The Impact of Internal Displacement Inflows in Colombian Host Communities: Housing

Emilio Depetris-Chauvin[*]   Rafael J. Santos[†]

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[*]Pontificia Universidad Católica de Chile. [†]Universidad de Los Andes.

50 Years of Conflict and IDP in Colombia

- Nearly 7 million individuals has been forcibly displaced from their homes (UNHCR, 2015)
- 5.8 Million of inflows between 1999 and 2014
- approximately 15% of Colombians are living in host communities
- almost 3 million migrated to Colombian 13 largest cities

Motivation

> "The impact of the displaced population [IDPs] is huge. [...] in truth there is not enough housing. The issue of housing is a disaster at the national and district levels for both the displaced and the host." (Mayor of Ciudad Bolivar, 2011)

> "Another point of complaint by local citizen is the lack of available housing. Due to the influx of large amounts of IDPs housing has become scarce and rents has been increasing. This is particularly problematic for those living on minimum wages. They often blame the IDPs for the rise in their living costs." (Lopez et al, 2011).

What this project aims at

- To study the impact of IDPs inflows on Housing Market
  - rental prices
  - housing construction and housing deficit
- The effect is not obvious, IDP inflows might :
  - increase demand, particularly for low income housing
  - decrease wages and income
  - exert an upward pressure on other prices
  - generate negative externalities for the initial residents (e.g., congestion and public space invasion)
  - affect (perception of and actual) crime

Contribution

- Why is this novel?
- Identify causal effect through
  - Fixed effects model with location-specific linear trends
  - IV approach
  - Large impact that is an order of magnitude bigger than estimates from economic migrant literature
- investigate impacts on rental prices in urban areas by varying levels of income
  - as IDP inflows increase, rental prices increase (decrease) for low (high) income units

Contribution

- We provide evidence on potential mechanisms for impact heterogeneity
  - differential response of construction sector
    - ★ inelastic for low-income housing
    - ★ elastic for mid- and high-income housing
  - increasing housing deficit
    - ★ mostly quantitative deficit (coverage)
    - ★ severe problem in highly urbanized areas
  - increasing levels of crime

Housing Market

- For some cities shock has been huge
- Only 5% of IDP are homeowners in host cities (85% before displacement)
- For Q1 and Q2 of income: homeownership is below 40%
- IDP have no access to credit (neither poor non-IDP)
- Government assistance is inadequate

Housing Market

- large quantitative and qualitative deficit (World Bank, 2010)
  - 1993: 7.2 mm HH; 1.2 mm w/quant. deficit & 2.6 mm w/qual. deficit
- severe problem in large cities
- IDP Survey (2000): IDP critic overcrowding 40% (vs 20% before displacement)
- constrained capacity to meet a growing demand for housing solutions
  - scarcity of serviced and affordable land for low-income housing
  - where expansion is feasible: highly-priced land only suitable for high-income segments
  - marginal participation of private sector in housing construction for low-income segment

Data Sources

- We focus on Colombian 13 largest cities for which data on both IDP inflows and prices is available at quarterly frequency for the period 1999-2015
- Prices: CPI of DANE by city and income level
- IDP migration inflows and outflows (1985-2015): RUV (Registro Único de Víctimas). i.e,: Colombian government
- New constructions licenses by income-segment (1998-2015): DANE
- Housing deficits by municipality: 1993 and 2005 National Census from DANE (entire country)
- Crime (13 largest cities, only for 2003-2014): (i) homicides and theft from Ministry of Defense. (ii) narcotics related arrests from National Police
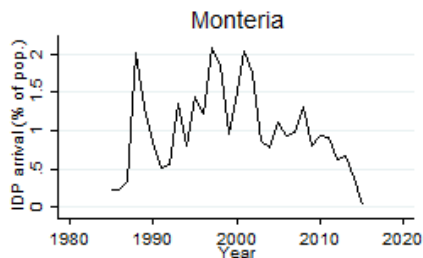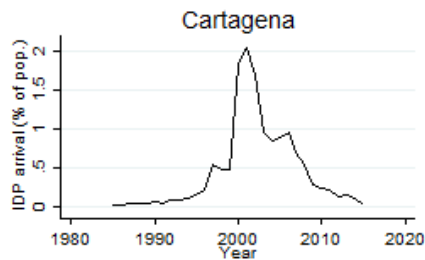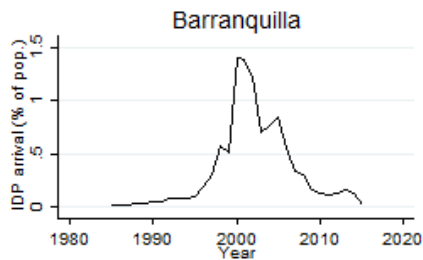
Main Empirical model

With a panel of host cities we estimate,

$$ln(P_{c,t}) = \beta \, ln(Inflows_{c,t-1}) + \eta' X_{c,t} + d_c + d_t + u_{c,t} \qquad (1)$$

1. $P_{c,t}$ are relative rental prices in city c and quarter t.
2. $Inflows_{c,t-1}$ is the number of IDP arriving at $t-1$ to host city c.
3. X are controls: Population, city-level linear trends, tax-revenues, teachers per student.
4. d_c and d_t are city and year fixed effects.
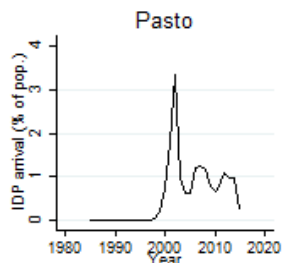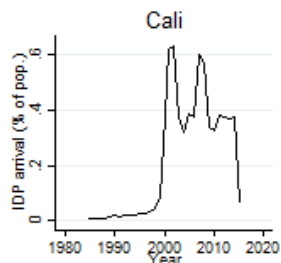5. $u_{c,t}$ is an error term clustered at the city.year level.

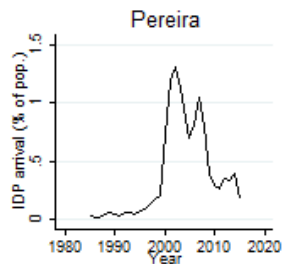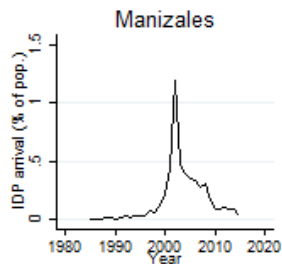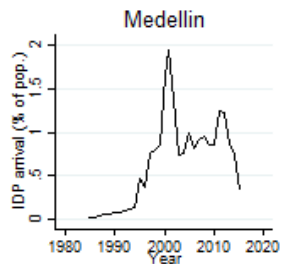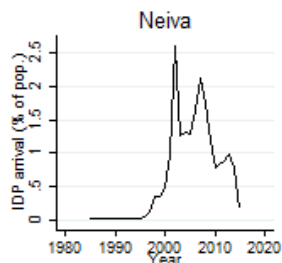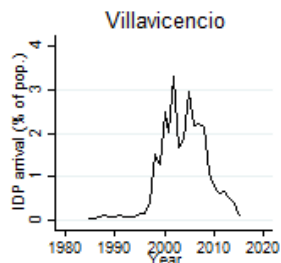# Intensity of displacement, uneven across time and regions

Northern Colombia

Barranquilla · Cartagena · Monteria

Intensity of displacement, uneven across time and regions

Eastern Colombia

Medellin · Manizales · Pereira · Cali · Pasto

Intensity of displacement, uneven across time and regions

Central Colombia
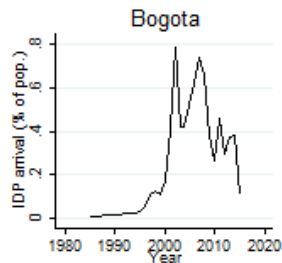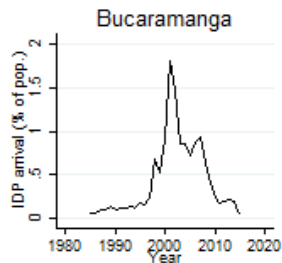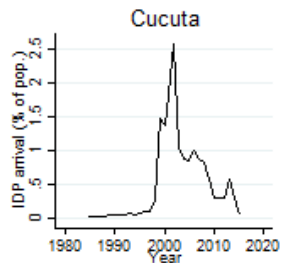
Main empirical model

- Problem: Migration is an endogenous decision (i.e: higher wages, lower cost of living, ammenities, etc.)
- Lagging the treatment does not convincingly solve endogeneity problems
- Measurement error in a fixed effect model
- Solution: Use an instrumental variable approach
- $receptivity_{c,t} = \sum\limits_{m \in M \backslash \{c\}} outflows_{m,t} \times D_{m,c}^{-1}$
- Where $c \in C \subseteq M$ is a city in our set of 13 cities, which is a subset of Colombian 1100 municipalities
- The instrument is a distance-weighed average of the outflows in all municipalities except city/municipality c

IDP and Rental Prices by Income Level (OLS and IV)

| | Dependent Variable: Ln of Relative Rental Price | | | |
| | Panel A: OLS Estimates | | | |
	Average	Low Income	Middle Income	High Income
IDP Inflows t-1	0.00759***	0.00810**	0.00787**	0.00160
	(0.00255)	(0.00320)	(0.00328)	(0.00445)
	Panel B: IV Estimates			
	Average	Low Income	Middle Income	High Income
IDP Inflows t-1	0.0114**	0.0259***	0.00206	-0.0324**
	(0.00466)	(0.00791)	(0.00598)	(0.0125)
First-stage F	27.92	27.92	27.92	27.92

Standard errors clustered at the city.year level in parenthesis. Sample size is 832 (N=13, T = 64). All variables are expressed in natural logarithms. All regressions include time and city fixed effects, city-specific linear trends, populatio, tax revenues, and teachers per pupil. All regressions are weighted by city population. *** p<0.01, ** p<0.05, * p<0.1

Housing Prices -Persistence

Figure: IDP Inflows and Rental Prices Over Time (IV)
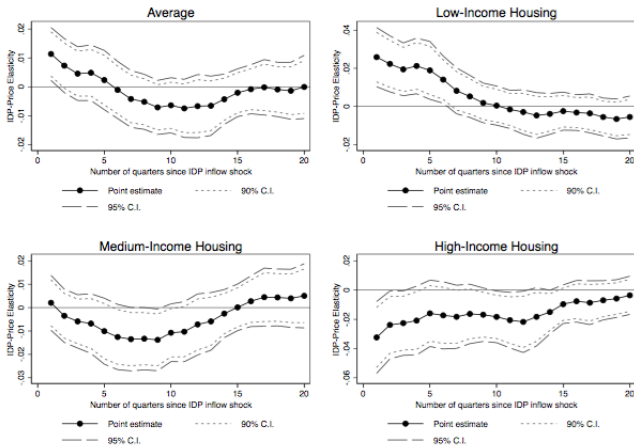
Examining causal pathways

- We exploit data on new housing construction licenses, divided into social interest housing (VIS) and normal housing (Non-VIS)
  - The VIS category was established by the Colombian government to assist low-income segments of the population to acquire homes
    - defined as units $\leq$ 135 monthly minimum legal wages (U\$D 34k)
- Some context:
  - Scarcity of serviced and affordable land for VIS
  - Marginal participation of private sector on VIS construction
  - IDP´s downward pressure in real wages for non-skill labor

Potential Channels: IDP and Construction Licenses

	Non-VIS (OLS) (1)	VIS (OLS) (2)	Non-VIs (IV) (3)	VIS (IV) (4)
IDP Inflows t-1	0.113**	0.0405	0.220*	0.138
	(0.0512)	(0.124)	(0.122)	(0.290)
Obs	830	830	830	830
First-stage F	.	.	27.88	27.88

Standard errors clustered at the city.year level in parenthesis. All variables are expressed in natural logarithms. All regressions include time and city fixed effects, city-specific linear trends and the full set of controls. All regressions are weighted by city population. VIS Licenses refer to social interest housing (see main text for details). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Examining causal pathways

- We use housing deficit data at the municipality level from 1993 and 2005 censuses
- Data allows us to distinguish impact on
  - quantitative deficit (coverage)
  - qualitatilive deficit (quality)
  - urban vs rural
- We exploit within-municipality variation in IDP inflows (short panel)
- Treatment: $\frac{Cumulative\ IDP\ Inflow_{m,t-1}}{Pop_{m,t}}$

Potential Channels: IDP and Housing Deficit (OLS and IV)

Dep. Var.	Panel A: OLS Estimates			
	Overall HD		Quantitative HD	
Cumulative IDP Inflow t-1 /Population t	0.101**	0.252**	0.0990**	0.291***
	(0.0455)	(0.107)	(0.0489)	(0.102)

Dep. Var.	Panel B: IV Estimates			
	Overall HD		Quantitative HD	
Cumulative IDP Inflow t-1 /Population t	0.901***	1.846***	0.702***	1.500***
	(0.294)	(0.678)	(0.268)	(0.532)
First-stage F	33.17	10.63	33.17	10.63
Municipalities in Sample	All	Urbanized	All	Urbanized
Municipality FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	2048	368	2048	368

Standard errors clustered at the municipality level in parenthesis. Housing deficit is computed as a share of total households in municipality (based on 1993 and 2005 national census). Cumulative IDP inflow/Population for 1993 (2005) is the cumulative sum of IDP inflows from 1985 (1994) to 1992 (2004) normalized by 1993 (2005) population. Instrumental variable is the cumulative sum (over the same period as the endogenous IDP inflows) of the receptivity measure (in logs). Urbanized municipalities are those with an urbanization rate above 0.66 in 2005 (i.e., 75th percentile in the distribution of urbanization rates). All regressions are weighted by the number of households in municipality. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Potential Channels: IDP and Housing Deficit (IV -cont.-)

Dep. Var.	Qualitative HD		Quantitative HD	
			in Mun. Seat	Outside Mun. Seat
	(1)	(2)	(3)	(4)
Cumulative IDP Inflow t-1 /Population t	0.198	0.346	1.767***	0.00875
	(0.182)	(0.322)	(0.607)	(0.139)
Observations	2048	368	368	362
Municipalities in Sample	All	Urbanized	Urbanized	Urbanized
Municipality FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
First-stage F	33.17	10.63	9.167	13.25

Standard errors clustered at the municipality level in parenthesis. Housing deficit is computed as a share of total households in municipality (based on 1993 and 2005 national census). Cumulative IDP inflow/Population for 1993 (2005) is the cumulative sum of IDP inflows from 1985 (1994) to 1992 (2004) normalized by 1993 (2005) population. Instrumental variable is the cumulative sum (over the same period as the endogenous IDP inflows) of the receptivity measure (in logs). Urbanized municipalities are those with an urbanization rate above 0.66 in 2005 (i.e., 75th percentile in the distribution of urbanization rates). All regressions are weighted by the number of households in municipality. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Examining causal pathways

- Negative externalities may depress housing prices (Besley and Hannes, 2012)
  - large population shocks associated to negative externalities
    - congestion
    - rising levels of crime
  - Survey in Bogota (2004): perception of (negative) impact of IDP varies with income
    - low-income: public space invasion and unemployment
    - high-income: public space invasion and crime

Potential Channels: IDP and Crime

	(1) Homicides (OLS)	(2) Robberies (OLS)	(3) Narcotics (OLS)	(4) Homicides (IV)	(5) Robberies (IV)	(6) Narcotics (IV)
IDP Inflows	0.201***	-0.0191	-0.0500	0.228	-0.155	1.948**
	(0.0577)	(0.0889)	(0.159)	(0.205)	(0.326)	(0.933)
Obs	572	572	572	572	572	572
First-stage F	.	.	.	13.20	13.20	13.20

Standard errors clustered at the city.year level in parenthesis. All variables are expressed in natural logarithms. All regressions include time and city fixed effects, city-specific linear trends. All regressions are weighted by city population. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Conclusions

- Rental Prices for low income individual increase with IDP Inflows. Higher demand outweighs crime externalities while housing supply is inelastic to inflows.
- Rental Prices for high income individuals decrease. Reinforcing channels: Increase in Supply and criminality.