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Migration Unit

DISCUSSION
PAPER N°
IDB-DP-815

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October 2020



<http://www.iadb.org>

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Repatriations and Firm Behavior: Effects of Repatriated Migrants with Large Networks*

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Abstract

Can repatriation inflows impact firm behavior in origin countries? To the extent that repatriated individuals bring large networks and know-how they can benefit local firms. We examine this question in the context of repatriation inflows from the United States and Mexico to El Salvador. For this purpose, we combine longitudinal firm-level panel data with inflows of repatriations exploiting municipal and annual variation during the period 2010 to 2017. Our empirical strategy combines variation in the municipality of birth of individuals repatriated in the period 1995-2002, with annual variation on aggregate inflows of repatriations to El Salvador. We find that repatriations increased firm growth through an increment in the number of branches, higher exports, and value-added per worker. We also document that repatriations caused a mechanic increase in the overall supply of labor reducing wages and increasing employment.

Keywords: deportations, firm behavior, labor markets.

JEL Classification: D22, J61, O17

*We are grateful for comments from participants at the IDB Discussion Seminar. We appreciate the support from the Social Security Office and the Ministry of Security from the Government of El Salvador for granting us access the data. We are also grateful to Horacio Vera, Sylvia Yin, and Sarita Oré, our research assistants. We acknowledge funding by the Inter-American Development Bank. The contents of this study are the responsibility of the authors and do not necessarily reflect the views of their employers, funding agencies, or governments.

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I Introduction

What are the effects of repatriation inflows on firm behavior inside origin countries? Can repatriated inflows cause different effects inside origin countries compared to those caused by the typical forced migrant displaced by violence or political instability in hosting locations? We argue that the effects of repatriation inflows inside origin countries deserves a separate analysis. Repatriations are a special and unique case of forced migration that could prompt positive, negative or null effects in the firms located inside origin countries.

As repatriations generally take place from richer to poor- or middle-income countries, repatriated individuals may bring back improved education (for example through higher proficiency in a foreign language), know-how on more advanced technologies, and networks; these acquired “skills” could potentially contribute to improve productive conditions and develop the private sector in origin countries. Additionally, repatriated individuals may have stronger (relative to other migrants) pre-existing family ties and networks in origin countries that could facilitate their integration to formal markets. Even if repatriated individuals bring back more “skills” or are better connected, it is also possible that they might not affect the productive sector in origin countries if migrants are determined to go back to destination countries, and never attempt to join the origin-country economy. Additionally, repatriation inflows can even have negative effects on origin countries. For instance, [Sviatschi \(2019\)](#) documents that the increase in criminal deportations from the United States in 1996, exposed more kids to gang leaders, resulting in lower education investments, and [Rozo et al. \(2020\)](#) show that repatriated inflows from the United States to Mexico induced higher homicide rates in proximity to the repatriation centers in Mexico. Consequently, the direction of the impacts on repatriation inflows in firm behaviors of origin countries, remains an empirical question that we aim to address in this paper.

We examine the impacts of repatriation inflows from the United States and Mexico on formal firms located in El Salvador. In the last forty years, El Salvador has been a net source of irregular migrants to other regions in North America, predominantly the United States. In fact, deportations

intensified during the country's brutal civil war (1980-1992), when a vast number of Salvadoran irregular migrants fled conflict and harsh economic conditions in their homeland for better opportunities abroad. The level of deportations was stable around 4,000 individuals per year after 1999, and increased dramatically after 2002, when the United States strengthened migration enforcement following the terrorist attacks of 2001.¹ Ever since deportations to El Salvador have maintained steady growth rates reaching almost 50,000 individuals per year by 2018.

In principle repatriation inflows can be understood as a labor supply shock as more workers enter the labor market. However, repatriation inflows could also represent a labor demand shock as repatriated individuals consume and may affect the production technologies, know-how and firm trade in origin countries. Following this logic, we first examine the effects of repatriation inflows as a *supply shock* evaluating its effects on firm wages and employment. In a second step, we study the effects of repatriation inflows on outcomes that could be more directly linked to the *demand shock* including firm entry, growth (measured as number of branched), productivity (measured as value-added per worker), and trade.

We carry out our empirical analysis combining repatriation information from El Salvador's migration authorities with firm longitudinal data from multiple governmental institutions. Our period of analysis covers the years 2010 to 2018 and employs municipal and annual variation.

Considering that repatriated migrants may choose their location depending on local economic conditions, or that, their location may have been forced on them by migration authorities, based on specific economic or political variables, we cannot simply estimate a linear regression of firm outcomes on repatriation inflows. To account for these possible biases we use a shift share instrument that exploits two sources of variation: i) annual variation from national repatriation inflows, and ii) municipal variation on birth municipality of individuals repatriated in the period 1995-2002. Based on our 2010-2018 sample, we know that deported individuals overwhelmingly go back to

¹As documented by [Rozo et al. \(2020\)](#) after 2001, resources devoted to enforcing immigration law increased greatly. With the creation of the new Department of Homeland Security, resources devoted to both border enforcement (the responsibility of the U.S. Customs and Border Protection) as well as interior enforcement (the responsibility of the newly-created Immigration and Customs Enforcement agency) expanded.

their birth municipalities, with about 70% of them going back to the municipality in which they were born. Repatriated individuals during 1995 and 2002 came back to El Salvador before the United States drastically strengthened and changed their migration enforcement in response to the terrorist attacks of 2001. The changes in the United States migration policies not only included a sudden increment in the number of repatriations, they also modified the strategies of deportations.

We document that repatriation inflows constitute both a labor and demand shock in the Salvadoran labor markets. Our estimations indicate that one standard deviation increase in the share of deportees to total population at the municipal level increases employment by 0.87 percent and reduces monthly salaries by 1.1 percent of the average firm. The effect on employment is equivalent to an increase of 0.25 workers for the average firm's size. The effects on salaries are mainly driven by workers employed in low-skilled intensive sectors, especially in the construction and factory industries.

We also document positive effects of returned migrants on firm's growth through new branches. When the share of deportees increases by a standard deviation, the number of branches per firm located in that municipality increases by approximately 7.2 percent. We find no evidence of the impact of returnees inflows on the probability of entry for each firm. Second, we explore if returnees are impacting firm's outcomes by bringing new know-how and commercial networks. Indeed, we find small but statistically significant effects on firms' exports in response to larger returnees inflows. These results are driven by both micro-sized and large firms. Finally, our estimations indicate that a positive returnees inflow improves firm productivity, proxied by value-added per worker. We document that a standard deviation increase in the share of repatriated individuals increases the labor productivity by 2 percent, which accounts for a total of \$480 of net sales per worker.

Relation to the Literature: Our paper contributes to the growing literature that examines the effects of forced migration. The impacts of large international forced migration inflows in hosting countries have been largely centered around studying the impacts of forced migrants in the

local workers;² with a smaller groups of studies exploring the effects of refugee inflows in general prices,³ political outcomes,⁴ education outcomes,⁵, health,⁶ and overall economic growth.⁷

More recently, new studies have emerged examining the effect of forced migration flows in firms located inside developing countries, which receive the lion's share of forced migration and have large informal sectors. One of these studies examines the effects of Syrian migration in Turkish formal firms (see [Altindag et al., 2020](#)). The authors document that firms are positively affected by the Syrian refugee shock, and that, firms operating in the hospitality and construction sectors are disproportionately affected. The positive effects observed are partly explained by the fact that Syrian refugees reduce labor costs for firms, brought capital from Syria, and that, they are also a large demand shock in the service sector, where Syrians are predominantly employed.

Another paper by [Rozo and Winkler \(2019\)](#), examines the effects of Colombian Internally Displaced Persons (IDPs) on firm behavior. In contrast, to the Turkish context, IDPs had a negative effect on formal businesses in Colombia. The authors document that the effects are explained by the fact that IDPs disproportionately worked in informal economic activities that competed with formal businesses, displacing them from the market. Moreover, IDPs were poorer and had a predominantly agricultural experience, as such, they had a harder time joining formal firms.

Our main contribution to these group of studies consists on examining the impacts of repatriated individuals that had previous ties with the countries where they are returned, as they themselves lived there. As such, repatriated individuals have stronger information and networks to integrate more quickly to the productive economy. Moreover, because repatriations typically take place from developed to developing countries, repatriated individuals may bring back more knowledge, education, and networks; which could help advance and transform productive firms in origin countries.

²See [Card \(1990\)](#); [Ruiz and Vargas-Silva \(2015\)](#); [Del Carpio and Wagner \(2015\)](#); [Ceritoglu et al. \(2017\)](#); [Borjas and Monras \(2017\)](#); [Clemens and Hunt \(2017\)](#); [Mayda et al. \(2017\)](#); [Peri and Yasenov \(2018\)](#).

³See [Alix-Garcia and Saah \(2009\)](#); [Balkan et al. \(2015\)](#); [Tumen \(2016\)](#); [Balkan and Tumen \(2016\)](#); [Al-Hawarin et al. \(2018\)](#).

⁴See [Dustmann et al. \(2019\)](#); [Rozo and Vargas \(2018\)](#).

⁵See [Assad \(2019\)](#); [Namen et al. \(2020\)](#).

⁶See [Ibáñez and Rozo \(2020\)](#).

⁷See [Alix-Garcia et al. \(2018\)](#).

The impacts of repatriations on hosting countries are not yet well understood and have only been explored by [Rozo et al. \(2020\)](#), who study the effects of Mexican repatriations in homicide rates; and [Sviatschi \(2019\)](#) who examines whether peer effects generate changes in education investments in the areas where deported criminals are located in Central America using administrative data in El Salvador. Our paper also contributes to the general analysis of how repatriations affect origin locations, with a special focus on firm behavior.

II Conceptual Framework

There are two direct channels through which repatriations can affect labor markets in an economy with no market segmentation (i.e., no formal and informal divisions): a positive supply and demand shock. Ultimately, the effects that we observe empirically in wages and employment will be a combination of both shocks and of their relative strength.

1. *Supply Shock*: repatriated individuals will increase the overall supply for workers. Although, it is likely that some of them will try to go back to the United States, as long as a share stays in El Salvador, we should observe a positive supply shock in labor markets.

The prediction from a simple supply and demand model, of a positive supply shock are *lower wages* and *higher employment*.

2. *Demand Shock*: there are many channels through which repatriated individuals can prompt a positive demand shock. The most obvious one, is through higher consumption levels that are being pushed by the larger population shock.

A second, more indirect channel, through which repatriated individuals can affect firms demand for labor are through intrinsic changes that they can cause on firms production processes if they are employed on those firms. For example, repatriated individuals can bring know-how and commercial networks from the United States.⁸ As such, repatriated indi-

⁸Examples of these effects have been documented by [Cadot et al. \(2011\)](#); [Imbs and Wacziarg \(2003\)](#); [Cadot et al.](#)

viduals employed in firms can increase firms productivity or even change their production technologies. How much change is observed in firms' technologies will also depend on how complementary or substitute repatriated individuals are to the other inputs of production and also on their skill composition.

The prediction of a simple model of supply and demand will indicate that repatriated individuals will shift firms demand to the right *increasing wages and employment*.

In sum, we expect that a large sudden repatriation shock should induce *higher employment* and a change on wages that *will be dependent on the strength of the relative change in labor supply and demand*. If the demand shock is larger than the supply shock, wages should increase, and vice versa.

II.1 Will repatriated individuals join the informal or formal economy?

It is important to highlight, however, that the predicted effects of a simple labor supply and demand model are dependent on whether repatriated individuals join the formal or informal productive economies. For example, if repatriated individuals work and consume in the informal businesses, we will likely see a positive demand and supply shock in that sector with other indirect effects in the formal sector. Those indirect effects include, for example, higher competition with informal economic activity. In such scenario the effects on the formal businesses can be negative.

On the opposite situation, if repatriated individuals work and consume in the formal sector then formal firms will likely be positively affected by their arrival.

Considering that in practice, repatriated individuals will likely participate in both markets, the overall effect that they can have on formal businesses remains an empirical question.

(2011); [Bahar et al. \(2018\)](#).

III Local Context: Repatriations to El Salvador

Migration flows from El Salvador to North America have been high since the beginning of El Salvador Civil War between 1980 and 1992. Most migrants seek to reach and settle in the United States, where—starting in the 1980s and 1990s—they had communities and networks they could rely upon to support their assimilation into the country (Contreras, 2019). In the United States, Salvadorans acquired different skill sets—including English—depending on their age upon arrival and the community context (Menjívar, 2000).⁹

Following a change in American immigration policy after the approval of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 -and the strengthening of immigration enforcement following the September 11, 2001, attacks, mass deportations ensued, heavily affecting undocumented Salvadoran communities throughout the United States (see Figure 1). In many cases, given the young age at which they left, many returnees did not know much about their homeland, tried to get back to the United States, and found it difficult to re-assimilate into Salvadoran society (particularly the high rate of informality that was not as prevalent in the United States) (Cardoso et al., 2016). Fifty percent of the repatriations to El Salvador come from the United States and approximately forty percent come from Mexico (see Figure 2).

Although Salvadoran migration abroad has been constant since the second half of the twentieth century, the makeup of the migrants has changed over time. Most of the migrants from the 1980s and 1990s tended to be civil war refugees. Most of the individuals that migrated during this period successfully settled in the United States, albeit their legal status has always been under question (Menjívar, 2000). Since the 2000s, the migrants are predominately driven out by El Salvador's poor and deteriorating economic conditions, as well as the violence brought about by the rise of gang's activity throughout the country (Cardoso et al., 2016; Menjívar, 2000). In the 2010s, the economy and violence keep being the main push factors, but there is also a rise in unaccompanied

⁹Human capital accumulation by Salvadoran migrants is not limited to that for licit economies. Many Salvadorans acquired criminal capital from Mexican gangs, particularly in they coexisted in urban settings such as Los Angeles and New York.

minors trying to reach the United States for family reunification (Clemens and Hunt, 2017). At the same time, Mexico has also increased its enforcement, leading to more repatriations as the migrants are en route to the United States.¹⁰

III.1 What are the characteristics of Salvadoran repatriated individuals?

Summary statistics of demographic characteristics of returned migrants are shown in Table 1, Panel B. Almost 71% of the deportees in our sample have completed primary education, whereas only 4% have secondary education, and 2% have completed technical education or university. Almost 80% of them were deported right after entering to either the United States or Mexico. Finally, we have data on English proficiency of 45% of our sample, which indicate that 51% out of the total of returnees do not speak English.

When comparing the levels of education of Salvadorian repatriated individuals we observe that they have better education than natives (see Figure 3). This observation is in line with the idea that repatriated individuals were able to improve their knowledge abroad.

We also compare the sectors where Salvadorans work inside the United States with the one of natives in El Salvador (see Figure 4). The figures show that the majority of Salvadorans living in the United States work in commerce, manufacturing, and the primary sector.

In sum, the majority of deportees have not spend a long time in the United States, but for those who do, we observe higher education levels of Salvadoran migrants in the United States relative to those of non-migrants in El Salvador.

¹⁰With the rise of enforcement at the Southern Border, the number of repatriations “upon arrival” (in the United States) have also increased. These individuals do not tend to acquire much human capital as they never manage to settle in the United States.

IV Empirical Methodology

IV.1 Identification Strategy

The simplest empirical strategy to estimate the effects of repatriations on firm behavior is given by the following specification

$$y_{imt} = \alpha_m + \lambda_t + \theta \text{Repatriation Share}_{mt} + \gamma \mathbf{X}_{mt} + \epsilon_{imt} \quad (1)$$

where Y_{imt} is the outcome of interest for firm i located in municipality m in year t . $\text{Repatriation Share}_{mt}$ stands for the population share of returnees that arrive to each municipality m at year t . X_{mt} is a vector of municipal characteristics observed at baseline interacted with year trends. m and t represent municipality and year fixed effects, respectively.

The estimates of θ in this specification, however, could be biased if we ignore that repatriated individuals likely choose their municipal locations inside El Salvador or else it is chosen for them by migration authorities. Although more than 60% of the returnees in our sample go back to their municipalities of birth, one legitimate concern is that, for example, returnees go disproportionately to municipalities with more employment opportunities, less labor market competition, or higher wages. Consequently, we construct a shift-share instrument as follows:

$$\text{Predicted Repatriations}_{mt} = \frac{R_{m1995-2002}}{R_{1995-2002}} \frac{\Delta R_t}{L_{mt-1}} \quad (2)$$

where $\frac{R_{m1995-2002}}{R_{1995-2002}}$ is the share of returnees born in municipality m in the period 1995-2002, ΔR_t is the change in the number of repatriations at the national level at time t , and L_{mt-1} is the population at the municipality level in the previous period. Consequently, our instrument exploits two sources of variation: (i) changes in annual variation from national repatriation inflows to El Salvador, which are likely exogenous to municipal firm behavior, and (ii) the birth municipality

of repatriated individuals in the period 1995-2002. We choose municipality of birth for individuals repatriated in 1995-2002, as they correspond to the period before the United States drastically strengthened and changed immigration enforcement in response to the terrorist attacks of 2001. The changes in United States policy not only included a sudden increment in the number of deportations, they also changed the locations and strategies of deportations.

IV.2 Data

We use multiple sources of administrative data to construct a municipal annual panel of individual firm outcomes and aggregated repatriation inflows.¹¹ We observe data for all of the 262 municipalities in El Salvador.

1. *Repatriations.* The data on returned migrants comes from records of the General Directorate of Migration (*Dirección General de Migración y Extranjería*, DGME) and is available at the individual level. In total we have information on 403,851 repatriations of Salvadoran citizens from 1995 to 2018. Starting in 2011, we have detailed information on all returnees that includes: date of repatriation, date of birth, marital status, level of education, gender, time spent abroad, country in which individual was living, whether the individual speaks English, motive for emigrating, municipality and city of birth, address of residence after repatriation, occupation and whether the subject has any criminal records. For repatriations between 1995 and 2010, we observe the motive of deportation, date, intended place of residence after repatriation, and date and place of birth.

2. *Firm Longitudinal Data:* We combine two sources of firm data.

- Instituto Salvadoreño de Seguridad Social [Salvadoran Institute for Social Security]: Monthly data between 2010 and 2018 on firms' performance, salaries, and formal employment comes from the Salvadoran Institute for Social Security. The data set covers

¹¹2010 to 2018 is the period for which we have the most consistent set of data across *all* of our data sources. However, we do have data prior and after the aforementioned period, which we use for some limited empirical exercises.

approximately 380,000 formal firms in the country and includes: annual wages, number of employees per firm separated by gender, and number of branches per firm. It also includes information on firms' general characteristics—such as its location (municipality and department), economic sector and activity, the year it started operating, and whether the firm stopped operating.¹²

- Ministry of the Economy: We also use the Annual Economic Surveys (*Encuestas Económicas Anuales*, EEA) from the Ministry of the Economy for 2007 to 2016. The surveys provide information on number of employees, inventories, taxes, and expenditures.

3. *Additional municipal controls.* Other municipal covariates employed in our analysis include population, crime, geographic controls, and political variables. Information on crime comes from the National Civilian Police of El Salvador (*Policía Nacional Civil*, PNC) and socioeconomic and demographic data comes from a report compiled by the United Nations Development Program (UNDP) in 2009.¹³

Descriptive statistics of our outcomes of interest at the firm level are presented in Table 1, Panel A. On average, firms pay a monthly salary of US\$340 per worker, with a slightly difference between men and women (6.5% more to male workers). The average firm in El Salvador employs 28 workers—44% of them are women. The average number of branches per firm is 2.17. The average firm lives in a municipality where returnees represent about 0.05 percentage points of the local population. There is substantial municipal variation in repatriation shares across El Salvador during our period of analysis (see Figure 5).

In our sample we observe the location of the branch of each firm. Since a firm can have branches in many municipalities, we impute the location of each firm according to the location of

¹²The economic sector classifications follow those of the International Labor Organization's (ILO) International Standard Classification of Occupations (ISCO).

¹³El Salvador has not conducted a census since 2007 and reliable and recent data for all of the country's municipalities is lacking. The 2009 UNDP report contains the most detailed demographic and socioeconomic measures that cover all of El Salvador's 262 municipalities.

the biggest branch. In our robustness tests, we document that our results are not dependent on this choice.

V Results

We estimate equations (1) and (2) through an instrumental variable panel methodology exploiting municipal-year variation. We first study repatriations as a supply shock, documenting the effects of repatriation inflows on wages and employment at the firm level. Then, we expand our analysis to the demand effects of repatriations in the labor market. To explore this channel, we present the effects of impacts of returned migrants on firm entry, growth (measured as branches and sales), and trade. For all our estimations, we present an OLS regression (Panel A), a reduced form regression (Panel B), and a 2SLS regression (Panel C and D).

V.1 Repatriations as a supply shock

First, we explore the effects of repatriations as a supply shock on wages and employment. The estimated coefficients using equations (1) and (2) are presented in Table 2. As expected, a naive estimation of the effects of returned migrants on formal sector outcomes using OLS indicates that the impact of the share of deported migrants is statistically insignificant, indicating an attenuation bias due to the endogeneity of the share of deported migrants. For example, the attractiveness of some locations where firms are paying higher salaries or demanding more employment can motivate migrants to move into those municipalities when they are deported. As a result, the greater number of returned migrants will just clear the higher labor demand in those locations. To address the endogeneity of immigrants' location choices, we implement the instrumental variables approach described in the empirical methodology section. The results are presented in panels B-D in Table 2. Our estimations indicate that an inflow of repatriations equivalent to one standard deviation (an increase of 0.4 percentage points in the inflow of returnees that accounts for an 80

percent increase in the exposure of the average firm) has negative impacts on the average monthly salary paid by the firms by approximately 1.1 percent ($\exp(-0.264 \times 0.04) = 0.011$), which corresponds to a reduction of about US\$3.1 from the average monthly salary paid by them. We also find small and statistically significant impacts of returned migrants on employment. A one standard deviation increase in the inflows of returnees raises employment in the average formal sector firm by 0.87 percent, which is equivalent to an increase of 0.25 workers for the average firm's size.

We next explore the differential effects of returned migrants on labor outcomes by gender. Considering that most Salvadoran migrants are men (around 80 percent in our sample), it is possible that they will mostly affect male employment and salaries upon their return. However, it is also likely that the reduction in the cost of labor would induce firms to hire women too. Estimated effects on wages and employment data separated by gender are presented in Table 3. Columns (1)-(2) present labor outcomes for male workers and columns (3)-(4) present similar results for female employees. We find that the reduction on the average salaries due to the inflow of deportees is similar for both men and women. Specifically, an inflow of returnees equivalent to one standard deviation will reduce the average salary paid by the firms to male and female workers by approximately 1.0 and 1.1 percent per month, respectively. These percentages correspond to US\$2.9 and US\$3.0 reductions from the average worker salaries paid by the firms to male and female employees, respectively. In terms of employment, only the effect on female employment is statistically significant and corresponds to an increase of 0.8 percent. However, although the estimated coefficient for male employment is not statistically significant, the magnitudes of both effect are similar. In sum, these results indicate that the wage reduction and job displacement effects generated by the deportees in the formal labor market seems not to be driven by gender differences.

Finally, we also test for differences in the impacts of returned migrants on average salaries by type of worker. As presented in Table 1, almost 64 percent of the returnees sample has completed only primary education. Thereby, we expect that the repatriation shock should affect mostly low-skilled professions. Table 4 shows the heterogeneity of the repatriation shock on salaries by type of

worker using data from the Annual Economic Surveys (AES). Only the wages of laborers (defined as people working in manual labor types, especially in the construction and factory industries) are negatively affected by the repatriation shock. A standard deviation increase in the share of returnees reduce laborers wages in 0.82 percent.

V.2 Repatriations as a demand shock

In this subsection, we turn to study the potential channels through which returnees influx can generate a positive labor demand shock in the local economy. Our analysis focuses on firm entry, number of branches, exports and imports, and value-added per worker.

The returned migrants influx shock can determine either the entry decision of a firm (extensive margin) or the growth decision through new branches (intensive margin). Both decisions will constitute a labor demand shock. We explore these effects using data from the Social Security Office. The results are presented in Table 5. The monthly variables measuring these outcomes are firm entry (column 1), total number of formal firms at the municipal level (column 2), and total number of branches per firm (column 3). We find positive effects of returned migrants on the intensive margin of firm growth. Our estimations indicate that when the share of deportees increases by a standard deviation, the number of branches per firm located in that municipality increases by approximately 7.2 percent. We find no evidence of the impact of returnees inflows on the extensive margin of production, estimated as the probability of entry for each firm.

Another channel through which repatriated people can impact firm's outcomes is by bringing know-how and commercial networks from the United States. As a result, firm productivity could be improved or the number of commercial partners might increase. To explore this channel, we included two additional analyses. First, we start exploring additional measures of firms' production. Using data from the Economic Surveys at the firm level, we estimate the impact of repatriations on annual firms sales, exports and imports. These estimated effects are presented in Table 6. As predicted, firms are increasing their exports in response to larger returnees inflows. However, the

estimated coefficients represent a very small economic impact. Particularly, the estimates in column (2) suggests that when the share of returnees inflow increase by one standard deviation, the total exports increases by 0.19 percent only. Estimated coefficients for sales and imports are not statistically significant. A potential concern with the estimated effects on sales, exports and imports is that they can be driven by large firms. However, 68 percent of firms in El Salvador are micro-firms (up to 10 workers),¹⁴, thereby the effects can be driven by this high concentration of firms. To understand if firms' size is driving the effects, we implemented a heterogeneity analysis and divided the sample by firm size. Results are presented in Table A.2 in the Appendix. In fact, the effects are driven by both micro-sized and big firms.

Second, we study if a positive returnees inflow at the municipal level improves firm productivity. We use total value-added and value-added per worker as proxies for labor productivity. This is estimated as total sales net of the cost of intermediate goods and services. The results of these estimations are shown in Table 7. The estimated coefficient for value-added per worker (column 1) indicates that a standard deviation increase in the share of repatriated individuals increases the labor productivity by 2 percent approximately, which accounts for a total of \$480 of net sales per worker.

V.3 Robustness checks

We carry out two robustness checks of the main results. Appendix A.0.1 shows the estimates of Tables A.3, A.4 and A.5, but using an alternative sample. In particular, they exclude from the sample firms and branches that changed locations during the period covered by this analysis. This is important as this movement may not be random and as a result it could introduce a bias into our estimates. As seen in Tables A.3 and A.4, the impacts of return migration on wages continues to be negative and statistically significant. In fact, the absolute value of the point estimates increases slightly. However, the estimated positive effects on the total number of workers becomes less pre-

¹⁴Descriptive statistics by size of firm are presented in Table A.1 in the Appendix section.

cise and they are no longer statistically significant. The results change more significantly when looking at the impacts on firm entry and the number of firms. As seen in Table A.5, returnees have a positive impact on these outcomes when using the restricted sample. Nevertheless, these findings continue to be consistent with the hypothesis that municipalities that received more returnees experienced both a labor supply and labor demand shock.

VI Discussion

Our results indicate that returnees inflows constitute both a demand and supply shock in the local labor markets. First, the positive effects of the repatriation share on the number of branches, exports and value-added per worker shed light on an increase production that can drive to a greater demand for labor from firms. Second, the repatriation by itself generates a mechanic increase in the overall supply of labor. The estimated effects of repatriations on wages and employment indicate that the labor supply was greater than the labor demand shock. As a result, in the new equilibrium, total employment was higher but wages were lower.

These results are in line with the evidence that migration inflows can increase competition in the labor market, reducing salaries of incumbent workers (Borjas, 2003). This impact is larger than that found by Rozo and Winkler (2019), who find no impacts of Internally Displaced Persons (IDPs) on average wages paid by firms in Colombia. However, it is smaller than that estimated by Dustmann and Glitz (2015), who find that a 1% increase in migration inflows reduces median wages by about 0.41%. These findings indicate that despite the informal-formal segmentation of the Salvadoran labor market, average formal wages do seem to respond, albeit marginally, to the inflows of returnees. In contrast with the findings of ?, we do find effects on the total number of employees. Since returnees are more likely to join the informal sector, these results suggest that despite the reduction in the cost of labor, formal firms seem to slightly change their employment decisions in response. It is important to emphasize that the data set only covers firms in the formal sector, thereby we cannot claim that returnees have no impact on employment or firm growth in

the informal sector.

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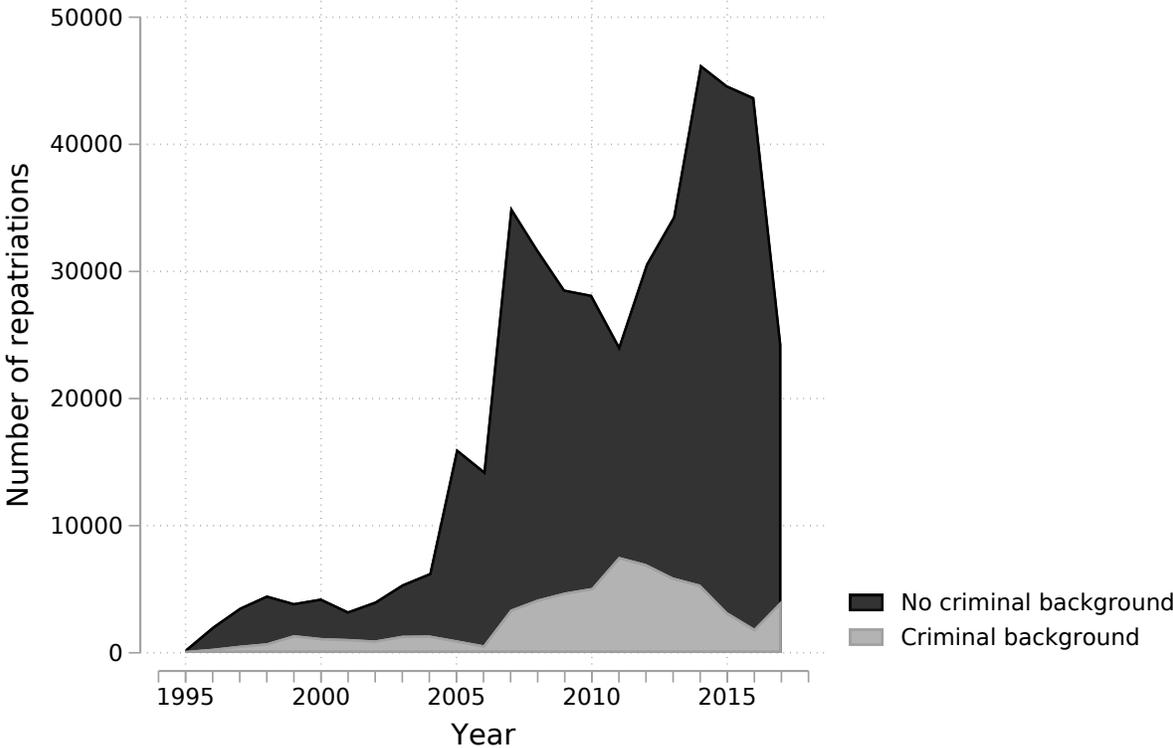
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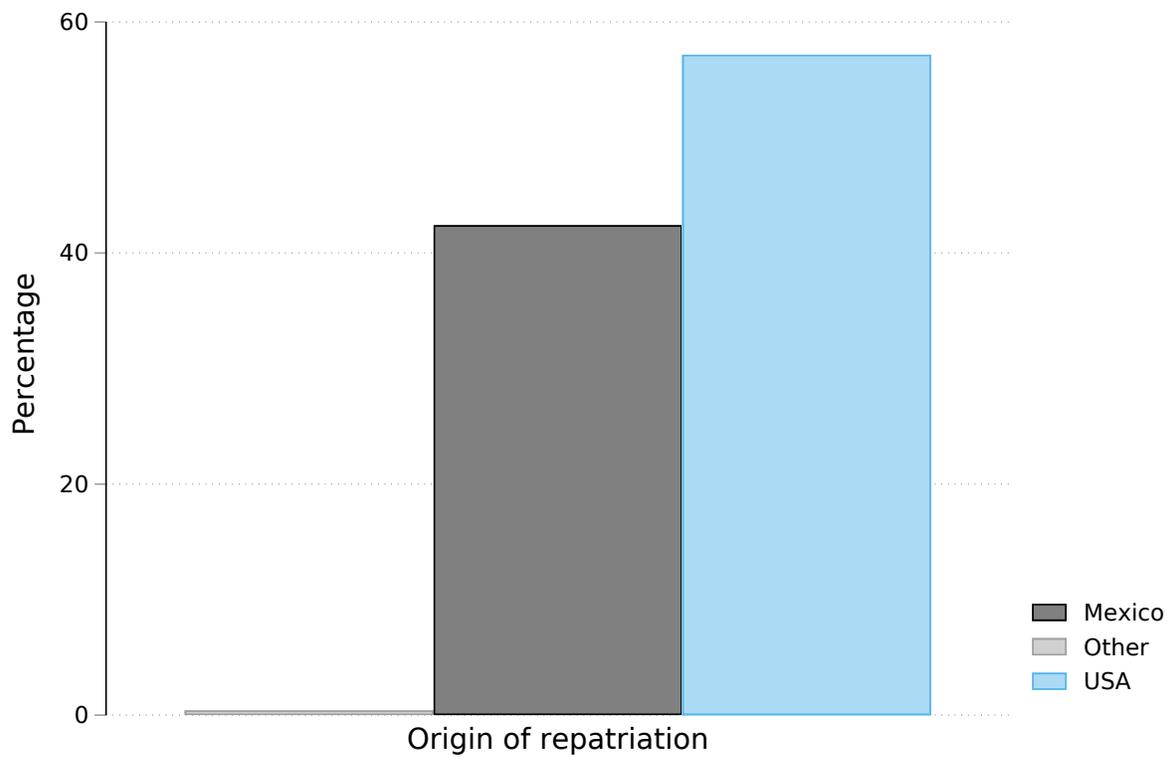
VII Figures and Tables

Figure 1: Sharp Increment of Repatriations to El Salvador between 1995 and 2018



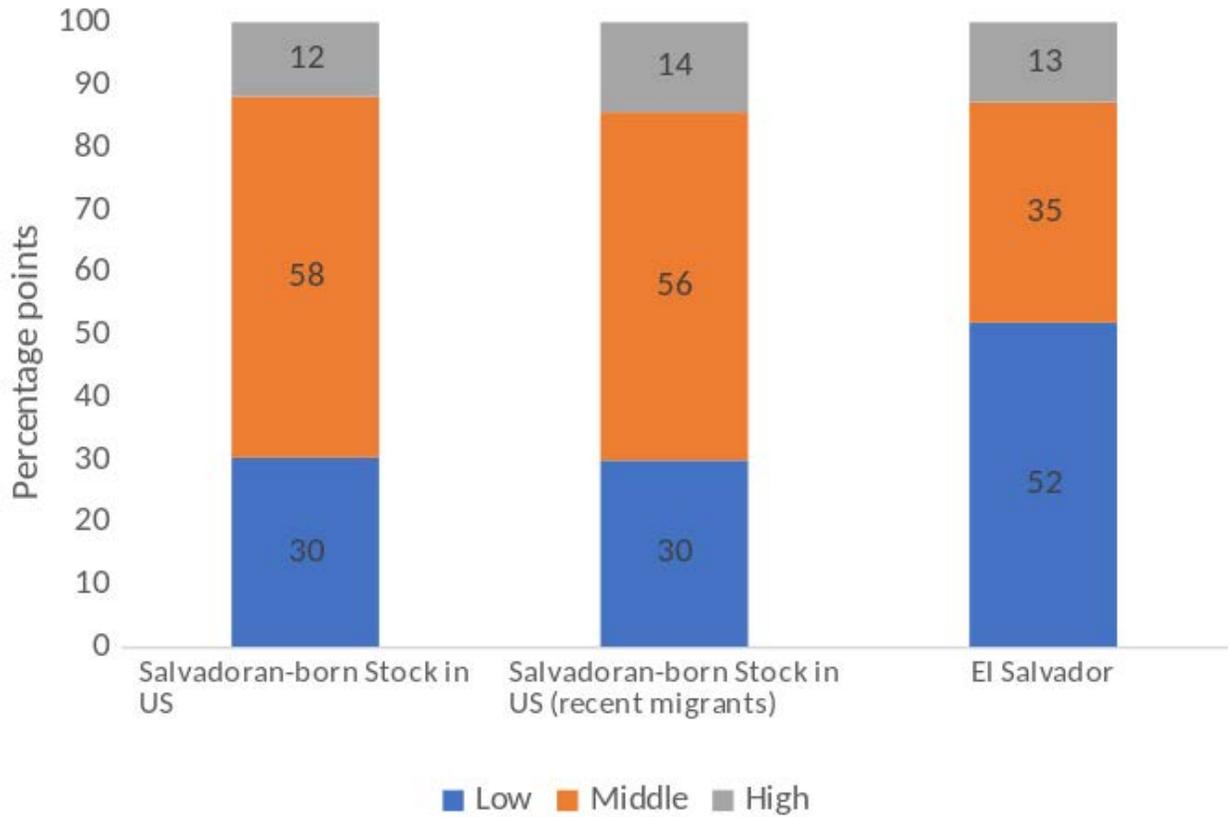
Source: DGME.

Figure 2: U.S. and Mexico Account for the Majority of Repatriated Salvadorans



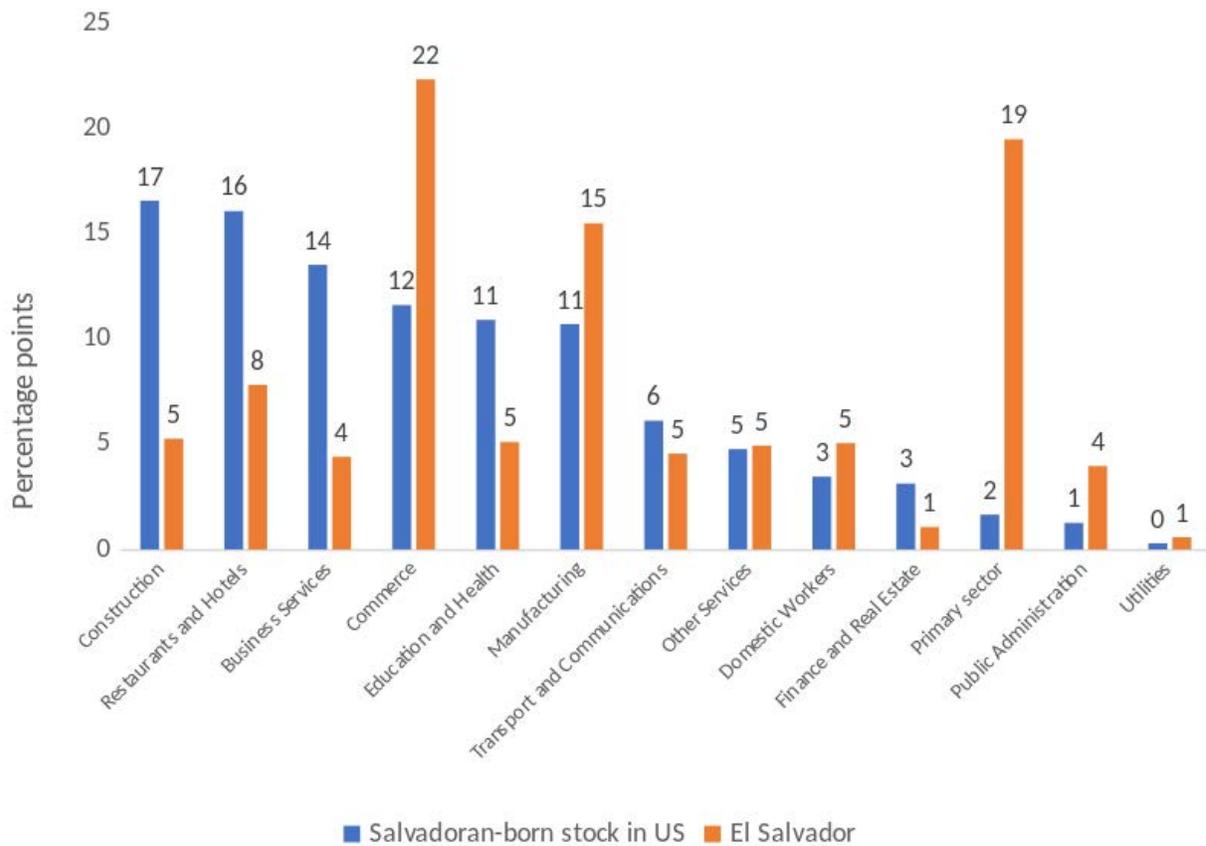
Source: DGME

Figure 3: Education of Salvadoran migrants is Higher than that of the Local Population



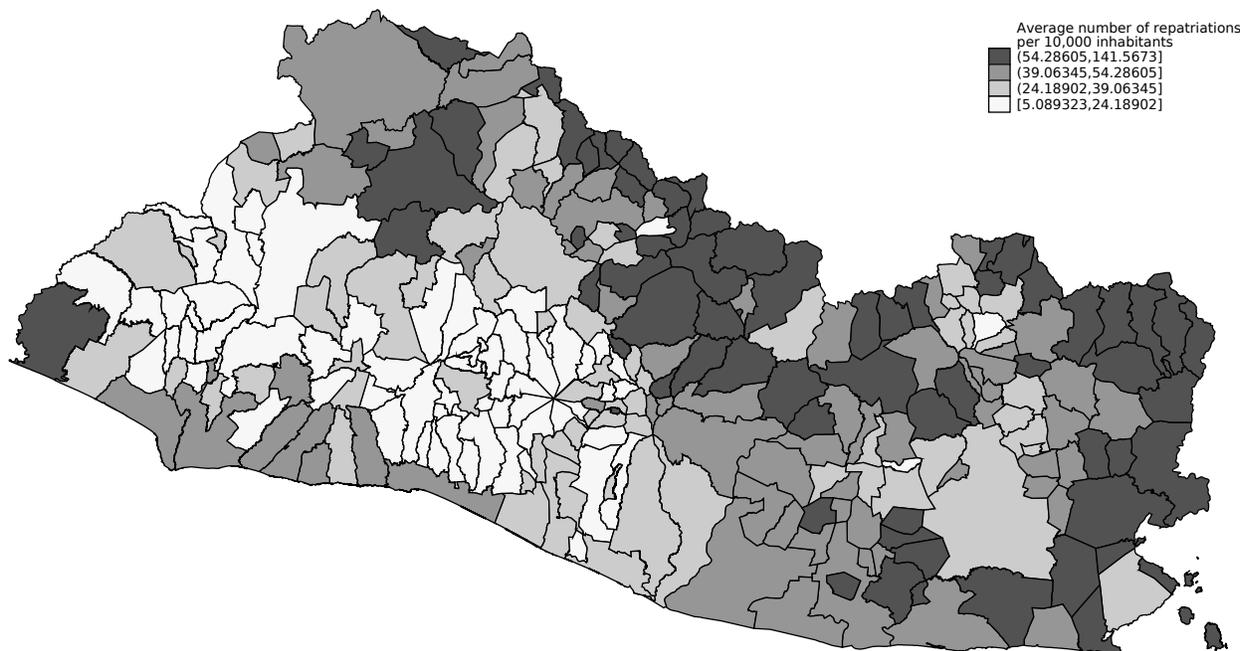
Notes: Educational structure of Salvadoran migrants in the US was estimated using the ACS for 2017. Recent migrants are those who migrated to the US within the last 5 years. The skill groups are classified in low (less than 9 years of education), middle (9 to 13 years of education), and high (14 years of education or more). Sample includes people aged 25 to 64 years. **Source:** American Community Survey (ACS), US Census Bureau.

Figure 4: Sector of employment for Salvadorans at El Salvador and in the United States



Source: ACS and SEDLAC.

Figure 5: Average Repatriation Rate per 100,000 Inhabitants (1995-2018)



Source: DGME.

Table 1: Descriptive Statistics

<i>Panel A. Salaries and Employment in the formal sector at the firm level</i>				
	Mean	Standard Deviation	Min 2.0cm	Max 2.0cm
	(1)	(2)	(3)	(4)
Salary per worker (mean, USD)	334.37	319.13	0.00	135,099.69
Female salaries (mean, USD)	332.16	288.28	0.00	108,867.02
Male salaries (mean, USD)	355.14	396.83	0.00	187,565.03
Share of female workers	0.44	0.32	0.00	1.00
Workers (total)	28.79	198.37	0.00	22,698.00
Branches (total)	2.17	3.41	1.00	309.00
Repatriation rate	0.05	0.04	0.00	0.78
<i>Panel B. Characteristics of returned migrants</i>				
	Female (%)	Male (%)	Total (%)	
	(1)	(2)	(3)	
<i>English proficiency</i>				
Good	0.45	1.98	1.69	
Regular	1.05	3.28	2.85	
Does not speak	42.95	53.18	51.23	
No data	55.55	41.57	44.22	
<i>Education level achieved</i>				
None	0.13	0.20	0.19	
Primary	63.67	72.85	71.11	
Secondary	3.69	4.53	4.37	
Technical education	4.12	1.81	2.24	
University	0.50	0.63	0.60	
No data	27.90	19.97	21.48	
<i>Time of residence abroad</i>				
Recently	79.52	75.29	76.09	
1 to 11 months	8.22	9.25	9.05	
1 to 8 years	12.16	15.02	14.48	
9 to 16 years	0.07	0.37	0.32	
>17 years	0.03	0.07	0.06	
<i>Marital status</i>				
Lives with someone	16.13	22.91	21.62	
Married	14.24	14.95	14.81	
Divorced or separated	3.96	1.68	2.11	
Single	64.54	60.30	61.11	
Widow	1.10	0.12	0.30	
N/A	0.04	0.04	0.04	
N (migrants)		37,801	161,417	199,218

Table 2: Effect of Repatriation Inflows on Wages and Employment

Dep. variable (<i>in logs</i>)	Mean Wages (1)	N Workers (2)
Panel A. OLS		
Repatriation share	-0.0147 (0.0450)	-0.0247 (0.0414)
Adjusted R^2	0.074	0.034
Panel B. Reduced Form		
Predicted repatriations	-3.389*** (0.907)	2.783* (1.527)
Adjusted R^2	0.074	0.034
Panel C. 2SLS		
Repatriation share	-0.264*** (0.0502)	0.217* (0.128)
Panel D. First Stage		
	Dependent variable: Repatriation Share	
Predicted repatriations	12.83*** (2.716)	12.83*** (2.716)
F-statistic	22.30	22.30
Mean	5.668	2.110
Obs. (for all panels)	2,056,497	2,056,500

Notes: Data is monthly, and comes from ISSS sample. All panels include controls for municipality, month and year fixed effects.

Clustered standard errors at the municipal level are shown in parenthesis.

*, **, ***, significant at 10%, 5% and 1%.

Table 3: Effect of Repatriation Inflows on Wages and Employment by Gender

Dep.variable (<i>in logs</i>)	Male wages	Male workers	Female wages	Female workers
	Mean (1)	Total (2)	Mean (3)	Total (4)
Panel A. OLS				
Repatriation share	-0.00160 (0.0507)	-0.000865 (0.0507)	-0.0382 (0.0473)	-0.0414 (0.0349)
Adjusted R^2	0.045	0.027	0.044	0.034
Panel B. Reduced Form				
Predicted repatriations	-3.198** (1.419)	3.631* (2.098)	-3.402*** (0.940)	2.570* (1.442)
Adjusted R^2	0.045	0.027	0.044	0.034
Panel C. 2SLS				
Repatriation share	-0.250*** (0.0757)	0.283 (0.175)	-0.265*** (0.0595)	0.200* (0.116)
Panel D. First Stage				
	Dependent variable: Repatriation Share			
Predicted repatriations	12.80*** (2.681)	12.83*** (2.716)	12.84*** (2.698)	12.83*** (2.716)
First Stage F-statistic	22.78	22.30	22.64	22.30
Mean	5.666	1.585	5.639	1.332
Observations (for all panels)	1,789,636	2,056,500	1,736,621	2,056,500

Notes: Data is monthly, and comes from ISSS sample. All panels include controls for municipality, month and year fixed effects.

Clustered standard errors at the municipal level are shown in parenthesis.

*, **, ***, significant at 10%, 5% and 1%.

Table 4: Effect of Repatriation inflows on Wages by Occupation

Dependent variable (in logs)	Total (1)	Executives (2)	Professional (3)	Technical (4)	Sales (5)	Administrative (6)	Laborers (7)	Others (8)
Panel A. OLS								
Repatriation share	0.208 (0.309)	-0.0259 (0.0324)	-0.0271 (0.108)	0.223 (0.189)	0.473* (0.240)	0.231 (0.283)	-0.0957 (0.0782)	-0.407** (0.192)
Adjusted R^2	0.184	0.008	0.032	0.025	0.102	0.137	0.110	0.034
Panel B. Reduced Form								
Predicted repatriations	-0.998 (2.048)	-0.562 (0.444)	-4.234 (2.692)	0.936 (2.242)	-6.066 (4.231)	2.521 (3.429)	-4.289*** (0.923)	3.529 (2.374)
Adjusted R^2	0.184	0.008	0.032	0.024	0.101	0.137	0.110	0.033
Panel C. 2SLS								
Repatriation share	-0.0478 (0.0979)	-0.0269 (0.0214)	-0.203 (0.128)	0.0448 (0.107)	-0.290 (0.208)	0.121 (0.163)	-0.205*** (0.0433)	0.169 (0.111)
Panel D. First Stage								
	Dependent variable: Repatriation Share							
Predicted repatriations	20.89*** (0.791)	20.89*** (0.791)	20.89*** (0.791)	20.89*** (0.791)	20.89*** (0.791)	20.89*** (0.791)	20.89*** (0.791)	20.89*** (0.791)
First Stage F-statistic	697.9	697.9	697.9	697.9	697.9	697.9	697.9	697.9
Mean	7.701	0.948	1.977	2.131	4.149	6.910	2.552	1.917
Observations (for all panels)	9,532	9,532	9,532	9,532	9,532	9,532	9,532	9,532

Notes: All panels include controls for municipality, month and year fixed effects. EEA sample restricted to 2010 - 2014 period. Clustered standard errors at the municipal level are shown in parenthesis.
*, **, ***, significant at 10%, 5% and 1%.

Table 5: Effect of Repatriation inflows on Firm Entry and Branches

Dependent variable	Firm entry (1)	Number of firms (2)	Number of branches (3)
Panel A. OLS			
Repatriation share	-0.0423 (0.0338)	-0.0947 (0.0634)	-0.178** (0.0782)
Adjusted R^2	0.024	0.990	0.985
Panel B. Reduced Form			
Predicted repatriations	0.654 (1.328)	5.340 (3.781)	12.41** (6.199)
Adjusted R^2	0.024	0.990	0.985
Panel C. 2SLS			
Repatriation share	0.0564 (0.107)	0.774 (0.559)	1.800* (1.074)
Panel D. First Stage			
	Dependent variable: Repatriation Share		
Predicted repatriations	11.60*** (2.594)	6.895*** (2.003)	6.895*** (2.003)
First Stage F-statistic	20.01	11.86	11.86
Mean	0.689	2.412	2.785
Observations (for all panels)	2,345,020	17,611	17,611

Notes: All panels include controls for municipality, month and year fixed effects. Data is monthly, and comes from ISSS sample.

Clustered standard errors at the municipal level are shown in parenthesis.

*, **, ***, significant at 10%, 5% and 1%.

Table 6: Effect of Repatriation Inflows on Trade

Dependent variable (<i>in logs</i>)	Sales (1)	Exports (2)	Imports (3)
Panel A. OLS			
Repatriation share	0.0986 (0.158)	-0.0112 (0.0302)	0.452 (0.475)
Adjusted R^2	0.149	0.000	0.092
Panel B. Reduced Form			
Predicted repatriations	3.208 (2.554)	0.855** (0.405)	-4.223 (3.183)
Adjusted R^2	0.149	0.000	0.092
Panel C. 2SLS			
Repatriation share	0.180 (0.126)	0.0481* (0.0275)	-0.237 (0.199)
Panel D. First Stage			
	Dependent variable: Repatriation Share		
Predicted repatriations	17.80*** (2.570)	17.80*** (2.570)	17.80*** (2.570)
First Stage F-statistic	47.96	47.96	47.96
Mean	13.88	0.0865	0.981
Observations (for all panels)	6,109	6,109	6,109

Notes: All panels include controls for municipality, month and year fixed effects. EEA sample restricted to 2013 - 2016 period.

Clustered standard errors at the municipal level are shown in parenthesis.

*, **, ***, significant at 10%, 5% and 1%.

Table 7: Effect of Repatriation Inflows on Productivity

Dependent variable (<i>in logs</i>)	Value Added per worker (1)	Total Value added (2)
Panel A. OLS		
Repatriation share	0.0450 (0.172)	0.0986 (0.153)
Adjusted R^2	0.187	0.168
Panel B. Reduced Form		
Predicted repatriations	8.708*** (1.508)	2.077 (3.061)
Adjusted R^2	0.187	0.168
Panel C. 2SLS		
Repatriation share	0.489*** (0.138)	0.117 (0.159)
Panel D. First Stage		
	Dependent variable: Repatriation share	
Predicted repatriations	17.80*** (2.572)	17.79*** (2.580)
First Stage F-statistic	47.90	47.53
Mean	10.10	13.99
Observations	5,960	6,059
(for all panels)		

Notes: All panels include controls for municipality, month and year fixed effects. EEA sample restricted to 2013 - 2016 period.

Clustered standard errors at the municipal level are shown in parenthesis.

*, **, ***, significant at 10%, 5% and 1%.

A Appendix

Table A.1: Size of firms

	Micro	Small	Medium	Big
Branches (N)	1,407,016	494,210	69,925	85,350
Workers (mean)	3.91	20.27	70.20	454.35
Workers (min)	0	10	51	101
Workers (max)	9	50	100	22,698

Notes: Data comes from the Social Security Office (ISSS) in El Salvador for the 2010-2017 period.

Table A.2: Effect of returnee inflows by size of firms

Sample	(1)	(2)	(3)	(4)
	Micro	Small	Medium	Big
Dependent variable (in logs)	Exports			
Repatriation share	0.0825**	0.169	0.0940	0.120***
	(0.0378)	(0.349)	(0.875)	(0.0427)
First Stage F-statistic	811.7	4.704	10.86	80.31
Observations	3,173	3,651	1,546	3,682
Dependent variable (in logs)	Imports			
Repatriation share	-0.264	-0.851	1.500	-0.306
	(0.193)	(0.836)	(1.252)	(0.207)
First Stage F-statistic	811.7	4.704	10.86	80.31
Observations	3,173	3,651	1,546	3,682
Dependent variable (in logs)	R &D investment			
Repatriation share	0.00399	0.157	0.829	0.425
	(0.00279)	(0.583)	(0.556)	(0.330)
First Stage F-statistic	811.7	4.704	10.86	80.31
Observations	3,173	3,651	1,546	3,682

Notes: All panels include controls for municipality, month and year fixed effects. EEA sample restricted to 2010 - 2016 period.

Clustered standard errors at the municipal level are shown in parenthesis.

*, **, ***, significant at 10%, 5% and 1%.

A.0.1 Alternative sample

This section shows the main results with the ISSS sample excluding firms and branches that are not located in the same municipality during all periods of analysis.

Table A.3: Effect of returnee inflows on wages and employment

Dependent variables: Wages and Employment in the formal sector

Dependent variable (in logs)	Mean wages (1)	Total workers (2)
Panel A. OLS		
Repatriation share	0.00872 (0.0377)	-0.0311 (0.0302)
Adjusted R^2	0.100	0.047
Panel B. Reduced Form		
Predicted repatriation	-4.361*** (0.954)	-0.359 (1.263)
Adjusted R^2	0.100	0.047
Panel C. 2SLS		
Repatriation share	-0.349*** (0.0595)	-0.0288 (0.0994)
Panel D. First Stage		
	Dependent variable: Share of deported migrants	
Predicted repatriations	12.49*** (2.949)	12.49*** (2.949)
First Stage F-statistic	17.95	17.95
Mean	5.680	2.168
Observations (for all panels)	1,126,594	1,126,597

Notes: Data is monthly, and comes from ISSS sample. All panels include controls for municipality, month and year fixed effects.

Clustered standard errors at the municipal level are shown in parenthesis.

*, **, ***, significant at 10%, 5% and 1%.

Table A.4: Effect of returnee inflows on wages and employment by gender*Dependent variables: Wages and Employment in the formal sector, by sex*

Dependent variable (in logs)	Male wages	Male workers	Female wages	Female workers
	Mean (1)	Total (2)	Mean (3)	Total (4)
Panel A. OLS				
Repatriation share	0.0124 (0.0489)	-0.0214 (0.0360)	-0.00889 (0.0399)	-0.0224 (0.0318)
Adjusted R^2	0.055	0.041	0.059	0.044
Panel B. Reduced Form				
Predicted repatriations	-3.982* (2.190)	-0.713 (2.050)	-3.760*** (1.321)	1.864 (1.655)
Adjusted R^2	0.055	0.041	0.059	0.044
Panel C. 2SLS				
Repatriation share	-0.315*** (0.115)	-0.0571 (0.160)	-0.299*** (0.0910)	0.149 (0.129)
Panel D. First Stage				
	Dependent variable: Share of deported migrants			
Predicted repatriations	12.63*** (2.980)	12.49*** (2.949)	12.56*** (2.887)	12.49*** (2.949)
First Stage F-statistic	17.96	17.95	18.93	17.95
Mean	5.662	1.637	5.650	1.389
Observations (for all panels)	989,960	1,126,597	960,634	1,126,597

Notes: Data is monthly, and comes from ISSS sample. All panels include controls for municipality, month and year fixed effects.

Clustered standard errors at the municipal level are shown in parenthesis.

*, **, ***, significant at 10%, 5% and 1%.

Table A.5: Effect of returnee inflows on firm creation and survival

Dependent variable	Firm entry (1)	Number of firms (2)	Number of branches (3)
Panel A. OLS			
Repatriation share	0.00884 (0.0244)	-0.0791 (0.0701)	-0.0906 (0.0751)
Adjusted R^2	0.034	0.986	0.985
Panel B. Reduced Form			
Predicted repatriations	3.912** (1.763)	6.467** (2.913)	10.98*** (3.060)
Adjusted R^2	0.034	0.986	0.985
Panel C. 2SLS			
Repatriation share	0.350*** (0.0955)	0.910* (0.548)	1.545** (0.779)
Panel D. First Stage			
	Dependent variable: Share of deported migrants		
Predicted repatriations	11.18*** (2.664)	7.104*** (2.133)	7.104*** (2.133)
First Stage F-statistic	17.61	11.09	11.09
Mean	0.668	1.958	2.051
Observations (for all panels)	1,687,094	17,408	17,408

Notes: Data is monthly, and comes from ISSS sample. All panels include controls for municipality, month and year fixed effects.

Clustered standard errors at the municipal level are shown in parenthesis.

*, **, ***, significant at 10%, 5% and 1%.