Are Immigration Inflows Good for Business? The Role of Informality in Developing Countries

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Research question

- What is the impact of forced migration on formal firms' behavior and outcomes in host communities of a developing country?

- Estimate impacts on the following firm-level measures:
  - Real sales
  - Real productivity
  - Number of firms
  - Prices (input and output)
  - Employment (total, blue and white collar)
  - Wages (total, blue and white collar)

Motivation

- Worldwide forced displacement due to violence has hit an all-time high.
- Sudden and large inflows of displaced persons (IDPs) due to violence may have sizable effects on firms' outcomes and the labor market in reception areas.
- Previous literature on the impact of immigrant flows on firms has focused on voluntary migration in developed economies
- Developing countries with large informal sector currently receive the highest inflows of displaced population or refugees

Preliminary Findings

- We find large and negative effects of IDPs on formal firms
- When IDPs increase by 1 percent, formal firms' real sales and output prices drop by approximately 0.2 percent and 0.5 percent, respectively.
- We also find negative effects of large IDPs on formal firms' input prices, wages and employment of white-collar workers.
- We show evidence suggesting that IDPs, by increasing the size of the informal sector, create additional (unfair) competitive pressures on formal firms

Presentation outline

1. Literature on the impacts of immigration on firms
2. Should we expect a different story for IDPs in developing countries?
3. The case of Colombia
4. Data description
5. Identification Strategy
6. Results (**PRELIMINARY**)
7. Investigating the channels: the role of the informal sector
8. Conclusions
9. Next steps

Previous literature

- To our knowledge, the literature on the impacts of immigration on firms has focused on voluntary immigrants in developed economies:
  - Spain (Carrizosa and Blasco, 2009), the United States (Lewis, 2011), Italy (Accetturo et al., 2012), the United Kingdom (Ottaviano et al., 2015), and Germany (Dustmann and Glitz, 2015).

- Positive effects of immigrants on firm-level productivity, driven mainly by lower production costs and skill complementarities in the workplace.

- Mixed results for capital investments.

The case of IDPs in a developing country with a large informal sector

- We can expect different results from previous work
- First, if IDPs join the informal sector upon arrival, they can add distortions.
- Second, the very specific nature of this type of migration deserves a separate analysis because the motivation and impacts of forced migrants or refugees are significantly different from those of economic migrants.

The case of IDPs in Colombia (1)

Figure I: Time Variation of Forced Displacement in Colombia

- The escalation of the Colombian armed conflict between 1995 and 2010 displaced approximately 4.4 million people, or approximately 9.57 percent of the total population in 2010.
- Circa 2010, 92 percent of all Colombian municipalities had at least one individual expelled and 82 percent of municipalities received at least one of these migrants.

The case of IDPs in Colombia (2)

- Forced displacement in Colombia mostly originates from rural areas.
- Most displaced individuals had previously worked in agriculture
- Households that had access to basic public services, had better economic opportunities, or had private property showed a lower probability of migrating
- Inside areas with extreme levels of violence, owning land increased the probability of displacement as these household were more targeted for extortion by illegal armed groups

The case of IDPs in Colombia (3)

- Most IDPs move to urban areas where there is little demand for their agricultural experience.
- Many of them, consequently, face extreme hardship upon arrival in their new locations facing living conditions less favorable than those of the urban poor (Velez, 2002; Ibanez and Moya, 2006).
- Ibanez and Moya (2006), more particularly, estimate that the consumption of displaced households falls by 35.7 percentage points upon migration and drops even further during the year following displacement.
- Forced migrant insertion into the labor markets is slow, their wages are lower than those of the local population, and more than 93% of the forced migrants employed are not covered by labor contracts (Garay, 2008).

Data and Identification Strategy

Firm-level Data

- Our main source of information is the Encuesta Anual Manufacturera (Annual Manufacturing Survey) from 1995 to 2010

- The data set is a census of all the manufacturing plants with ten or more workers or with a total output value larger than 65 million in 1992 Colombian pesos (approximately USD$95,000).

- This data is regarded as one of the best and most complete sources of information for studying firm behavior in developing countries (Kugler and Verhoogen, 2011).

IDPs data

- Municipal data on forced displacement caused by violent conflict was obtained from the Registro Unico de Victimas (RUV, Registration of Victims).
- It has information on municipality of origin and reception
- On average all Colombian municipalities lost approximately 20% of their population to force migration between 1995 and 2010.
- Forcefully displaced migrants tend to move to urban areas with large populations.
  - Migrants may decide to move to urban areas in search for better economic opportunities (i.e., a larger labor market), a sense of safety due to anonymity, and to move away from conflict areas, which were predominantly rural during the period of analysis.

Identification Strategy (1)

- Instrumental variables approach to control for the endogeneity of location decisions:

$$Ln(Y_{jmt}) = \gamma_o + \gamma_1 Ln(\text{IDP}_{mt}) + X_{mt}\Gamma' + \gamma_j + \gamma_t + \epsilon_{jmt}$$

$$Ln(\text{IDP}_{mt}) = \theta_o + \theta_1 \text{Predicted Inflows}_{mt} + X_{mt}\Theta' + \theta_j + \theta_t + \mu_{jmt}$$

where j stands for the firm, located in municipality m, and year t; Y represents the firm outcomes (including production, employment, and prices); IDP_{mt} represents the number of individuals who were involuntarily displaced by violence and arrived to municipality m in year t; X_{mt} is a vector of municipal controls; j and t represent fixed effects by firm (or municipality) and year;

Identification Strategy (2)

$$\text{Predicted Inflows by Distance (PID)}_{mt} = \sum_{-m \epsilon M} \left[\text{Forced Migration Outflows}_{-mt} \times \frac{1}{distance_{m,-m}} \right]$$

- Where Forced Migration Outflows measures the number of individuals who were displaced by violence in municipality -m and year t and M represents the group of municipalities different to m.

- PIDmt, therefore, is a weighted average of the number of individuals expelled from surrounding municipalities (-m) weighted by the inverse distance between municipality m and Municipality -m.

Identification Strategy (3)

- Concerning the exclusion restriction, because our estimates include fixed effects by firm (or municipality), and department-year fixed effects, our estimates are not threatened by static differences between municipalities or by department-year time trends.

- Our estimates will only be threatened by time-variable covariates that may be correlated with the instrument and are directly affecting firm outcomes.

- We also control for homicide rates in all of our estimates

Preliminary Results

Impact on Production

Dep. Variable:	Ln (Real Sales)					Ln (N. Firms)				
	OLS		2SLS			OLS		2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Second Stage										
ln (IDP Inflows - RUV)	-0.130***	-0.101***	-0.244***	-0.244***	-0.229***	0.345***	-0.005	-0.005	-0.001	0.006
	(0.013)	(0.020)	(0.024)	(0.024)	(0.024)	(0.048)	(0.011)	(0.023)	(0.023)	(0.024)
First Stage										
Predicted Inflows - RUV			1.577***	1.572***	1.588***			1.342***	1.333***	1.293***
			(0.042)	(0.043)	(0.043)			(0.111)	(0.110)	(0.112)
Kleibergen-Paap F-statistic			3240	3452	4285			987.1	1021	1068
Observations			111659					3204		
Clusters (by mun)			290					301		
Controls for all Panels										
Year FE	–	X	X	X	X	–	X	X	X	X
Firm FE	–	X	X	X	X	–	–	–	–	–
Mun FE	–	–	–	–	–	–	X	X	X	X
Year - Department FE	–	X	–	X	X	–	X	–	X	X
Controls for Homicide Rate	–	–	–	–	X	–	–	–	–	X

Notes: Clustered standard errors at the municipality level are presented in parentheses. *** significant at the 1%, ** significant at the 5%, * significant at the 10%.

Impact on Prices

Dep. Variable:	Ln (Nominal Output Prices)					Ln (Nominal Input Prices)				
	OLS		2SLS			OLS		2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Second Stage										
ln (IDP Inflows - RUV)	0.137***	-0.039***	-0.563***	-0.562***	-0.527***	0.068***	0.028**	-0.071***	-0.070***	-0.063***
	(0.040)	(0.008)	(0.059)	(0.057)	(0.061)	(0.011)	(0.011)	(0.011)	(0.011)	(0.008)
First Stage										
Predicted Inflows - RUV			1.686***	1.688***	1.771***			1.681***	1.683***	1.749***
			(0.004)	(0.004)	(0.004)			(0.004)	(0.004)	(0.004)
Kleibergen-Paap F-statistic			2580	3011	4345			2940	3241	4624
Observations			722045					789514		
Clusters (by mun)			278					287		
Controls for all Panels										
Year FE	–	X	X	X	X	–	X	X	X	X
Firm FE	–	X	X	X	X	–	X	X	X	X
Product FE	–	X	X	X	X	–	X	X	X	X
Year - Department FE	–	X	–	X	X	–	X	–	X	X
Controls for Homicide Rate	–	–	–	–	X	–	–	–	–	X

Notes: Product fixed effects correspond to the four-digit classification of the International Standard Industry Classification (ISIC) for each product-plant-year observation. There are 113 four-digit codes. Clustered standard errors at the municipality level are presented in parentheses. *** significant at the 1%, ** significant at the 5%, * significant at the 10%.

Impact on Blue-Collar Jobs

Table IV: Effects of Forced Displacement on the Blue-Collar Labor Market

Dep. Variable:	Ln (Blue-Collar Employment)					Ln (Nominal Blue-Collar Wages)				
	OLS		2SLS			OLS		2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Second Stage										
ln (IDP Inflows - RUV)	-0.084***	-0.014***	-0.022	-0.021	-0.006	-0.011	-0.021***	-0.369***	-0.369***	-0.370***
	(0.015)	(0.004)	(0.018)	(0.018)	(0.021)	(0.008)	(0.006)	(0.053)	(0.052)	(0.080)
First Stage										
Predicted Inflows - RUV			0.771***	0.774***	0.742***			0.772***	0.776***	0.743***
			(0.022)	(0.022)	(0.033)			(0.022)	(0.022)	(0.033)
Kleibergen-Paap F-statistic			699.9	864.1	1117			695.9	856.9	1114
Observations			81478					81313		
Clusters (by mun)			282					280		
Controls for all Panels										
Year FE	–	X	X	X	X	–	X	X	X	X
Firm FE	–	X	X	X	X	–	X	X	X	X
Year - Department FE	–	X	–	X	X	–	X	–	X	X
Controls for Homicide Rate	–	–	–	–	X	–	–	–	–	X

Notes: Employment and wages are observed after the year 2000. Clustered standard errors at the municipality level are presented in parentheses. *** significant at the 1%, ** significant at the 5%, * significant at the 10%.

Impact on White-Collar Jobs

Dep. Variable:	Ln (White-Collar Employment)					Ln (Nominal White-Collar Wages)				
	OLS		2SLS			OLS		2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Second Stage										
ln (IDP Inflows - RUV)	-0.037**	-0.016***	-0.083***	-0.083***	-0.080***	-0.033**	-0.023***	-0.386***	-0.386***	-0.385***
	(0.016)	(0.004)	(0.015)	(0.015)	(0.016)	(0.016)	(0.009)	(0.061)	(0.059)	(0.084)
First Stage										
Predicted Inflows - RUV			0.764***	0.767***	0.735***			0.768***	0.772***	0.737***
			(0.022)	(0.022)	(0.033)			(0.022)	(0.022)	(0.034)
Kleibergen-Paap F-statistic			734.6	937.5	1185			733.8	939	1189
Observations			82889					80264		
Clusters (by mun)			281					277		
Controls for all Panels										
Year FE	–	X	X	X	X	–	X	X	X	X
Firm FE	–	X	X	X	X	–	X	X	X	X
Year - Department FE	–	X	–	X	X	–	X	–	X	X
Controls for Homicide Rate	–	–	–	–	X	–	–	–	–	X

Notes: Wages by white- and blue-collar workers in only observed after the year 2000. Clustered standard errors at the municipality level are presented in parentheses. *** significant at the 1%, ** significant at the 5%, * significant at the 10%.

Interpretation of the results

- Lower wages and input prices help explain the decrease in output prices

- Yet, firms experience larger reductions on output prices than in wages or input prices, which, coupled with the real sales decrease, suggests that formal firms have faced a profit downsizing.

- Firms may react to this fall in demand by laying off white collar workers

The role of informality

Is informality driving the negative impacts of IDPs on formal firms? (1)

- The informal sector accounts for a sizable share of total economic activity in developing countries and is mostly comprised of small firms with low productivity levels that can operate without being detected and that employ low-skilled workers

- In Colombia, between 1995 and 2010, approximately 60 percent of the total work force was informal

- Considering that displaced individuals arrive in new locations with low experience in jobs that have high local demand, and tend to have low skill levels, it is plausible that upon arrival in their new locations, the displaced population takes lower tier jobs most likely available in the informal sector

Is informality driving the negative impacts of IDPs on formal firms? (2)

- The first channel is that formal firms pay a higher tax burden when the informal sector increases its size.
  - The lower operating costs of informal firms may imply that they can carry lower prices and thereby compete unfairly with formal businesses.
  - The unfair competition of informal firms could slow down the process by which inefficient firms can be replaced by more efficient competitors.
  - It could also negatively affect the incentives of formal firms to innovate and adopt new technologies, since these could easily be stolen.
  - Higher informal competition may force formal sector firms to lower the quality of their products.
- The second channel is that, as the informal sector increases production, informal output prices may fall, which can ultimately displace demand from the formal to the informal sector.

The informality hypothesis: Results by firm size

Smaller firms (200 employees or less)

Ln (Real Sales)	Ln (Output Prices)	Ln (Input Prices)	Ln (Blue-Collar E.)
(1)	(2)	(3)	(4)
-0.225***	-0.557***	-0.072***	-0.043**
(0.025)	(0.062)	(0.013)	(0.019)

Ln (White-Collar E.)	Ln (Blue-Collar W)	Ln (White-Collar W)	Ln (Real Prod.)
(5)	(6)	(7)	(9)
-0.122***	-0.380***	-0.407***	-0.194***
(0.022)	(0.079)	(0.084)	(0.023)

Larger firms (201 employees or more)

Ln (Real Sales)	Ln (Output Prices)	Ln (Input Prices)	Ln (Blue-Collar E.)
(10)	(11)	(12)	(13)
-0.157***	-0.347***	0.034	-0.031
(0.038)	(0.079)	(0.036)	(0.031)

Ln (White-Collar E.)	Ln (Blue-Collar W)	Ln (White-Collar W)	Ln (Real Prod.)
(14)	(15)	(16)	(18)
-0.003	-0.112***	-0.099**	-0.003
(0.041)	(0.032)	(0.039)	(0.041)

- As expected, the negative impacts are larger among smaller firms

Impacts of IDPs on informality: results using household surveys

Sample:	All Sectors		Highly Informal Sectors		Highly Formal Sectors	
	Pr.(No Pension)	Pr.(No Health or Pension)	Pr.(No Pension)	Pr.(No Health or Pension)	Pr.(No Pension)	Pr.(No Health or Pension)
	(1)	(2)	(3)	(4)	(5)	(6)
IDPs - RUV	0.0004***	0.0005***	0.0005***	0.0005***	-0.0000	0.0000
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0003)	(0.0003)
Obs.	1651224	1621139	1193667	1172081	457557	449058
R-square	.07371	.07444	.06221	.06303	.07098	.07118
Controls for all Panels						
Year FE	X	X	X	X	X	X
Mun. FE	X	X	X	X	X	X
Month FE	X	X	X	X	X	X
Individual Covariates	X	X	X	X	X	X

Notes: The sample is available between 2002 and 2010. The estimates use the *Encuesta Continua de Hogares* between 2002 and 2005 and the *Gran Encuesta Integrada de Hogares* from 2006 to 2010. The former was the first version of the Colombian household survey and the later is an augmented improved version. From 2002 to 2005 we only observe the variables for the 13 main cities of Colombia (i.e., 13 municipalities) but beginning in 2006 we observe 609 municipalities. Each coefficient corresponds to a separate regression. Individual covariates include gender, marital status, education level, and household size. All regressions use individual weights. Robust standard errors are presented in parentheses. *** significant at the 1%, ** significant at the 5%, * significant at the 10%.

- Higher IDP flows increase overall inequality, but the results are driven by sectors more prone to informal work

Conclusions

- While existing empirical evidence finds positive effects of voluntary migration on firms of developed economies, we find that forced migration has negative impacts on formal firms of a developing country.
- While IDPs have a negative impact on wages, input prices and output prices, we also find that they have a negative impact on real sales, employment and productivity.
- We hypothesize and show suggestive evidence that this is driven by an expansion of the informal sector, which absorbs most of the displaced individuals and adds unfair competitive pressures on formal firms.
- Our results highlight the importance of national policies and international cooperation efforts to facilitate the integration of IDPs - and also international refugees - into formal labor markets.

Next steps

- Use a different instrument for IDP flows that use historical migration trends (as in Card, 2001) instead of distance as weights to construct predicted migration:

$$\text{Predicted Inflows}_{mt} = \sum_{j=1 \epsilon J} \left[\text{Forced Migration Outflows}_{jt} \times \frac{Migrants_{m,j}^{1993}}{TotalMigrants_{m}^{1993}} \right]$$

- We use the Census microdata from 1993 (before the start of the large displacements) to measure historical migration patterns

Thanks!