Labour Market Effects of Migration-Related Supply Shocks: Evidence from Internal Refugees in Colombia

Valentina Calderón – Unicef
Ana María Ibáñez – Universidad de los Andes
Motivation

• Armed civil conflicts impose economic costs on victims of conflict and people living in conflict regions
  – Exacerbating pre-existing problems of poverty and inequality
• Yet conflict may impose economic costs beyond direct victims and people living in conflict areas
• Forced internal displacement
  – Exerts a heavy toll on the people forced to migrate
  – And may also affect people in destination cities through labour supply shocks, among other channels
• Today: 60 million forced migrants resulting from several conflicts in the world
Motivation

• Colombia the second largest magnitude of internally displaced population worldwide
  – 6.9 million IDP: 14.4% of total population

• Conflict is largely a rural phenomenon: residents in the countryside suffer the direct costs of conflict

• Internally displaced population flee the countryside for the relative safety of the country's urban areas.

• In some cities, the resulting labour supply shocks have been sizable
Objective and contribution

• Identify the causal impact of labour supply shocks of internal displacement flows on urban wages

• Estimate the broader labour market effects of conflict: how migration from conflict areas impact labour markets not directly touched by conflict
Impact of economic migration on labor markets

• Results show migration negatively affects wages and employment outcomes for natives, especially the least skilled: wide difference on estimates

• Difficult to establish causality between migration flows and labor market conditions: people migrate to cities with more dynamic labor markets

• Identification strategies
  – Analysing national rather than regional labour markets (Borjas, 2005),
Conflict in Colombia

- Civil conflict in Colombia was triggered by the emergence of several left wing guerrilla groups in the late 1960s.
- Violence intensified in the decades to follow with the expansion of guerrilla groups to wealthier areas of the country to extract resources and with the appearance of illegal drug crops.
- Drug trade resources also instigated the creation of right-wing paramilitary groups that have been closely related to drug barons and some land owners.
- Intensification of the conflict caused an escalating trend of attacks against the civilian population and has been the main driver behind forced displacement.
Conflict in Colombia

• Victims between 1985 and 2015: 7.3 million people (15.1% of the Colombian population)
  – Approximately 220,000 people died: 81.5% were civilians
• Forced displacement a strategy of armed groups to terrorize the population, weaken the support to the opponent group, prevent civil resistance, and seize valuable assets
  – Internally displaced persons between 1985 and 2015 is 6.9 million people
  – 90% of the Colombian municipalities were affected as origin location, as destination or both
  – Only 11% wants to return to their place of origin
• Today
  – Since 2002 onwards violence has decreased
  – 2006: peace process with paramilitary groups demobilized 31,700 combatants
  – Currently peace negotiations with FARC the largest guerrilla group
Labour supply shock in largest metropolitan areas

IDP shares in the 13 largest metropolitan areas: 2005

Source: Authors’ calculations based on DANE and RUV
Worforce descriptive statistics

<table>
<thead>
<tr>
<th></th>
<th>Formal</th>
<th></th>
<th>Informal</th>
<th></th>
<th>Workers</th>
<th></th>
<th>Internal</th>
<th></th>
<th>Refugees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
</tr>
<tr>
<td>Age</td>
<td>36.32</td>
<td>10.34</td>
<td>32.19</td>
<td></td>
<td>12.60</td>
<td></td>
<td>29.75</td>
<td></td>
<td>14.02</td>
</tr>
<tr>
<td>Sex (Female==1)</td>
<td>0.46</td>
<td>0.50</td>
<td>0.52</td>
<td></td>
<td>0.50</td>
<td></td>
<td>0.42</td>
<td></td>
<td>0.49</td>
</tr>
<tr>
<td>Married</td>
<td>0.59</td>
<td>0.49</td>
<td>0.39</td>
<td></td>
<td>0.49</td>
<td></td>
<td>0.45</td>
<td></td>
<td>0.50</td>
</tr>
<tr>
<td>Household Members</td>
<td>4.43</td>
<td>1.95</td>
<td>5.05</td>
<td></td>
<td>2.40</td>
<td></td>
<td>5.90</td>
<td></td>
<td>2.55</td>
</tr>
<tr>
<td>Years of Completed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>12.20</td>
<td>3.82</td>
<td>7.36</td>
<td></td>
<td>3.61</td>
<td></td>
<td>6.49</td>
<td></td>
<td>3.82</td>
</tr>
<tr>
<td>Real Monthly Wage (COP)</td>
<td>581,815</td>
<td>632,899</td>
<td>217,070</td>
<td></td>
<td>155,539</td>
<td></td>
<td>127,142</td>
<td></td>
<td>205,894</td>
</tr>
<tr>
<td>Wage in terms of the Min.Wage</td>
<td>2.51</td>
<td>2.68</td>
<td>0.91</td>
<td></td>
<td>0.68</td>
<td></td>
<td>0.67</td>
<td></td>
<td>1.15</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations based on ECH
Internally displaced persons: close substitutes of informal workers

Source: Authors’ calculations based on ECH
Data

• Data on Internal Refugees (RUV) from Victims’ Unit
• National Household Survey 2001-2005 (ECH 2001-2005)
• Data on massacres by municipality from CEDE and the Colombian Police
Estimation

• Reduced form specification for individual $i$ in municipality $c$ at time $t$

\[ w_{ict} = \beta_t + \beta_{ct} + X_{ict} \delta + \gamma \ln S_{ct} + \epsilon_{ict} \]

• $X_{ict}$ individual characteristics: potential experience, years of schooling completed, gender and marital status

\[ S_{ct} = \sum_{j=2001}^{t} \frac{M_{cj}}{Pop_{12-65ct}} \]

• Share of internal refugees at period $t$ with respect to the labor force
Identification strategy

• Instrumental variable: number of massacre victims in municipalities of origin divided by the distance between municipality of origin and destination

\[ l_{ct} = f \left( \frac{\sum_{t=Jan2001}^{T} \text{MassacreVictims}_{to}}{\text{Distance}_{oc}} \right) \]

• The functional form of the instrument suggests that the number of migrants in labor market \( c \) will increase in the number of massacre victims, but decrease in the distance from the massacre to the labor market.
Identification strategy: migration driven by massacres and not favorable labor conditions

Massacres and Timing of Migration

Source: Authors’ calculations based on CEDE and police data
Identification strategy: timing of violence in rural areas is not related to conditions in nearby urban labour markets

<table>
<thead>
<tr>
<th>Dependent Variable: Massacres per state</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log unemployment rate of the state capital</td>
<td>-0,34</td>
<td></td>
<td>0,25</td>
</tr>
<tr>
<td></td>
<td>(1,434)</td>
<td></td>
<td>(1,961)</td>
</tr>
<tr>
<td>Log employment rate of the state capital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log labour force participation of the state capital</td>
<td>0,06</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1,363)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>62</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>F-Statistic</td>
<td>0,05</td>
<td>0,01</td>
<td>0,00</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Month FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>State FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations based on ECH, CEDE and police data
Identification strategy: workers fleeing rural violence generally relocate nearby, most often to their state capital.

Displacement after a Massacre (Peque, Antioquia, July 2001)

Source: Authors’ calculations based on CEDE and police data
# Results: First Stage Regression

<table>
<thead>
<tr>
<th></th>
<th>Unweighted data</th>
<th>Weighted</th>
<th>Regression at the Individual Level</th>
<th>Regression at the Individual Level</th>
<th>Regression at the city level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log (Massacre Victims/ Distance)</td>
<td>0.43*** (0,055)</td>
<td>0.37*** (0,047)</td>
<td>0.48*** (0,098)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>0,96</td>
<td>0,97</td>
<td>0,46</td>
<td>0,46</td>
<td>1619</td>
</tr>
<tr>
<td>Observations</td>
<td>688098</td>
<td>688098</td>
<td>0</td>
<td>0</td>
<td>1619</td>
</tr>
<tr>
<td>F(1, 12)</td>
<td>63,98</td>
<td>262,89</td>
<td>23,59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F( 63, 12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Month FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>City FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SES FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sector FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: OLS estimates. City, month and year fixed effects are included in all the regressions.
Robust clustered standard errors are reported in parentheses.
* Significant at the 10 % level.
** Significant at the 5 % level.
*** Significant at the 1 % level
Standard errors are clustered at the city level
## Results: IV estimations

<table>
<thead>
<tr>
<th></th>
<th>Total sample</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td>-0.088***</td>
<td>-0.100***</td>
<td>-0.081***</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.022)</td>
<td>(0.02)</td>
</tr>
<tr>
<td><strong>Waged workers manual occupations</strong></td>
<td>-0.063***</td>
<td>-0.021</td>
<td>-0.075***</td>
</tr>
<tr>
<td></td>
<td>(0.023)</td>
<td>(0.049)</td>
<td>(0.027)</td>
</tr>
<tr>
<td><strong>Waged workers administrative &amp; professional occupations</strong></td>
<td>-0.046**</td>
<td>-0.064**</td>
<td>-0.024</td>
</tr>
<tr>
<td></td>
<td>(0.023)</td>
<td>(0.030)</td>
<td>(0.035)</td>
</tr>
<tr>
<td><strong>Domestic workers</strong></td>
<td>-0.022</td>
<td>-0.017</td>
<td>0.027</td>
</tr>
<tr>
<td></td>
<td>(0.041)</td>
<td>(0.041)</td>
<td>(0.249)</td>
</tr>
<tr>
<td><strong>Independent Workers/ Self Employed</strong></td>
<td>-0.168***</td>
<td>-0.228***</td>
<td>-0.131***</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.049)</td>
<td>(0.034)</td>
</tr>
</tbody>
</table>

Robust clustered standard errors are reported in parentheses.

* Significant at the 10 % level.
** Significant at the 5 % level.
*** Significant at the 1 % level.
### Results IV estimations: independent workers and education levels

<table>
<thead>
<tr>
<th></th>
<th>Total sample</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Workers/Self Employed</td>
<td>-0.168***</td>
<td>-0.228***</td>
<td>-0.131***</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.049)</td>
<td>(0.034)</td>
</tr>
<tr>
<td>With a high school degree or less</td>
<td>-0.207***</td>
<td>-0.270***</td>
<td>-0.174***</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.048)</td>
<td>(0.034)</td>
</tr>
<tr>
<td>With some college or college degree</td>
<td>0.039</td>
<td>-0.054</td>
<td>0.096</td>
</tr>
<tr>
<td></td>
<td>(0.106)</td>
<td>(0.173)</td>
<td>(0.134)</td>
</tr>
</tbody>
</table>

Robust clustered standard errors are reported in parentheses.

* Significant at the 10 % level.
** Significant at the 5 % level.
*** Significant at the 1 % level
## Results IV estimations: salaried workers, self-employed professionals and employers

<table>
<thead>
<tr>
<th></th>
<th>Total sample</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaried, self-employed professionals &amp; employers</td>
<td>-0.038**</td>
<td>-0.027</td>
<td>-0.041**</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.022)</td>
<td>(0.020)</td>
</tr>
<tr>
<td>With a high school degree or less</td>
<td>-0.052***</td>
<td>-0.04</td>
<td>-0.058***</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.025)</td>
<td>(0.021)</td>
</tr>
<tr>
<td>With some college or college degree</td>
<td>-0.033</td>
<td>-0.028</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
<td>(0.040)</td>
<td>(0.039)</td>
</tr>
</tbody>
</table>

Robust clustered standard errors are reported in parentheses.

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level
## Results IV estimations: informal/formal workers

<table>
<thead>
<tr>
<th></th>
<th>Total sample</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Informal workers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-0.428***</td>
<td>-0.472***</td>
<td>-0.404***</td>
</tr>
<tr>
<td></td>
<td>(0,095)</td>
<td>(0,149)</td>
<td>(0,123)</td>
</tr>
<tr>
<td><strong>Informal workers: high school degree and less</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-0.517***</td>
<td>-0.510***</td>
<td>-0.537***</td>
</tr>
<tr>
<td></td>
<td>(0,115)</td>
<td>(0,186)</td>
<td>(0,145)</td>
</tr>
<tr>
<td><strong>Informal workers: some college or college degree</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-0.273</td>
<td>-0.359</td>
<td>-0.232</td>
</tr>
<tr>
<td></td>
<td>(0,188)</td>
<td>(0,264)</td>
<td>(0,266)</td>
</tr>
<tr>
<td><strong>Formal workers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-0.106</td>
<td>-0.15</td>
<td>-0.088</td>
</tr>
<tr>
<td></td>
<td>(0,243)</td>
<td>(0,368)</td>
<td>(0,319)</td>
</tr>
<tr>
<td><strong>Formal workers: high school degree and less</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-0.101</td>
<td>-0.708*</td>
<td>0.100</td>
</tr>
<tr>
<td></td>
<td>(0,289)</td>
<td>(0,380)</td>
<td>(0,388)</td>
</tr>
<tr>
<td><strong>Formal workers: some college or college degree</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-0.048</td>
<td>-0.098</td>
<td>-0.018</td>
</tr>
<tr>
<td></td>
<td>(0,314)</td>
<td>(0,462)</td>
<td>(0,418)</td>
</tr>
</tbody>
</table>

Robust clustered standard errors are reported in parentheses.

* Significant at the 10 % level.
** Significant at the 5 % level.
*** Significant at the 1 % level
Conclusions

• Inflows of internally displaced persons have a large effect on urban labour-market: a 10% increase in the share of IDP decreases wages from 0.8 to a little over 5.7%

• Burden of the increase in labour supply falls disproportionately on female, self-employed, low-skilled and informal workers

• Real minimum wage in the period increased on average 2.21% yearly, while wages for self-employed workers with a high school diploma or less declined 2.07% in response to a 10% increase in the share of forced migrants
Conclusions

• Results suggest expansion of the informal economy, accompanied by a large decline in wages in this sector

• Negative impacts of displacement are broadly distributed across the Colombian population
  - Forced migrants face large welfare losses from the displacement process
  - Large inflows of displaced populations also affect vulnerable groups within the urban population in destination cities