0.0002*** | 0.0002*** |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $R^2$ | 0.720 | 0.720 | 0.762 | 0.763 | 0.762 |
| Observations | 887,046 | 887,046 | 887,046 | 887,046 | 887,046 |
| County × Country Controls | No | Yes | Yes | Yes | Yes |
| Region × Country F.E. | No | No | Yes | Yes | Yes |
| County × Continent F.E. | No | No | Yes | Yes | Yes |
| Year F.E. | No | No | Yes | Yes | Yes |
| Contemporaneous European Immigration | No | No | No | Yes | No |
| Contemporaneous Push-Pull | No | No | Yes | Yes | Yes |

**Table A.3: IV: Effect of Immigration on Municipal Bond Yields**

This table presents robustness estimates of the relationship between immigration and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipal bond's Yield Spread onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The first panel represents the base specification from column (5) of Table 3. The second panel presents results from various sampling choices: Row 2A uses the logarithm of yield as the dependent variable, row 2B weights observations by the initial county's population in 1970, row 2C controls for the Census flow of internal migration, row 2D uses the full sample of bonds by back-filling immigration date. The third panel presents results from various alterations of the instrument: Row 3A keeps only counties with immigration inflows below the 99th percentile and row 3B scales immigration inflows by the county's initial population in 1970. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years, Row 3C scales a municipal bond's *Yield Spread*, the endogenous immigration inflows, and the instrumented inflows using the inverse hyperbolic sine transformation. Row 3D accounts for spatial spillovers by instrumenting for additional immigrant inflows at the state-level, Row 3E excludes counties from the push factor with correlated county settlement patterns rather than Census regions, Row 3F excludes migrants from the same continent in the pull factor rather than using European migrants, Row 3G replaces predicted ancestry with predicted ancestry in 1975 for all periods, and Row 3H takes the sum of push-pull interactions up to 1960 only. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Yield Spread | | | |
|---|---|---|---|---|
| Instrument Variable | Coefficient | Standard Error | F-Statistic | Observations |
| **1. Base Specification** | | | | |
| Immigration | -0.249*** | 0.08 | 458.90 | 40,502 |
| **2. Sampling Choices** | | | | |
| **A. Use Log Dependent Variable** | | | | |
| Immigration | -0.112*** | 0.04 | 469.45 | 39,586 |
| **B. Weight by Initial County Population** | | | | |
| Immigration | -0.294*** | 0.07 | 798.20 | 40,502 |
| **C. Control Census Flow of Internal Migration** | | | | |
| Immigration | -0.274** | 0.10 | 129.03 | 41,479 |
| **D. Include Full Sample of Bonds and Back-fill Immigration Data** | | | | |
| Immigration | -0.108* | 0.06 | 566.46 | 202,525 |
| **3. Instrument Choices** | | | | |
| **A. Immigration $\leq$ 99th Percentile** | | | | |
| Immigration | -0.579*** | 0.17 | 44.27 | 40,046 |
| **B. Scale Immigration by Initial County Population** | | | | |
| Immigration | -0.195*** | 0.07 | 17.83 | 40,502 |
| **C. Use Inverse-Hyperbolic Sine Transformation** | | | | |
| Immigration | -0.021** | 0.003 | 10.48 | 40,502 |
| **D. Account for Spatial Spillovers** | | | | |
| Immigration | -0.261** | 0.084 | 19.77 | 40,502 |
| **E. Leave-out Correlated Counties from the *Push* Factor** | | | | |
| Immigration | -0.337*** | 0.06 | 79.71 | 40,502 |
| **F. Leave-Out Own Continent from the *Pull* Factor** | | | | |
| Immigration | -0.238*** | 0.08 | 492.41 | 40,502 |
| **G. Predicted Ancestry in 1975 Only as Shares** | | | | |
| Immigration | -0.248*** | 0.08 | 525.19 | 40,502 |
| **H. Stop Push-Pull in 1960** | | | | |
| Immigration | -0.248*** | 0.08 | 466.57 | 40,502 |

**Table A.4: IV: Effect of Immigration on Yield Spreads Across Bond Characteristics**

This table presents estimates of the relationship between immigration and a municipal bond's yield spread across different bond types. The table displays the IV second-stage results from regressing a municipality's Yield Spread onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variable *Yield Spread* is a municipality's issuing yield adjusted based on its tax-exemption less the maturity matched treasury rate. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. Regressions are estimated by splitting the sample across whether a bond is *insured* in columns (1) and (2), its type of either *revenue vs general obligation* in columns (3) and (4), whether a bond is part of a *refinancing* in columns (5) and (6), and whether the bond is a negotiated bid in columns (7) and (8). Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Yield Spread | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample: | Insured | | Bond Type | | Refinancing | | Negotiated Bid | |
| Split: | Yes | No | REV | GO | Yes | No | Yes | No |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Immigration | -0.089** | -0.260** | -0.164*** | -0.320** | -0.183** | -0.259*** | -0.197** | -0.352** |
| | [0.036] | [0.104] | [0.051] | [0.132] | [0.086] | [0.071] | [0.083] | [0.142] |
| F-Statistic | 103.55 | 580.32 | 1101.36 | 165.02 | 205.55 | 510.18 | 802.72 | 93.85 |
| Observations | 10780 | 29370 | 12042 | 28084 | 10534 | 29582 | 22549 | 17637 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Bond Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

**Table A.5: IV: Effect of Immigration on Use of Bond Proceeds**

This table presents estimates of the relationship between immigration and a municipal bond's stated use of bond proceeds. The table displays the IV second-stage results from regressing a municipal bond's *Use of Bond Proceeds* onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variables include uses across *Transportation*, *Utilities*, *Economic Development*, *Education*, *General*, *Healthcare*, and *Housing*. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Transportation | Utilities | Economic Dev. | Education | General | Healthcare | Housing |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Immigration | -0.005 | 0.002 | 0.008 | 0.017 | 0.004 | -0.003 | -0.023*** |
| | [0.006] | [0.007] | [0.008] | [0.017] | [0.010] | [0.003] | [0.008] |
| F-Statistic | 462.13 | 462.13 | 462.13 | 462.13 | 462.13 | 462.13 | 462.13 |
| Observations | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 | 40502 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Bond Controls | No | No | No | No | No | No | No |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

**Table A.6: IV: Effects on Immigration on Internal Migration and Population Change**

This table presents estimates of the relationship between immigration and internal migration and population change. The table displays the IV second-stage results from regressing measures of internal migration and population onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variables include *% Stayers* which is the percent of returning residents from a given county, *% Joiners* is the inflow of domestic residents scaled by the previous year's population, *% Net Flow* is the inflow of domestic residents (those who join less those who leave) scaled by the previous year's population, and *Log(Population)* is the logarithm of population. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | % Stayers | % Joiners | % Net Flow | Log(Population) |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Immigration | 0.010*** | -0.015*** | -0.005 | 0.365*** |
| | [0.003] | [0.005] | [0.005] | [0.106] |
| F-Statistic | 97.38 | 97.38 | 97.38 | 246.02 |
| Observations | 6073 | 6073 | 6073 | 6302 |
| County F.E. | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes |
| Y-mean | 0.94 | 0.06 | 0.01 | 11.22 |

**Table A.7: OLS: Effect of Immigration on County Revenues and Expenses**

This table presents OLS estimates of the relationship between immigration and a municipality's revenue sources. The table displays the OLS estimates from regressing a municipality's revenue and expense sources onto the inflow of immigrants, *Immigration*. The dependent variables include the logarithm of a county's *Total Taxes*, *Property Taxes*, *Sales Tax*, *Total Intergovernmental Transfers*, *Federal Intergovernmental Transfers*, *State Intergovernmental Transfers*, *Local Intergovernmental Transfers*, *Capital Expenses*, *Roads*, *Parks*, *Judicial*, *Health*, *Police*, and *Welfare*. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: OLS: Effect of Immigration on Revenues

| | Log(Taxes) | | | Log(General) | Log(Intergovernmental Transfers) | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Property | Sales & Rec | General | Total | Fed | State | Local |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Immigration | 0.311** | 0.310** | 0.128 | 0.238** | 0.398*** | 0.450*** | 0.344** | 0.480** |
| | [0.123] | [0.118] | [0.190] | [0.090] | [0.127] | [0.100] | [0.134] | [0.191] |
| Observations | 6280 | 6272 | 4136 | 6258 | 6265 | 4592 | 6263 | 4314 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

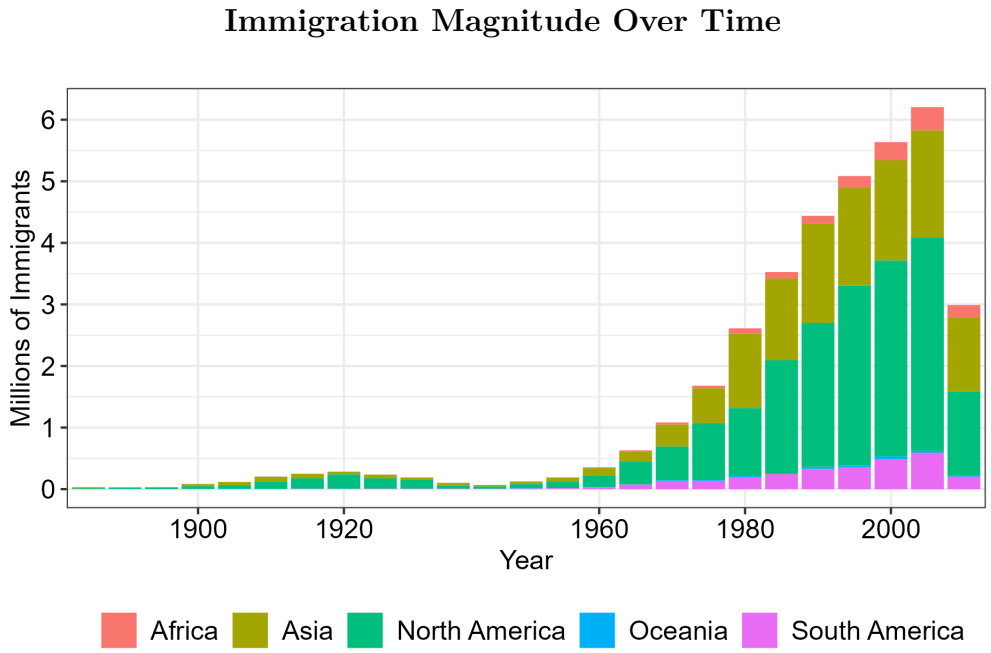
Panel B: OLS: Effect of Immigration on Expenses

| | Log(Infrastructure) | | Log(Public Goods Expenses) | | | | |
|---|---|---|---|---|---|---|---|
| | Capital | Roads | Parks | Judicial | Health | Police | Welfare |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Immigration | 0.264** | 0.247*** | -0.051 | 0.305*** | 0.372* | 0.280*** | 0.339** |
| | [0.113] | [0.087] | [0.197] | [0.065] | [0.197] | [0.103] | [0.155] |
| Observations | 5946 | 5998 | 4631 | 6186 | 5831 | 6194 | 5438 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

# Internet Appendix

**Figure IA.1: Immigration to the United States Over Time**

This figure shows the magnitude and proportion of immigration to the United States by continent over time. Panel A shows the magnitude of immigrants entering the United States by sender continent (excluding Europe) while Panel B provides the breakdown of the proportion of immigrants by their birth continent. Immigration data are based on respondents from the US Census Bureau decennial and American Community Survey.



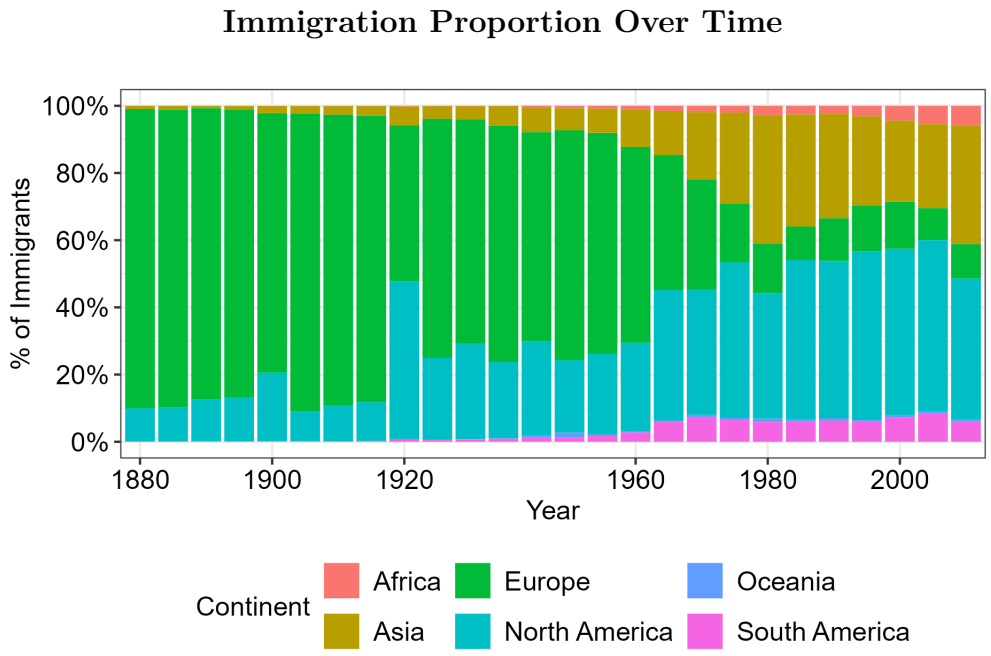



**Table IA.1: IV: Heterogeneous Effects of Immigrant Region on Yield Spreads**

This table presents estimates of the heterogeneous relationship between immigration region of origin and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipal bond's Yield Spread onto various immigrant regions of origin. Immigrants from the given region of origin are instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6 from origin country $o \times$ county $c$ level for countries within the top 20 origin nations as a joint set of instruments. For example, the Central American Immigrant inflows includes immigrants from Mexico, Guatemala, El Salvador, and Honduras. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Yield Spread | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Central American Immigrants | -0.220*** | -0.421*** | | |
| | [0.047] | [0.131] | | |
| Asian Immigrants | | | -0.561*** | -1.293*** |
| | | | [0.126] | [0.368] |
| F-Statistic | > 200 | > 200 | > 200 | > 200 |
| Observations | 40241 | 40241 | 40241 | 40241 |
| State F.E. | Yes | No | Yes | No |
| County F.E. | No | Yes | No | Yes |
| Year F.E. | Yes | Yes | Yes | Yes |
| Bond Controls | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes |

**Table IA.2: IV: Heterogeneous Effects of Immigrant Country on Yield Spreads**
This table presents estimates of the heterogeneous relationship between immigration country of origin and a municipal bond's yield spread. The table displays the IV second-stage results from regressing a municipal bond's Yield Spread onto various immigrant countries of origin. Immigrants from the given country of origin are instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6 from origin country $o \times$ county $c$ level. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. Bond controls include the bond's maturity, amount, whether the bond is callable, insured, a negotiated bid, a revenue bond, tax-exempt, has a sinking fund, is refinancing an existing issuance, and its rating. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Yield Spread | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Mexican Immigrants | -0.298*** | | | |
| | [0.055] | | | |
| Chinese Immigrants | | -1.663*** | | |
| | | [0.422] | | |
| Phillippines Immigrants | | | -1.317*** | |
| | | | [0.394] | |
| Vietnamese Immigrants | | | | -1.372 |
| | | | | [1.051] |
| F-Statistic | 141.71 | 70.02 | 58.33 | 218.38 |
| Observations | 40241 | 40241 | 40241 | 40241 |
| State F.E. | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes |
| Bond Controls | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes |

**Table IA.3: IV: Effect of Immigration on Operating Margin and Balance Sheet of Aggregate County**
This table presents estimates of the relationship between immigration and the aggregate county's operating margin and balance sheet. The table displays the IV second-stage results from regressing the aggregate county's operating margin and balance sheet items onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variables include the logarithm of a county's *Total Revenues*, *Total Expenses*, *Net Margin*$_t$, *Net Margin*$_{t+5}$, *Net Margin*$_{t+10}$, *Total Debt*, *Financial Assets*, and *Debt/Financial Assets*. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. All county entities are aggregated together to create these measures. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Log(Total Revenues) | Log(Total Expenses) | Net Margin$_t$ | Net Margin$_{t+5}$ | Net Margin$_{t+10}$ | Log(Total Debt) | Log(Fin. Assets) | Debt/ Fin. Assets |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Immigration | 0.118*** | 0.116*** | -0.001 | 0.031* | 0.038*** | 0.036 | 0.086 | 0.022 |
| | [0.033] | [0.033] | [0.010] | [0.019] | [0.013] | [0.095] | [0.065] | [0.047] |
| F-Statistic | 256.45 | 256.45 | 256.45 | 256.45 | 256.45 | 256.49 | 256.45 | 256.45 |
| Observations | 6313 | 6313 | 6313 | 6313 | 6313 | 6261 | 6306 | 6306 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

**Table IA.4: IV: Effect of Immigration on Aggregate County Revenues**

This table presents estimates of the relationship between immigration and the aggregate county's revenue sources. The table displays the IV second-stage results from regressing the aggregate county's revenue sources onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variables include the logarithm of a county's total revenue from *Total Taxes*, *Property Taxes*, *Sales Tax*, *Total Intergovernmental Transfers*, *Federal Intergovernmental Transfers*, *State Intergovernmental Transfers*, and *Local Intergovernmental Transfers*. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. All county entities are aggregated together to create these measures. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Log(Taxes) | | | Log(General) | Log(Intergovernmental Transfers) | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Property | Sales & Rec | General | Total | Fed | State | Local |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Immigration | 0.169*** | 0.136** | 0.022 | 0.156** | 0.055 | 0.365*** | 0.021 | 0.476** |
| | [0.063] | [0.064] | [0.133] | [0.059] | [0.059] | [0.090] | [0.065] | [0.201] |
| F-Statistic | 256.45 | 256.45 | 266.85 | 256.42 | 256.42 | 256.45 | 256.42 | 256.84 |
| Observations | 6305 | 6300 | 4988 | 6310 | 6308 | 5860 | 6307 | 6016 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

**Table IA.5: IV: Effect of Immigration on Aggregate County Expenses**

This table presents estimates of the relationship between immigration and the aggregate county's expense sources. The table displays the IV second-stage results from regressing the aggregate county's expense sources onto the inflow of immigrants, *Immigration*, which is instrumented by the exogenous inflow of immigrants over the last five years as described in Equation 6. The dependent variables include the logarithm of a county's total spending on *Capital*, *Roads*, *Parks*, *Judicial*, *Health*, *Police*, and *Public Welfare*. County controls are lagged from five years prior and include population, percent of working population, percent below the poverty line, average income, median age, total employment, and percent working in labor-intensive industries. *Immigration* is per an additional 100,000 non-European immigrants entering a county over the last five years. All county entities are aggregated together to create these measures. County financial data comes from U.S. Census of State and Local Governments. Fixed effects and controls are denoted in the table while standard errors are clustered at the state level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | Log(Infrastructure) | | Log(Public Goods Expenses) | | | | |
|---|---|---|---|---|---|---|---|
| | Capital | Roads | Parks | Judicial | Health | Police | Welfare |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Immigration | 0.084 | 0.309*** | 0.256** | 0.339*** | 0.194 | 0.325*** | 0.339* |
| | [0.074] | [0.114] | [0.124] | [0.121] | [0.124] | [0.092] | [0.183] |
| F-Statistic | 256.43 | 258.69 | 259.06 | 259.48 | 264.40 | 258.84 | 283.91 |
| Observations | 6294 | 5633 | 5247 | 5271 | 5157 | 5533 | 4521 |
| County F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| County Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |