Effects of Venezuelan migration on education outcomes in Colombia

A research proposal presented to the Inter-American Development Bank

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Abstract

The large flows of migrants arriving from Venezuela to Colombia as the crisis in that country has worsened include a high proportion of school-age children who have interrupted their education process due to migration decision. Upon settlement in hosting community a priority of the migrant household is likely to enroll these children back in the school system. The extent to which the local public schools can absorbe these children is key for the ability of migrants –as well as locals– to accumulate skills and human capital. This proposal summarizes the data and methodology that we will use to identify the causal effect of Venezuelan migration waves on educational outcomes in receiving municipalities in Colombia, both at the school and at the individual level. We will compute an exogenous *predicted migration inflow* by interacting the population share of Venezuelans in each municipality according to the 2005 population census and the aggregate registered annual Venezuelan migration to Colombia. This strategy takes advantage of the well-documented fact that migrants disproportionately locate in municipalities with early settlements of individuals from their place of origin. Based on this strategy, we will estimate the causal impacts of the recent migration shock on outcomes such as school enrollment rates, dropout rates, promotion rates, repetition rates, school-level inputs and individual-level outcomes such as the students' performance in nation-wide exams.

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I Introduction

Economic and political turmoil, as well as a surge of criminal violence in neighboring Venezuela have induced a large migration wave of Venezuelans to Colombia. By June 2018, the number of *registered* Venezuelans in Colombia was over 1.3 million (Revista Semana, 2018). The actual figure, however, is likely higher as registration is not enforced and a large share of migrants may actively avoid it and work in the informal sector.

Because Venezuelan migration is driven by political and economic turmoil, as well as by the intensification of violence, migrants are disproportionally composed by poor, vulnerable, and poorly educated households, who flee without much previous panning or preparation (Rozo and Vargas, 2019). At the same time, the large proportion of migrants children constitute an unprecedented demand shock for the public schooling system of hosting municipalities. The extent to which local schools can absorb and accommodate Venezuelan children will determine the accumulation of skills and human capital of the younger generations of migrants –as well as kids in host communities– and hence the capacity of households to break potential poverty traps in the future.

If this proposal is funded, we will assess whether Venezuelan migration has affected local-level educational outcomes such as school enrollment, school dropout, academic achievement at different rates and outcomes associated with the efficiency of the educational system (which is likely to be affected by the migration-driven demand shock due to congestion) such as passing rates and grade retention rates.

Importantly, data on educational outcomes does not include the nationality of the student so we will only be able to assess "general equilibrium" effects on the entire education system, including both Colombian and Venezuelan children. Colombian children will likely be affected by the migration-driven demand shock because of school congestion (which as mentioned above affects efficiency) as well as peer effects. Indeed, Figlio and Özek (2017) study the educational outcomes of *local* school-age children in Florida following the large migration wave driven by the 201 earthquake in Haiti.

Since migration inflows are not random, we cannot simply compare differences in educational outcomes across municipalities with higher and lower shares of migration inflows. Our empirical strategy, consequently, exploits two sources of exogenous variation in Venezuelan migration inflows at the municipality-year level. Cross-sectional municipal variation comes from the share of population within each receiving municipality that was born Venezuela and arrived before the political and economic crisis of that country began. Annual variation comes from the number of individuals leaving Venezuela each year, as the crises worsened during the Maduro administration. The interaction of these two sources of variation corresponds to a plausibly exogenous *predicted migrant inflow* measure.

Our identification strategy exploits the fact that crisis-induced migrants tend to move disproportionately to municipalities where they have preexisting networks (formed before the beginning of the migration wave). Our identification assumption is that predicted migrant inflows are correlated with actual migration but do not affect educational outcomes independently or through any other channel.

Understanding the relationship between the recent surge in migration flows from Venezuela to

neighboring Colombia and social outcomes such as school performance or efficiency is of foremost policy importance. It will help design programs and interventions with the purpose of reducing potential negative consequences of migration and boosting the capacity of migrant (as well as local) children to accumulate cognitive skills as well as human capital. This will help achieve a smooth and beneficial absorption of the Venezuelan community into Colombian society and its labor market. The proposed research will contribute to this policy agenda, perhaps the most important that Colombia will face in the next decade.

II Context

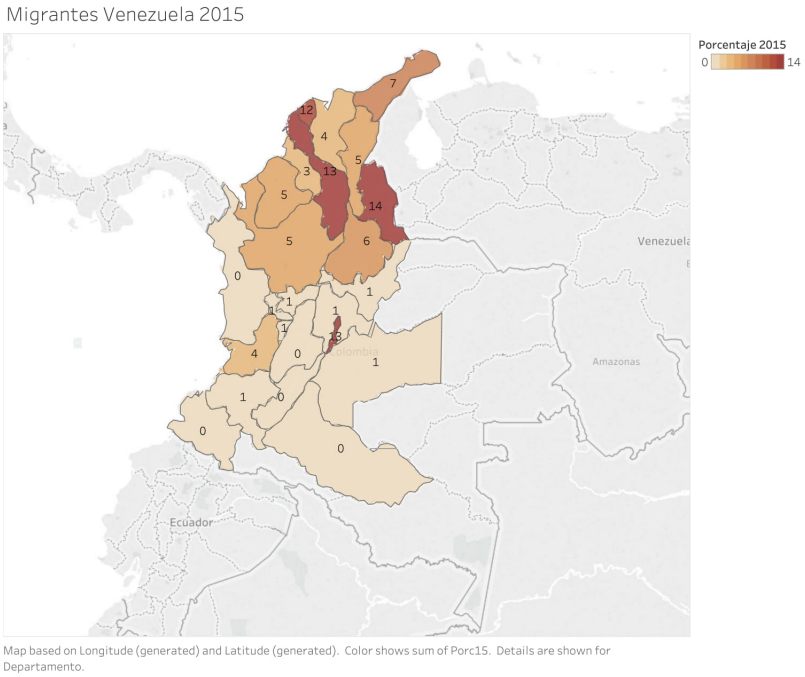
The beginning of the Venezuelan political crisis can be traced back to the election of Hugo Chávez as president on December 6, 1998. Chávez's socialist regime was characterized by constitutional amendments, land expropriations, the implementation of populist social programs, nationalizations, and restrictions on private businesses (Crasto and Álvarez, 2017). Chávez's policies were continued by Nicolás Maduro, who was elected president of Venezuela in 2013. Maduro's regime has dramatically worsened the economic and social crisis in Venezuela. Shortages of food and basic necessities became extremely common, and looting began to occur systematically throughout the country (Revista Semana, 2017). Moreover, insecurity became endemic, repression of the opposition became common, and systematic human rights violations by public authorities were repeatedly reported by the international media (see El Nuevo Herald, 2014; BBC News, 2017; BBC, 2016).

This situation triggered large waves of out-migration by Venezuelans, who most often moved to neighboring Colombia. According to the official statistics, Venezuelan migration increased fivefold as the humanitarian crisis caused by Chávez and Maduro's regimes worsened.

Initially, Venezuelan migrants consisted mainly of wealthy Venezuelans and entrepreneurs who came to invest in Colombia and fled to save their capital from expropriations and from high inflation (Revista Semana, 2017; Crasto and Álvarez, 2017). As the crisis intensified, however, the core of Venezuelan migration shifted to the poorly educated population who report fleeing to Colombia to escape violent crime, political repression, and to look for basic necessities for survival (NPR, 2018). Indeed, according to recent characterizations of Venezuelan migrants based on the Colombian household surveys of 2015 and 2016, over 80 percent of registered migrants have not completed a high school education, at least half are 25 years old or less, and they are balanced in terms of gender (see OLR, 2017).

Another important characteristic of the migration flow of Venezuelan migrants is the variation across Colombian regions. Figures I and II present the share of the total Venezuelan migrants by Colombian states (departamentos) in 2015 and 2017 respectively. It is noteworthy that migrants locate in several states, with Bogotá, Cesar, Magdalena and Norte de Santander having the largest shares of migrants (about 50% of the aggregate flow of migrants over this period). Other states that have faced a large number of Venezuelan migrants are Guajira, Antioquia and Valle. This longitudinal variation is important for the empirical strategy proposed in this document. Indeed, we will study heterogeneous effects across demographic characteristics (such as the type of school, as well as the age and gender of the student for individual-level outcomes) as well as geographic

Figure (I) Distribution of venezuelan migrants by Colombian States (% of total migrants at 2015)



regions with the purpose of providing a set of results that can better inform localized policies.

III Data

III.1 Venezuelan migration data

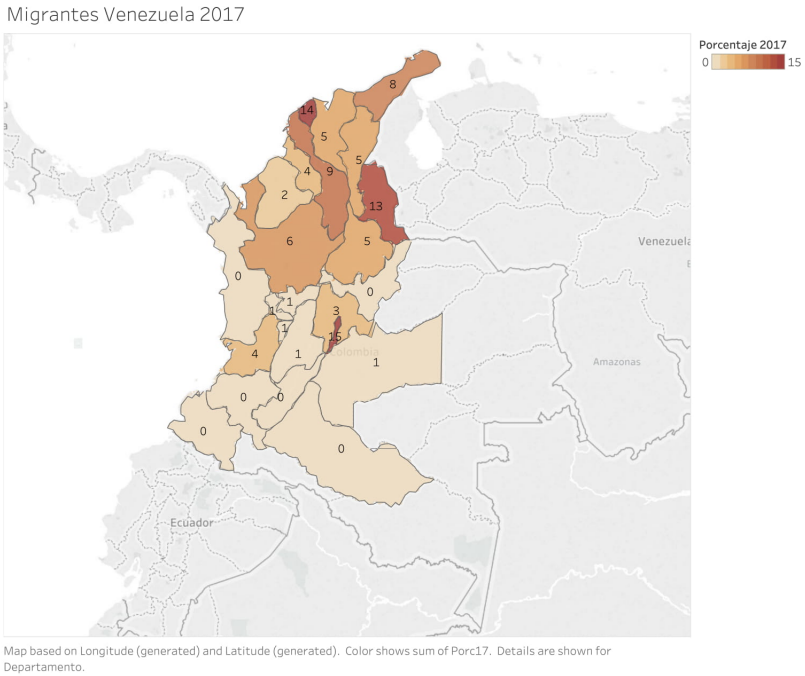
We intend to employ data on the total number of Venezuelans arriving annually in Colombia, available through the Colombian Statistics Department. The data comes from the information recorded at official migration points and thus it does not include any illegal or unregistered migration. To date, however, it remains the best (and only) data available.

III.2 Education data

Data on enrollment, dropout rates, passing rates and grade retention rates at the school level come from the school census data (Form C600) collected by the Department of Statistics and the Ministry of Education in Colombia. To compute the main dependent variables, we will aggregate the school-level information at the municipal level and calculate municipality enrollment/dropout/retention and passing rates. These measures correspond to a weighted average of school-level rates where the weights are the relative size of the school enrollment at the beginning of the year.

Data from academic achievement in grades, 5, 9 and the last grade of high school come from ICFES and correspondes to nation-wide official tests carried out each year. Again, we will ag-

Figure (II) Distribution of venezuelan migrants by Colombian States (% of total migrants at 2015)



gregate these outcomes at the municipality level and standardize them to make them comparable across years given methodological changes in the administrated tests. We will look at both the Math and the Language test scores, and also will compute aggregates differentiating by gender and age.

The data discussed above is publicly available and the research team has unrestricted access to it.

IV Empirical Strategy

As forced migrants do not choose their arrival municipalities randomly, we cannot use a mean comparison to identify their effects on educational outcomes in host municipalities. Such a comparison would likely be biased. For example, if migrants go disproportionally to more prosperous municipalities and prosperity is positively associated with better school performance, then the bias would be positive. More generally, it is reasonable to assume that the decision of where to locate is associated with municipal characteristics that, in turn, are correlated with the quality of education. Our empirical strategy, consequently, exploits the fact that, as the political crises intensified in Venezuela, migrants tend to move disproportionately to municipalities where they have networks, family, or acquaintances. In particular, and following the methodology proposed by a subset of the proposal's authors (Rozo and Vargas, 2019) we estimate the following specification:

$$Log(Y_{mt}) = \theta[\text{Predicted Inflows}_{mt}] + X_{mt}\Gamma + \alpha_m + \gamma_t + \epsilon_{mt} \quad (1)$$

where m represents the municipality, t the election year, Y is one of our dependent variables regarding education, X is a vector of time-varying controls, and α_m and γ_t stand for municipality and year fixed effects.

Our measure of predicted inflows of migrants follows the standard practice in the literature (see Card, 2001 and Altonji and Card, 1991 for the pioneer approaches and Lewis and Peri, 2015 for a review of the literature on applications) and exploits the disproportionate levels of migrant inflows to areas with previous settlements of similar identity groups. Specifically, our measure of inflows is constructed as:

$$\text{Predicted Venezuelan Inflows}_{mt} = \left[\frac{1}{\text{Population}_{mt}}\left(\text{Venezuelan Outflows}_t \times \text{Venezuelan Share}_m^{2005}\right)\right] \times 100$$

where *Venezuelan Share*$^m_{2005}$ is the ratio of Venezuelan nationals who lived in municipality m and the total population who lived in that municipality but was not born in Colombia in 2005 (according to that year's population census);[1] *Venezuelan Outflows*$_t$ is the count of individuals leaving Venezuela and arriving in Colombia in year t; and *Population*$_{mt}$ is the municipal annual population. Robust standard errors are clustered at the municipality level to account for potential serial correlation within municipalities.

Unfortunately, the lack of available quality data on yearly arrivals of Venezuelans to each municipality prevents us from estimating an instrumental variables specification.

IV.1 Threats to identification

Because our estimates will include fixed effects by municipality and year, they are confounded neither by time-invariant differences across municipalities nor by annual aggregate shocks.

One important threat to our identification strategy may be caused by differences in socioeconomic characteristics across municipalities that are correlated with the settlement of Venezuelans prior to the large migration shocks. This may be the case to the extent that the post-shock evolution of such characteristics affects educational outcomes.

To make sure that migrants do not settle disproportionally in places with characteristics that explain future educational outcomes, we include full interactions between the year dummies and several pre-migration shock municipal covariates, including conflict intensity, criminal violence, local and national public expenditures, the number of public institutions, sector composition, and economic growth. Our identification strategy thus relies on our measure of predicted migration inflows affecting educational outcomes only through actual migration and not through any other time-varying covariates after controlling for flexible municipal-specific trends, parametrized by a large set of pre-determined characteristics.

The inclusion of these controls is important as identification relies on the exogeneity of the early settlements, an equivalence that is shown by Goldsmith-Pinkham et al. (2019) for the general case of Bartik instruments. Even when the share of early migrants is not exogenous, Borusyak et al. (2018) show that identification can be achieved if the aggregate shocks are as good as random, a condition that is satisfied

[1] In 2005, the Colombian statistics agency collected the last population census before the start of the large wave of Venezuelan migration. The raw data of the census is available at the processing center located in the headquarters of the Colombian statistics agency in Bogota.

when: i) one controls by observable municipal characteristics weighted by shock exposure and ii) there is a large number of observed shocks per period and a large number of periods. We meet these criteria.[2]

IV.2 Heterogeneous effects

We will study heterogeneous effects by gender, age, and region in order to better assess the demographic profile that is more at risk as well as the areas for which our outcomes are likely to be more sensitive to migration shocks. This is extremely important for policy design. A detailed understanding of regional patterns as well as of what is the most relevant population at risk is essential to targeting effective policy interventions.

V Experience of the research team

Professor **Rozo** holds a PhD in Economics from UCLA. She is a renown expert on migration and has large experience studying the current Venezuela migration crisis. Her recent research on the topic includes:

1. "Forced Migration and the Spread of Infectious Diseases" (co-authored with A. Ibáñez)
2. "Allowing Forced Migrants to Work: Impacts of Work Permits on Labor Markets and Crime" (co-authored with A. Ibáñez & D. Bahar)
3. "Brothers or Invaders? How Crises-Driven Migrants Shape Voting Behavior" (co-authored with J. Vargas)
4. "Blessing or Burden? The Impact of Refugees on Businesses and the Informal Economy" (co-authored with O. Altindag & O. Bakis)
5. "Are Refugees a Burden? Impacts of Refugee Inflows on Host's Consumption Expenditures" (co-authored with M. Sviastchi)
6. "?Is Informality Good for Business? The Impacts of IDP Inflows on Formal Firms" (co-authored with H. Winkler)
7. "Deportation, Crime, and Victimization" (co-authored with T. Anders & S. Raphael)

Professor **Namen** holds a PhD in Public Policy from Chicago's Harris School. She is largely studies the Colombian educational system as well as that of other Latin American countries such as Chile. Her recent research on the topic includes:

1. "The Impact of Encouraging Social Promotion"
2. "The Human Capital Peace Dividend" (co-authored with M. Prem & J. Vargas)

[2]One additional recent criticism to the validity of using early migrants networks to study the impacts of migration in that is settings in which migration flows to specific locations are stable over time one cannot disentangle the short- and long-term causal effects of migration (Jaeger et al., 2018). Our empirical strategy is not sensitive to this threat because the inflows of crisis-driven migrants are not stable in time, they are sudden and large in scale as a consequence of the intensification of the internal and the Venezuelan crises.

3. "The Peer Effects of Grade Retention"

4. "Complementarities between teacher, school and student inputs" (co-authored with M. Fioretti, E. Manresa & P. Thiemann)

5. "An Evaluation of an Incentive Payment Scheme for Schools in Colombia" (co-authored with S. Majerowicz)

Professors **Prem** and **Vargas** are applied micro-economists with large individual and joint experience studying the political economy of post-conflict Colombia. Their recent join projects include:

1. "The Human Capital Peace Dividend" (co-authored with O. Namen)

2. "End of conflict deforestation: evidence from Colombia's Peace Agreement" (co-authored with S. Saavedra)

3. "Killing social leaders for territorial control: The unintended consequences of peace" (co-authored A. Rivera & D. Romero)

In addition, Vargas is coauthor of Professor Rozo in one of her papers.

The CVs of the PIs are attached to this proposal.

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