Wages and the Price of Goods in Statewide Markets After a Mass Deportation Event: An Analysis of Operation Wetback

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Carter Warthman will graduate from the Northern Kentucky University Haile College of Business in May 2026, obtaining a Bachelor of Science degree in Economics. Carter was honored to have been part of NKU's economics program, where he was mentored by Dr. Linda Dynan both on this project and in many of his favorite academic courses. While Carter is currently pursuing a J.D. at NKU Chase College of Law through the accelerated 3+3 program, this project helped instill him with an exceptional passion for economics that he hopes to carry into the future.

Abstract

The election of President Trump in 2024 brought immigration policy, and its economic consequences, back into the forefront of American politics. In the face of mass deportations, this study aims to identify how a mass deportation event will impact wages and the price of goods. The mass deportation event studied is named "Operation Wetback," wherein hundreds of thousands of Mexican immigrants were removed from Los Angeles, Houston, San Francisco, and Chicago in the Summer of 1954. A difference-in-difference approach is used to determine the impacts of deportations on personal income and the consumer price index of each city affected, using the city of Cincinnati as a control group. The results indicate that deportations under Operation Wetback did not have a statistically significant impact on the personal income and CPI in the cities affected by deportations, though the coincidence of the baby-boom generation appears to negate the impacts of Operation Wetback.

Introduction

The election of President Trump in 2024 brought immigration policy and its economic impacts to the forefront of American politics. Americans appear worried about the economic consequences of strict immigration policy, which includes a staple promise of the President's campaign: mass deportations.

The objective of this study is to estimate how prices of goods and services, including consumption goods and wages, are impacted by forced emigration events. Many economists have investigated the impact of immigration on local economies over the past several decades; however, the economic impacts of emigration, or the act of exiting a country, have not been as widely studied. In context, mass deportation events can be described as forceful emigration of a foreign-born population from a host country.

Background

The population of the United States has exploded since the 1980s; increasing from more than 226 million residents in 1980 to more than 331 million residents in 2020 according to the Census Bureau (US Census Bureau. "Historical Population Change Data (1910-2020)."). Today, immigrants "account for 14.3% of the U.S. population, a roughly threefold increase from 4.7% in 1970" (Moslimani, 2024). As of 2022, Latin America represented 27% of the immigrant population, Asia represented 28%, and all other immigrants represented the remaining sum. Likewise, most immigrants (77% as of 2022) are authorized to be in the nation. Of the immigrant population in 2022, 49% were naturalized citizens, 24% were lawful permanent residents, and 4% were legal temporary residents, leaving 23% as unauthorized immigrants.

The term to refer to unauthorized immigrants is not "illegal immigrant." Rather, it is "undocumented immigrant," because being in the United States unauthorized is a civil matter, not a criminal one. Under 8 USCS § 1325, illegal entry into the United States is a misdemeanor (8 USCS § 1325). However, roughly 40% of immigrants who entered the United States in 2023 had done so legally and overstayed their visas (Buchholz, 2025).

Lawfully permitted immigrants may be able to attain jobs, while others can be permitted to enter and live in the United States under programs like the H1-B visa, which requires sponsorship by an employer. According to the Bureau of Labor Statistics, "in 2023, foreign-born workers were more likely than native-born workers to be employed in service occupations (21.8 percent versus 15.0 percent); natural resources, construction, and maintenance occupations (13.8 percent versus 7.8 percent); and production, transportation, and material moving occupations (15.2 percent versus 11.8 percent). Foreign-born workers were less likely than native-born workers to be employed in management, professional, and related occupations (36.1 percent versus 45.4 percent) and in sales and office occupations (13.0 percent versus 20.1 percent)" (Bureau of Labor Statistics, 2024). The report concludes, "in 2023, the employment-population ratio—the number of employed people as a percentage of the civilian noninstitutional population—of the foreign born increased to 64.2 percent," indicating that a greater proportion of the foreign-born population (64.2%) was employed relative to the native-born population (59.5%). In the same 2023 Bureau of Labor Statistics report, "median usual weekly earnings of foreign-born full-time wage and salary workers ($987) were 86.6 percent of the earnings of their native-born counterparts ($1,140)." The difference of ~14% less in median wage and salary indicates that foreign-born workers are paid less than native-born workers.

Those in support of mass deportations argue that the presence of immigrants will result in less available jobs for American-workers. According to Steven Camarota, director of research for the anti-immigration think-tank Center for Immigration Studies, "They crowd out the native-born…But putting that aside, the worst aspect of immigration is that it lets us say: 'Who gives a shit? We'll just hire the eager immigrants. And if all these men are on the sidelines in rural America or in cities, what do I care? I got this eager immigrant who's willing to fix my roof or work at McDonald's or babysit my kid — babysitting wouldn't be what men do — or work in construction or be a janitor.' And I think that's why it's so bad" (Sutton, 2025). Economically, this is the idea that immigration is a "zero-sum game", or that if an immigrant-worker receives a job, then an American-worker is going without a job.

The study of mass deportations herein was unable to find substantial evidence to support the idea that immigration, and its impacts on the local economy, are a zero-sum game. However, prior research on the topic suggests links between "zero-sum"-thinking and anti-immigration biases. Dr. Stefanie Stantcheva, Ropes Professor of Political Economy and founder of the Harvard Social Economics Lab, found "that zero-sum thinking can help explain variations in policy views within parties—Democrats who hold more zero-sum views tend to be more strongly opposed to immigration" (Farrar, 2025). This indicates that anti-immigration sentiment may be motivated by bias rather than empirical evidence on the economic impacts of immigration.

Regardless, nativist sentiments have spiked. According to Statista, nearly 64% of respondents say they are dissatisfied with the level of immigration into the country today, with only 28% claiming they are satisfied (Gallup, 2024). This dissatisfaction generates a desire for incoming immigrants to be vetted by federal officers and removed if deemed necessary.

The Department of Homeland Security refers to the return of immigrants to their country of origin as "repatriation."

Repatriations can take several forms, including "returns" (repatriation without penalties), "removals" (repatriation with penalties), and "Title 42 expulsions" (repatriation related to public health and safety). Likewise, immigrants can be removed if they commit a crime in the US or have a criminal history in their country of origin. A Title 42 expulsion refers to Title 42 § 265 of the US Code Service, which allows the United States Surgeon General to prohibit the introduction of immigrants or property from a foreign country into the US when there is a dangerous widespread communicable disease that poses risks to US health in the foreign country (42 USCS § 265). Title 42 was activated during the COVID-19 pandemic from 2020 to 2022.

In 2014, the total number of repatriations was 568,520. In 2016 the total decreased to 437,990. By 2021 the total increased dramatically to 1,334,210 repatriations; 1,071,070 (80.27%) of which were Title 42 expulsions. In 2024, Title 42 expulsions ended and no repatriation in this year was a Title 42 removal. As a result, the total number of repatriations dropped to 777,580 (Office of Homeland Security Statistics, 2025). Most repatriations since 2014 occurred while President Biden was in office from 2021 to 2024, and the dramatic increase can likely be attributed to the Title 42 expulsions during the COVID-19 pandemic. Over those four years, the total number of repatriations was 4,779,640 repatriations (58% of repatriations since 2014).

After taking office in January 2025, the Trump administration took a radical approach to immigration: attempting to end birthright citizenship, attempting to employ the Guantanamo Bay facility as an immigrant detention camp, and ordering the US military to assist in flying immigrants out of the country. As of February 21st, 2025, the Trump administration reportedly deported 37,660 immigrants, "far less than the monthly average of 57,000 removals and returns in the last full year of Joe Biden's administration" (Hesson, 2025). Regardless of the relative deportation levels, the Trump administration called for more arrests and more repatriations, indicating further this administration's hardline approach to immigration.

Economic Convention and Prior Study

What can be expected when immigration occurs? Initially, an increase in the immigrant-population would lead to an increase in the total population. Under economic convention, an increase in population would yield an increase in the total labor supply (L_S) and the total demand for consumption goods ($D_{Consumption\ goods}$) simultaneously:

$$L_S^{Immigrant\ population} \uparrow \Rightarrow L_S^{Total\ population} \uparrow$$

$$D_{Consumption\ goods}^{Immigrant\ population} \uparrow \Rightarrow D_{Consumption\ goods}^{Total\ population} \uparrow$$

Assuming competitive labor markets, it can be concluded that an increase in labor supply will place a downward pressure on wages (ω) in the short run, while an increase in demand for consumption goods would place an upward pressure on the price of consumption goods (P) in the short run:

$$L_S^{(Total\ population)} \uparrow \Rightarrow \omega \downarrow$$

$$D_{(Consumption\ goods)}^{(Total\ population)} \uparrow \Rightarrow P \uparrow$$

The downward pressure on wages would result in an increase in labor demanded (L_D). Capital is fixed in the short run; therefore, the short run impact of an increased immigrant labor supply is the substitution of other inputs of production, like native workers with relatively low-productivity or low-skill native workers receiving a relatively higher wage-rate. Likewise, in the short run, there is a relative increase in demand for consumption goods which will pressure firms into increasing production.

$$L_S^{(Total\ population)} \uparrow \Rightarrow \omega \downarrow \Rightarrow$$

$$L_D^{(Immigrant\ population)} \uparrow + L_D^{(Native\ population)} \downarrow$$

Some firms will observe an increase in demand for their products and be party to cheaper wages in the labor markets. Certain firms may respond by increasing production further:

$$D_{Consumption\ goods} \uparrow \Rightarrow P \uparrow \Rightarrow L_D \uparrow \Rightarrow S_{Consumption\ goods} \uparrow$$

By convention, in the long run, all markets will return to equilibrium. Indicating that over time, prices for consumption goods will decrease and wages will increase to equilibrium:

$$L_S^{Total\ population} \uparrow \Rightarrow \omega \downarrow \Rightarrow L_D^{Immigrant\ population} \uparrow + L_D^{Native\ population} \downarrow$$

$$D_{Consumption\ goods} \uparrow \Rightarrow P \uparrow \Rightarrow L_D^{Total\ population} \uparrow \Rightarrow \omega \uparrow + S_{Consumption\ goods} \uparrow \Rightarrow P \downarrow$$

However, empirical studies have suggested that when immigration occurs, there is a negligible impact on wages and an overall decrease in the price of consumption goods.

For instance, Miami, Florida was subject to a large-scale immigration event in 1980 called the Mariel Boatlift, wherein about 125,000 Cuban immigrants flooded into the Miami labor force between April and October of 1980, fleeing Fidel Castro's regime. Initially, the immigrants were collectively looking for asylum in the South American embassies in Cuba. However, Castro spontaneously allowed all asylum seekers to leave if they wished, furnishing them with passports and the right to safely emigrate. Many made their way to the city of Miami roughly 200 miles away after US president Jimmy Carter declared the event a humanitarian emergency.

The result was a "7% increase in the labor force of Miami and a 20% increase in the number of Cuban workers in Miami," according to Nobel-prize winning economist David Card (1990). After analyzing hourly wage rate data in Miami

between 1979 and 1985, Card (1990) determined that the Mariel Boatlift "had virtually no effect on the wage rates of less-skilled non-Cuban workers." The evidence also suggested that "even among the Cuban population there is no indication that wages or unemployment rates of earlier immigrants were substantially affected by the arrival of the Mariels" (Card 1990). This analysis indicates that in the 6-year time span studied, there is a negligible impact on the hourly wage rate among the native workers. Card (1990) also recognizes that the non-Cuban immigrant population of Miami continued to increase following the Mariel Boatlift, indicating that Miami appeared more attractive to non-Cuban immigrants in the years following the Mariel Boatlift. Despite the finding, Card (1990) looks at Miami's high concentration of non-English speakers and youthful industry as the reason that Miami integrated immigrants into the economy without significant consequence. Card (1990) also mentions that the native-Cuban population moved on to better employment options, and thus the negligible impact on native worker wages.

The simultaneous growth in the labor supply and the consumption goods market caused by an immigration event may indicate why Card (1990) found evidence to suggest that immigration has a negligible impact on wages. Returning to the previous short run convention: increased immigration will lead to an increase in the demand for consumption goods and the supply of labor in a local economy. On the demand-front, this can be described as an increase in sales-transactions between native-sellers and immigrant-buyers as immigrant-buyers purchase goods for their own consumption. On the supply-front, this is an increase in labor-transactions between native-employers and immigrant-workers as native-employers rent out the labor of immigrant-workers. Since neither party to these transactions is harmed, and at least one party is generally better off, then these transactions are considered Pareto-improving transactions. In other terms: an increase in the immigrant population will generally increase the quantity of Pareto[PH2.1]-improving transactions in a local marketplace, which in turn increases the overall efficiency of the economy.

It would be expected that an increase in Pareto-improving transactions would result in an overall increased employment level as immigrant workers "replace" native workers, and native workers subsequently attain new employment at firms that need to increase production in response to the simultaneous increase in demand. The implication would be that as labor demand increases, so too does the wages, thus negating the previous short term downward pressure on wages from immigrant-workers entering the marketplace.

When analyzing the impact of immigrant movement around the country and the how the labor markets responded, Geroge J. Borjas (2001) found that both immigrants and natives were overall better-off by immigration. Notably, it was indicated that the relative education and skill level of native-workers and immigrant-workers can result in overall growth for both parties. "It turns out that part of this efficiency gain accrues to natives, suggesting that existing estimates of the benefits from immigration may be ignoring a potentially important source of these benefits" (Borjas, 2001). The "efficiency gain" being referred to is the market efficiency from having immigrants in the labor force, as the immigrants work a disproportionately higher number of marginalized jobs, an often-neglected role of maximizing efficiency in local markets. However, Borjas discusses that simple estimations about how much indirect benefits are accrued to native workers are relatively small, estimating about $10 billion per year in the US economy.

Notably, Borjas (2001) and Card (1990) both indicate that the ability for an increase in population to produce a negligible impact on wages is dependent on the overall "fitness" of the native population. Whether this new population shares similar languages and cultures may indicate how well the immigrant population integrates with the native population; while the immigrant population's relative skill levels, reservation wages, or education may indicate if the immigrant population is complementary or substitutive to the native population. When studying immigration's impact on the income of various groups in the United States and Europe, Ira Gang and Francisco Rivera-Batiz (1994) found, "data suggests that, in the United States and Europe, education is complementary with unskilled labor and experienced labor in production" (Gang and Rivera-Batiz, 1994). Gang and Rivera-Batiz (1994) further indicate that the differing education and skill-level of immigrant workers relative to native workers will determine whether the immigrants are substitutes or complements in the local labor market. This supposes that there could be local economies in which there are larger quantities of low-skill native workers that could benefit when receiving immigrant workers who are relatively higher in skill. The opposite could also be observed: where the native workers are relatively higher in skill compared to a relatively low-skilled immigrant population. Both scenarios suppose a situation wherein Pareto-improving transactions could be increased by the increased demand and supply of much needed higher or lower-skill labor, increasing labor and wages for more workers overall.

A problem with the above hypothetical economies is that low-skill immigrants may have less ability to choose their destination location than high-skill immigrants. Borjas (2001) also found that "new immigrants who have particular skills to offer are more likely to reside in those states that happen to offer the highest wages for those skills" indicating that immigrant workers with higher skill may choose their host location more than low-skill immigrant workers. This indicates that the scenario in which high-skill immigrant workers immigrate to a low-skill native-worker economy would be irrational, as the high-skill immigrant workers would be more likely choose urban epicenters where the wage for their skillset would be relatively higher.

Understanding the impacts of immigration on the local labor markets and native wage rates can be extended to assist in understanding how immigration could cause the prices of consumption goods to decrease, rather than increase. Like the native population, immigrants need food, clothing, and other goods for their own personal consumption, which would result in an upward pressure on the price of consumption goods in the short run. However, this short run effect may be temporary because empirical evidence indicates that prices of consumption goods decrease after an immigration event occurs.

After conflict erupted in Syria in 2011, the nation of Turkey experienced a large-scale influx of Syrian refugees. When studying the impact of the forced immigration event, researchers in Turkey observed that the "general level of consumer prices has declined by approximately 2.5% due to immigration. Prices of goods and services have declined in similar magnitudes" (Balkan and Tumen, 2016). This study indicates that the influx of Syrian refugees decreased the cost of labor in informal labor markets and thus decreased the price of basic goods. Notably, the refugees in Turkey were a better fit in informal labor markets, or markets where the labor is not registered with the government. Going hand in hand with Balkan and Tumen (2016), Lach (2007) found that after Israel observed a large influx of immigrants from the former Soviet Union, a "one-percentage-point increase in the ratio of immigrants to natives in a city decreases prices by 0.5 percentage point on average" (Lach 2007). Likewise, Patricia Cortes of the University of Chicago discovered that, "a 10 percent increase in the average city's share of low-skilled immigrants in the labor force decreases the price of immigrant-intensive services such as housekeeping and gardening by 2 percent" (Cortes 2008).

It is worth noting that each study gave one of two proposed theories behind the decrease in prices: either the substitution of immigrant workers results in a cheaper product due to lower labor costs, or the price elasticity of demand among immigrant populations is especially high and firms will lower prices of consumption goods to meet quantity demanded. However, it is uncertain whether goods that are produced in informal markets are sold in formal markets. Informal markets are more prevalent in unregulated and developing economies, and by nature, it is difficult to compare the quality of goods produced to those in formal markets.

Hypotheses

Given what is known about immigration, the alternative hypotheses about mass-deportations are: (1) mass-deportations will increase wages; and (2) mass-deportations will increase the price of consumption goods.

Methodology

To assess the impact of emigration on local labor and consumption-goods markets, this study will analyze the impact of a mass deportation event named "Operation Wetback." The objective of Operation Wetback was to use the United States Army in efforts to expel Mexican immigrants from the states of Texas, California, and Illinois. Roughly 1.1 million Mexican immigrants were removed to Mexico under Operation Wetback, however, some sources believe that this figure is overestimated. Many Mexican immigrants left the United States in 1954 and 1955 following the nativist-anger over the Bracero Program, which allowed Mexican workers to enter the United States as agricultural labor in response to labor shortages from 1942-1964. Regardless, the appearance of mass deportations scared many Mexican immigrants into leaving voluntarily. "In Texas, for example, more than 63,000 individuals returned to Mexico of their own volition; U.S. officials detained an additional 42,000 persons in July 1954" (History, Art, & Archives).

Operation Wetback occurred from 1954 to 1955, and mainly impacted the cities of Chicago, Houston, Los Angeles, and San Francisco. To test the above hypotheses in the context of Operation Wetback, this study will utilize a difference-in-difference approach to estimate the impact of deportations on wages and the price of goods. This study will collect relevant income and price data about each city for the period of 1945-1965.

In the difference-in-difference approach, Cincinnati, Ohio, will serve as the control-group for the cities of Chicago, Houston, Los Angeles, and San Francisco to be compared against. Cincinnati has been selected as the control group because the city was not directly identified as a location where a notable number of deportations occurred under Operation Wetback. Since the difference-in-difference approach aims to individually test the treatment groups against the control-group, it is critical to the study to select a control-group that is not heavily impacted by mass deportations under Operation Wetback.

In terms of population and population characteristics, Cincinnati is notably different from the cities that were directly impacted by Operation Wetback. According to the 1950 Census, the ratio of foreign-born persons to native-born persons in Cincinnati was 4.1% in 1950 (total population of 502,010) (U.S. Census Bureau. "Historical Census Statistics on the Foreign-Born Population of the United States: 1850-1990."). This ratio was 14.8% in Chicago (total population of 3,611,580); 13.4% in Los Angeles (total population of 1,965,150); 17.7% in San Francisco (total population of 775,075); and 3.0% in Houston (total population of 594,585). Three of the five cities have a foreign-born to native-born ratio that is greater than 10%, indicating that at least one tenth (nearly one fifth in San Francisco's case) of the population of those cities were foreign-

born persons.

Cincinnati also uniquely shares some similarities with Chicago and Houston, which may offer greater insight into the impact of mass-deportations on cities of varying size and geographical location. For example, Chicago, is the only city in the treatment group that is in the same region as Cincinnati: the Midwest region. Of the other cities in the treatment-group, Houston is in the South-Western region, while Los Angeles and San Francisco are in the Western region. Houston, Los Angeles, and San Francisco are also significantly closer to the Mexican-American border than Chicago or Cincinnati, which may indicate unique effects of deportations on cities based on geographical location. Likewise, Houston appears to have similar population size and foreign-born to native-born ratio as Cincinnati. This would indicate that the city of Cincinnati and the city of Houston may be closer in size and population than the other cities in the treatment group and provide greater insight into the impact of mass deportations on relatively smaller cities than Los Angeles and Chicago; two of the long-time most populous cities in the United States.

Due to data limitations during the 1940s to 1960s, this study will replace wages and the price of consumption goods with the personal income and the consumer price index (CPI) of all goods respectively. The personal income and CPI data will be gathered from the Statistical Abstract of the United States from the years 1945-1965 (U.S. Department of Commerce, "Income payments to individuals, by states and regions"; U.S. Department of Labor, "Consumer price index-all items, and commodity groups, by cities"). CPI data is available for the metropolitan statistical areas (MSA's) that this study is aiming to look at, but personal income data is only available by state. Thus, personal income data from California will replace the cities of Los Angeles and San Francisco, personal income data from Texas will replace the city of Houston, and the city of Chicago and the city of Cincinnati will be replaced with personal income data from the states of Illinois and Ohio respectively.

As such, the proposed hypotheses can be re-written as: (1) mass-deportations will increase personal income in states that are affected by deportations; and (2) mass-deportations will increase the CPI of all goods in city-MSA's that are affected by deportations.

To isolate the effect of deportations on CPI and personal income, the variable D_t will be used as a DUMMY variable to indicate the years when Operation Wetback occurred (1954-1955). This means that D_t will be 0 for all years, except for 1954 and 1955, when deportations were active (D_t = 1). A time trend, *t*, will be used to capture the effects of the time-series data and indicate the impact of time on CPI and personal income.

This study will utilize the following CPI model:

$$P_{i,t} = \beta_0 + \beta_1(Chicago) + \beta_2(Houston) + \beta_3(Los\ \ Angeles)$$
$$+\beta_4(San\ \ Francisco) + \beta_5(D_t) + \beta_6(Chicago \times D_t)$$
$$+\beta_7(Houston \times D_t) + \beta_8(Los\ \ Angeles \times D_t)$$
$$+\beta_9(San\ \ Francisco \times D_t) + t$$

Where $P_{i,t}$ represents consumer price index of each MSA (Cincinnati, Chicago, Houston, Los Angeles, and San Francisco), i, over time, t. In the model, Chicago, Houston, Los Angeles, and San Francisco are DUMMY-variables indicating a value of 1 when this city-MSA's CPI data is active in the model. β_0 will estimate the coefficient of CPI in Cincinnati (control group). β_1, β_2, β_3, and β_4 will estimate the coefficients of CPI in Chicago, Houston, Los Angeles, and San Francisco respectively, that is, in relation to the CPI of Cincinnati. β_5 will estimate the coefficient of the deportation event, D_t. The terms β_6, β_7, β_8, and β_9 will estimate the coefficient of the interaction terms, $(Chicago \times D_t)$, $(Houston \times D_t)$, $(Los\ \ Angeles \times D_t)$, and $(San\ \ Francisco \times D_t)$, respectively. These interaction terms indicate the isolated effect of Operation Wetback on the CPI of each state relative to the Cincinnati-MSA.

To analyze the impact of deportations on personal income, this study will use the following model:

$$I_{i,t} = \beta_0 + \beta_1(CA) + \beta_2(IL) + \beta_3(TX) + \beta_4(D_t) + \beta_5(CA \times D_t)$$
$$+\beta_6(IL \times D_t) + \beta_7(TX \times D_t) + t$$

Where $I_{i,t}$ represents personal income of each state (Ohio, California [CA], Texas [TX], and Illinois [IL]), i, over time, t. β_0 is the coefficient that describes the personal income in the state of Ohio. β_0, β_2, and β_3 estimates the coefficient of personal income in the states of California, Illinois, and Texas respectively, in reference to the control group, Ohio. The variables CA, IL, and TX are DUMMY variables representing a 1 when each state is active in the model. β_4 will estimate the coefficient of the deportation event DUMMY-variable, D_t, or the impact of deportations on personal income. β_5 will estimate the coefficient of the interaction term, $(CA \times D_t)$, which will isolate the personal income of California for during the deportation event. Likewise, β_6 will estimate the coefficient of the interaction term, $(IL \times D_t)$, or the isolated personal income of Illinois during the deportation event; and β_7 will estimate the coefficient of the interaction term, $(TX \times D_t)$, or the isolated personal income of Texas during the deportation event.

The data used in this study is listed in Tables I and II and shown graphically in Figures 1 and 2. Table I and Figure 1 represent the observed CPI for each MSA from 1945-1965 where 1945 is the base year (1945=100). Table II and Figure 2 represent

Table I. Consumer Price Index by City-MSI (1945 - 1965)

Year (t)	Cincinnati	Chicago	Houston	Los Angeles	San Francisco
1945	100.0	100.0	100.0	100.0	100.0
1946	117.9	119.5	119.6	115.6	118.1
1947	131.5	132.9	133.0	124.2	124.4
1948	133.0	137.0	136.5	129.2	130.1
1949	129.6	135.3	136.1	123.7	126.3
1950	139.1	145.5	148.6	134.2	134.8
1951	146.6	154.0	156.6	143.1	143.4
1952	147.8	154.8	157.8	144.9	146.7
1953	150.5	157.2	158.6	145.5	148.4
1954	148.8	158.0	157.8	144.9	146.9
1955	150.0	160.1	157.8	146.2	147.1
1956	154.3	163.4	161.8	150.1	154.3
1957	158.7	169.7	164.7	154.5	158.4
1958	159.6	164.3	164.6	153.9	154.6
1959	161.4	166.9	166.3	157.0	159.3
1960	163.0	169.0	167.6	159.6	161.8
1961	162.8	167.6	169.7	160.6	163.3
1962	165.0	167.4	170.7	162.8	165.3
1963	166.8	173.1	174.3	165.0	168.5
1964	168.7	173.1	175.1	167.3	169.6
1965	170.1	174.9	177.2	170.8	172.8

(1945 CPI = 100)

Table II. Personal Income by State (1945 - 1965) in Millions USD

Year (t)	Ohio	California	Illinois	Texas
1945	8925	13124	10589	6263
1946	9808	14879	12019	6748
1947	11061	16121	13636	8014
1948	12136	17099	15167	8788
1949	11443	17005	14107	9265
1950	12590	18642	15329	9868
1951	14509	21306	17001	11285
1952	15378	23146	17681	11887
1953	16840	24856	18800	12279
1954	17293	27026	19812	13350
1955	18442	29488	20988	14116
1956	19594	32501	22472	15044
1957	20748	35131	23579	16364
1958	20409	36692	24076	17007
1959	21979	40783	25734	18041
1960	22778	43448	26425	18508
1961	23013	45586	27410	19503
1962	24156	49187	28859	20361
1963	25164	52317	30020	21351
1964	26805	56264	32078	23084
1965	28857	59476	34551	24751

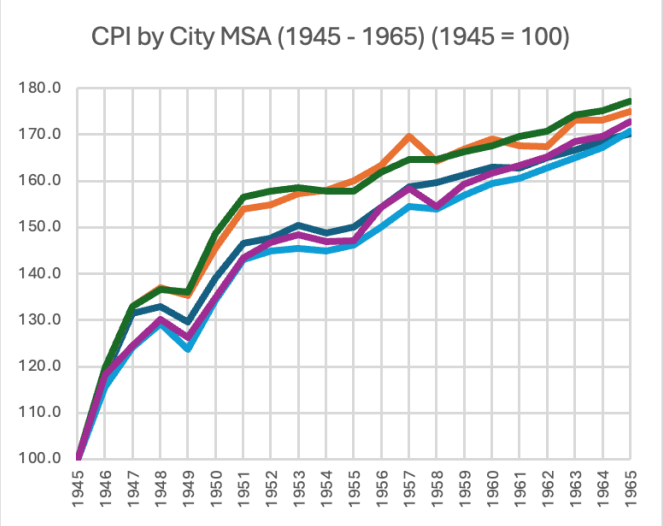

Figure 1. Consumer Price Index by City-MSA over the period 1945 - 1965 (1945 = 100): Cincinnati (dark blue), Chicago (orange), Houston (green), Los Angeles (light blue), and San Francisco (purple).

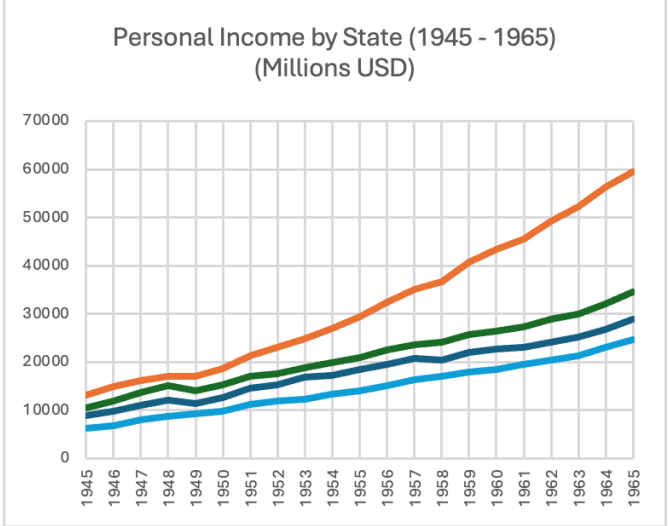

Figure 2. Personal Income in Millions USD by state over the period 1945 - 1965: Ohio (dark blue), California (orange), Illinois (green), and Texas (light blue).

the observed personal income for each state from 1945-1965 in millions of dollars USD. In testing both hypotheses, this study will utilize a significant level of 5% (α=0.05) to indicate statistical significance.

Results

Table III represents the results of the CPI model described in the methodology section with 21 observations of CPI for each MSA identified (total of 105 observations). The model has an Adjusted R^2 equal to 0.8568, indicating that 85.68% of the variance in CPI is explained by the model. The F-statistic is 2.623×10^{-37}, indicating that the model is statistically significant.

The intercept of the model, β_0, has an estimated coefficient of 117.2658 (P-value [0.0000] < 0.05), indicating that the baseline CPI of the control group (Cincinnati) is 117.2658 when all other variables are equal to 0. The estimated coefficient for Deportations is 2.2356, but the P-value is equal to 0.6774, indicating deportations is not statistically significant independent variable.

The city of Chicago has an estimated coefficient of 5.2405 (P-value [0.0273] < 0.05), indicating that the CPI in Chicago increased by 5.2405 points relative to the CPI of Cincinnati. In the city of Houston, the estimated coefficient is 5.9059 (P-value [0.0132] < 0.05), indicating that the CPI of Houston increased by 5.9059 relative to CPI of Cincinnati. The cities of Los Angeles and San Francisco have an estimated coefficient of -3.3856 and -1.3791 respectively. However, the estimated coefficients of both Los Angeles (P-value [0.1509] > 0.05) and San Francisco (P-value [0.5567] > 0.05) are not statistically significant.

Each interaction term represents the isolated impact of deportations on the CPI of each affected city relative to the city of Cincinnati. Each city-interaction term has a P-value greater than 0.05, indicating that the isolated impact on CPI in all cities relative to Cincinnati are not statistically significant. The estimated coefficients of the interaction terms for Chicago, Houston, Los Angeles, and San Francisco are 4.4018, 2.4515, -0.4899, and -1.0518 respectively, indicating that the relative impact on CPI that deportations would have had on each city relative to Cincinnati if the variables were statistically significant.

Table III. Consumer Price Index (1945 = 100)

Regression Statistics	
Multiple R	0.933075
R^2	0.870629
Adjusted R^2	0.856866
Standard error	7.205396
Observations	105

	df	SS	MS	F	Significance F
Regression	10	32842.842	3284.284	63.259	2.623×10^{-37}
Residual	94	4880.267	51.918		
Total	104	37723.109			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	117.2658	2.0931	56.0251	0.0000	113.1099	121.4217
Deportation	2.2356	5.3568	0.4173	0.6774	-8.4005	12.8717
Chicago	5.2405	2.3377	2.2417	0.0273	0.5989	9.8821
Houston	5.9059	2.3377	2.5263	0.0132	1.2643	10.5475
Los Angeles	-3.3856	2.3377	-1.4482	0.1509	-8.0272	1.2561
San Francisco	-1.3791	2.3377	-0.5899	0.5567	-6.0207	3.2625
Chicago×D_t	4.4018	7.5751	0.5811	0.5626	-10.6388	19.4424
Houston×D_t	2.4515	7.5751	0.3236	0.7469	-12.5891	17.4922
Los Angeles×D_t	-0.4899	7.5751	-0.0647	0.9486	-15.5305	14.5508
San Francisco×D_t	-1.0518	7.5751	-0.1388	0.8899	-16.0924	13.9889
Time	2.8486	0.1162	24.5220	0.0000	2.6180	3.0793

Table IV. Personal Income (Millions USD)

Regression Statistics	
Multiple R	0.939318
R^2	0.882319
Adjusted R^2	0.869766
Standard error	3983.210418
Observations	84

	df	SS	MS	F	Significance F
Regression	8	8.92×10^{9}	1.12×10^{9}	70.290	1.00983×10^{-31}
Residual	75	1.19×10^{9}	1.59×10^{7}		
Total	83	1.01×10^{10}			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	3736.0927	1210.2840	3.0870	0.0028	1325.0832	6147.1021
Deportation	371.0454	2961.3524	0.1253	0.9006	-5528.2710	6270.3618
California	14282.6316	1292.3241	11.0519	0.0000	11708.1899	16857.0732
Illinois	3333.6842	1292.3241	2.5796	0.0118	759.2426	5908.1259
Texas	-3567.4737	1292.3241	-2.7605	0.0073	-6141.9153	-993.0320
California×D_t	-3893.1316	4187.6087	-0.9297	0.3555	-12235.2759	4449.0128
Illinois×D_t	-801.1842	4187.6087	-0.1913	0.8488	-9143.3286	7540.9602
Texas×D_t	-567.0263	4187.6087	-0.1354	0.8927	-8909.1707	7775.1180
Time	1310.5107	71.7982	18.2527	0.0000	1167.4812	1453.5401

The time variable, *t*, has an estimated coefficient of 2.8486 (P-value [0.0000] < 0.05), indicating that the CPI increases by 2.8486 points over time.

Likewise, Table IV represents the results of the personal income model from the methodology section. The personal income model has an Adjusted R^2 equal to 0.8697; indicating that 86.97% of the variance in personal income is explained by the model. The model has 84 observations, or 21 observations for each state in the model. The significant F-statistic of the model is 1.00983×10^{-31}. This indicates that the model is a good fit.

The intercept term, which indicates the baseline personal income of the state of Ohio, is 3,736.0927 (P-value [0.0028] < 0.05). The deportation variables estimated coefficient of 371.0454 (P-value [0.9006] > 0.05) is not statistically significant, indicating that the deportation event didn't significantly impact personal income in each state.

The coefficients of the isolated personal income of California, Illinois, and Texas relative to the state of Ohio are 14,282.6316 (P-value = 0.0000), 3,333.6842 (P-value = 0.0118), and -3,567.4737 (P-value = 0.0073) respectively. These coefficients estimate the baseline personal income in each state relative to the state of Ohio. The P-value of each state is less than 0.05, indicating each variable as statistically significant.

However, the interaction terms of each state, which represent the isolated impact of deportations on each state's personal income relative to the state of Ohio, are not statistically significant. [cw1.1][cw1.2]The interaction term for California has a coefficient of -3,893.1316 (P-value = 0.3555), the interaction term for Illinois has a coefficient of -801.1842 (P-value = 0.8488), and the interaction term for Texas has a coefficient of -567.0263 (P-value = 0.8927).

The time trend, *t*, has an estimated coefficient of 1,310.5107 (P-value [0.0000] < 0.05), indicating that with each time observation, personal income increased by 1,310.5107 million dollars.

Discussion and Conclusions

Upon the completion of this study's analysis, the remaining procedure is to determine what the empirical results in the analysis section indicate about the hypotheses made earlier. Recall the following hypotheses: (1) mass-deportations will increase personal income in states that are affected by deportations; and (2) mass-deportations will increase the CPI of all goods in city-MSA's that are affected by deportations.

This study tested two difference-in-difference models. The first model estimated the impact of deportations on CPI for the City-MSA's of Chicago, Houston, Los Angeles, and San

Francisco relative to the control-group, Cincinnati. The second model estimated the impact of deportations on the personal income for the states of Illinois, Texas, and California relative to the control-group, Ohio.

The results from the performance of the CPI model indicate that Operation Wetback did not have an effect on the CPI. The Adjusted R^2 (0.8568) of the model indicates that the model explains 85.68% of the variance in CPI. The F-statistic (2.623×10^{-37}) indicates that the model is a good fit overall. In the CPI model, the estimated coefficient of the intercept (117.2658) indicates the baseline CPI in Cincinnati. The estimated coefficient for deportations is 2.2356 but is not statistically significant because the variable's p-value equals 0.6774. The baseline CPIs of Chicago and Houston increase relative to Cincinnati by 5.2405 and 5.9059 respectively. None of the interaction terms in the CPI model are statistically significant, which indicates that the isolated effects of Operation Wetback do not significantly impact the CPI of each city-MSA relative to Cincinnati. The time trend has a coefficient of 2.8486, indicating that CPI increases by 2.8486 points with each time unit.

Regarding personal income, the results of the analysis indicate that Operation Wetback did not have an effect on personal income. The Adjusted R^2 (0.8697) of the model indicates that the model explains 86.97% of the variance in personal income. The F-statistic (1.009×10^{-31}) indicates that the model is a good fit overall. The intercept coefficient of the model is estimated to be 3,736.0927, which indicates that the baseline personal income in Ohio is $3,736.0927 million dollars. The coefficient for the deportation variable is 371.0454 but is not statistically significant (P-value = 0.9006). Therefore, deportations are not significantly correlated with an increase in personal income. For the states of California, Illinois, and Texas, the estimated baseline personal income coefficients relative to Ohio are 14,282.6316, 3,333.6842, and -3,567.4737 respectively. Each state has a baseline personal income coefficient that is significant, indicating how each state's personal income changes relative to Ohio irrespective of deportations. For each interaction term, none of the states are statistically significant, indicating that the impact of deportations on each state did not significantly impact personal income relative to Ohio. The time trend has a coefficient of 1,310.5107, indicating that the personal income increased by 1,310.5107 million dollars with each additional unit of time. Overall, the results of both models indicate that mass-deportations had little to no effect on CPI and little to no effect on personal income. Therefore, this study rejects both hypotheses.

A true comparison of this study's results to the literature is difficult, as this study is fundamentally about emigration while the literature is fundamentally about immigration. Regardless, Card (1990) indicated that wages were not impacted by the Mariel Boatlift, and the results of this study indicate that personal income was not impacted by Operation Wetback. However, this study found that the CPI of all goods does not appear to be impacted by the deportations under Operation Wetback. This is different than what was indicated by Lach (2007), Cortes (2008), and Balkan & Tumen (2016), which indicated that prices would decrease with immigration.

So, what happened? Certain indicators in the models suggest that the true effects of Operation Wetback are overshadowed by the general population growth of all MSA's and states at the same time as the period analyzed in this study. Consider each model's results. Each model appears to indicate strong fitness to explain the variation in CPI and personal income. Both models have a high Adjusted R^2, and a low F-statistic, indicating strong correlation between the explanatory variables and the dependent variable. Within each model the deportation variable and each interaction-term variables are not statistically significant, indicating that deportations had no effect on the CPI and personal income of each city relative to the control-group. Both models have a time trend with a statistically significant positive correlation with CPI or personal income. Therefore, time appears to increase CPI and personal income more than deportations under Operation Wetback.

In the historical context of the studied period, the year 1945 marked the end of WW2. Hundreds of thousands of men returned to the United States from the European and the Pacific Theaters, marking the beginning of the infamous "baby-boom"-generation (estimated 1946 to mid-1960s).

Table V. Population by State (thousands of persons)

Year	Texas	Illinois	Ohio	California
1945	6,826	7,601	6,916	9,344
1965	10,378	10,693	10,201	18,585

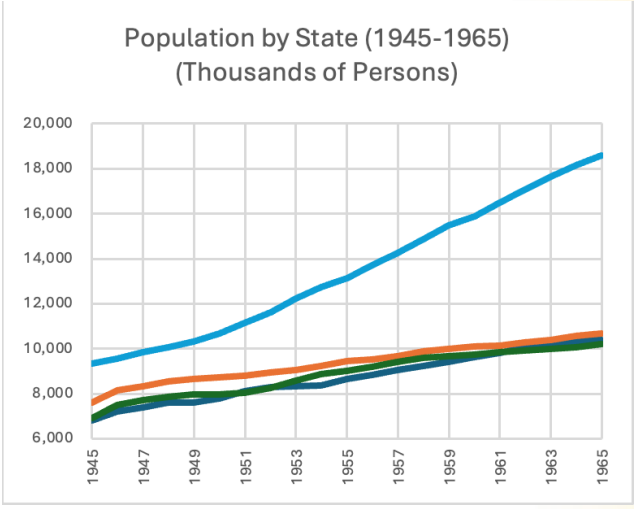

Figure 3. Resident population (in thousands of persons) over the period 1945 - 1965 by state: Texas (dark blue), Illinois (orange), Ohio (green), and California (light blue).

Table V and Figure 3 represent the resident population of each state (in thousands of persons) in 1945 and 1965 (U.S. Census Bureau, Resident Population in Ohio [OHPOP]; U.S. Census Bureau, Resident Population in Illinois [ILPOP]; U.S. Census Bureau, Resident Population in Texas [TXPOP]; U.S. Census Bureau, Resident Population in California [CAPOP]).

As indicated in Table V, the population of Texas grew from 6.826 million people to 10.378 million people (change of +3.552 million people), the population of Illinois grew from 7.601 million people to 10.693 million people (change of +3.092 million people), the population of Ohio grew from 6.916 million people to 10.201 million people (change of +3.285 million people), and the population of California grew from 9.344 million people to a whopping 18.585 million people (change of +9.241 million people). The population of California alone increased by 98.9% from 1945-1965. Overall, the population of Ohio, Illinois, Texas, and California increased by 19.17 million people from 1945-1965. This implies that the change in population during the baby-boom generation negates or otherwise hampers the impacts of "Operation Wetback" in each state studied.

In summation, this study has sufficient evidence to suggest that deportations under Operation Wetback did not have a significant impact on CPI and personal income relative to the control-group. However, it is plausible that the timing of Operation Wetback coincides with factors that otherwise negate or diminish the impacts of the deportation event.

A potential area of further study could be exploring emigration events that are not related to mass-deportations. An example could be the population decline of Detroit from the 1960s to the mid-2010s. During this period, the population of Detroit declined by an estimated 900,000 people. Most of the population that migrated left Detroit (residing in Wayne County) for the suburbs in the neighboring Oakland and Macomb counties. Exploring this emigration event may indicate how migration can impact an economy without a mass-deportation policy in effect. However, future studies should account for the characteristics of migrants, because migrants leaving Detroit to the neighboring counties during the period were predominately higher-skill or higher-pay unionized automotive workers.

Areas to expand this study in future research may be the use of deportation values, or how many people were deported during the period. This would identify if there were potential "per deportation" effects on CPI or personal income. Likewise, the inclusion of more state-level personal income data or more MSA-level CPI data would result in a more comprehensive analysis of how deportations impact the United States as a whole.

Other further research could be a future analysis of the current administration's deportation policy and its impact. At the time of writing, there are articles in the news indicating that immigration into the US has been reduced for both authorized and unauthorized immigrants. Preliminary reports about current events indicate that the federal government is not necessarily deporting unauthorized immigrants at higher volumes but is operating in a manner that is meant to intimidate or alienate immigrants into leaving this country out of their own accord. This appears similar to the strategy behind Operation Wetback, wherein it is estimated that more people left on their own rather than be deported. It would be interesting to perform a future analysis on this period and compare the results to this study, especially because there is more comprehensible and accurate data reporting now relative to the 1950s.

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