

The Impact of Internal Migration on Local Labor Markets: Evidence from Internally Displaced Populations in Colombia

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September 2008

Abstract

The intensification of the civil conflict in Colombia over the past 15 years has generated an exodus of low-skilled populations from rural to urban areas. This paper exploits this unfortunate natural experiment to examine the impact of exogenous labor supply shifts on labor outcomes. While migration flows are exogenously produced by conflict dynamics, location decisions might be positively correlated with demand shocks. An instrumental variables strategy allows us to correct for the possible attenuation bias generated by internally displaced populations locating in dynamic labor markets. In contrast to other papers in the literature on migration, we use an interaction of the number of massacres at the origin and the distance to the state capital. We believe this instrument accurately explains the location decision patterns of these migrants, and that it is exogenous to local market conditions. Our results suggest that these immigration flows produce large negative impacts on wages and employment opportunities of all workers, but are particularly large for low skill workers. Due to the rigidities of labor markets in Colombia, effects are large for both wages and labor market participation. The distributive impact of forced displacement is considerable.

Keywords: Migration, Labor Markets, Developing Countries

JEL No. J22, J40, J41, J61

We acknowledge funding from MICROCON and Universidad de los Andes (Colombia). We are especially grateful to Robert LaLonde, Marcos Rangel, and Amer Hasan for useful comments. Valentina Calderón-Mejía thanks Universidad de los Andes and MICROCON for financial support. E-mail for correspondence: vcalder@uchicago.edu and aibanez@uniandes.edu.co.

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I. Introduction

The perception that large inflows of unskilled migrants can deteriorate the labor conditions of a low-skilled native workforce in the host country has inspired a debate on the impact of migration. The evidence in the literature is mixed. Numerous studies have found that migration negatively affects wages and employment outcomes of natives, especially those least skilled, yet the magnitude of the effect is small (Altonji and Card, 1989; Card, 1989; Lalonde and Topel, 1991; Schoeni, 1997; Borjas and Katz, 2005; Carrasco et al, 2008; Kugler and Yuksel, 2008; Borjas, Freeman and Katz, 1997; Borjas, Grogger and Hanson 2006 and 2008). Some authors attribute the small effects to market adjustments, such as the outmigration of natives and the positive output of demand shocks, which conceal the large impact (Altonji and Card, 1989; Borjas, 1994).

Establishing causality between adjustments in labor markets and immigration flows is however difficult. Presumably, migrants locate in dynamic markets with a growing labor demand, biasing the impact on the labor markets. In order to solve the endogeneity issue, inflows of migrants have been instrumented with earlier migration flows from the same country (Altonji and Card, 1989; Lalonde and Topel, 1991; Card, 1989, Schoeni, 1997), or natural experiments whereby exogenous migrant flows are used to estimate the impact on labor markets (Card, 1989; Hunt, 1992; Carrington and deLima, 1996; Friedberg, 2001; Angrist and Kugler, 2003; Kugler and Yuksel, 2008).

The purpose of this paper is to determine the effects of large inflows of forced migration on city wages, employment, unemployment, and labor force participation by the low-skilled native workforce. In contrast to most of the literature that has focused on examining the effects of economic immigration on labor markets; this paper will examine the impact of forced displacement in Colombia generated by the civil conflict the country has endured over the last 40 years. Because forced displacement is prompted by armed conflicts and chronic violence, the massive flows of migration generated is not responding to economic incentives, but instead migrants are fleeing rural areas in search of safety. This

phenomenon creates an exogenous shift in labor supply, serving as a natural experiment to evaluate the effects of large labor supply shocks on cities.

Intensification of the Colombian conflict during the 1990s has prompted the forced migration of nearly 7.8 percent of the population. These flows of displaced population dispersed along the country's territory, creating a large geographical variation of the immigration shock. At least one-third of the forced displaced migrated to the 13 largest metropolitan areas, which have received on average three percent of their native labor force in a period of eight years, with cities like Villavicencio receiving about eight percent of their labor force in the same time frame. Internally Displaced Populations (IDPs) are generally less skilled than the average native, and their labor experience is akin to rural areas. They are more likely to become informal labor, as their skills are less compatible with city skill demands. Despite being forced to flee from their origin cities, the decision to locate in a certain city might be associated with the economic opportunities the destination provides. For this purpose, we instrument the immigrant flows with the interaction between massacres at origin site and distance between origin and reception site. We believe this instrument corrects the bias generated by migrants locating in dynamic labor markets.

Our results suggest that these migration flows produce large negative impacts on wages and employment opportunities of all workers, but are particularly large for low-skilled workers. Due to the rigidities of labor markets in Colombia, effects are large for both wages and quantity outcomes such as labor participation, employment and unemployment. The distributive impact of forced displacement is considerable. Not only are welfare and assets losses stemming from forced displacement substantial (Ibáñez and Moya, 2008), the impact of displaced inflows falls heavily on the most vulnerable groups of the native population.

The paper is organized in five sections. The first section describes forced displacement in Colombia and provides a brief overview of the country's labor markets. In the second section, the theoretical framework is explained. The data sources, the variables constructed, and some preliminary results are discussed in section three. Lastly, the results are discussed in section four with the conclusions presented in section five.

II. Forced displacement in Colombia: the impact on the Colombian Labor Markets

The on-going civil conflict in Colombia caused an unexpected and large wave of migrants from rural areas to urban centers during a short period of time. More than 3.5

million Colombians were forced to migrate between 1998 and 2008 (Ibáñez and Velásquez, 2008). This migration was not voluntary; it was forced by the heightened conflict in rural areas of the country between paramilitary and guerrilla groups. The population fled in order to save their lives or after being a victim of illegal armed groups. These migration flows were not seeking better economic opportunities. Presumably such a large inflow of immigrants exerted an impact on urban labor markets. Since forced displacement was not a response to the usual migration incentives, migration flows were exogenous to labor conditions and thus provide a natural experiment which allows us to identify the impact of exogenous shifts in labor supply. Similar approaches have been adopted by Kugler and Yuksel (2008), Card (1990), Hunt (1992), Carrington and deLima (1996), Friedberg (2001), and Angrist and Kugler (2003).

However all these studies focus on international migration to developed countries. To our knowledge, this is the first paper that examines the impact of internal migration in a developing country. Before describing the theoretical framework, the following section will discuss the phenomenon of forced displacement in Colombia and the particular characteristics of the country's labor markets.

2.1. Forced displacement in Colombia

Colombia has endured a civil conflict for the last four decades. The conflict erupted when left-wing guerrilla groups decided to challenge the State authority by launching sporadic attacks on government forces and some rural villages (Echeverry et al, 2001). Their influence was confined however to isolated rural regions of the country and aggressions against the civil population were rare. The appearance of illegal drug trade in the late seventies fueled the conflict by providing financial resources to illegal armed groups and fostering the creation of right-wing paramilitary groups to combat guerrilla groups.

The massive financial resources provided by drug trade, paired with the emergence of a new warring faction, intensified the conflict and contributed to its geographical expansion. Aggressions against the civil population heightened as a consequence. Selective homicides, massacres, death threats, sexual violence, forced recruitment, and abductions perpetrated by illegal armed groups became frequent in rural areas. By attacking the civilian population, illegal armed groups aimed at weakening civil support to its opponent, augmenting the war loot, deterring civil resistance movements, and seizing valuable assets (in particular land). In

order to prevent aggressions or after being the victim of one, the civil population fled to seek refuge in urban areas.

Between 1998 and 2008, nearly 3.5 million persons, equivalent to 7.8 percent of the country's population, were forced to migrate (Ibáñez and Velásquez, 2008). More than half of displacements occurred in a time span of four years (2000-2004). Although those forced to displace dispersed throughout the Colombian territory, flows of migrants concentrated primarily within a few regions. In some medium-sized cities the displaced population was more than 20 percent of the native population.

People mostly migrated to urban areas where government forces or anonymity provided protection from future attacks. Despite being forced to leave, the selection of the destination site was completely voluntary. Different from other countries facing conflict, refugees were not required to locate to special camps, or to migrate to a particular city. Labor markets conditions could thus determine, at least partially, the decision to locate in a particular host city.

Identifying the economic conditions in destination site of the displaced population and the particular characteristics is important to understand the impact of forced displacement on the Colombian labor markets. First, the death or abduction of the households' main breadwinner for 8.5 percent of displaced households forced many females to become household heads, and the main breadwinners, while before displacement females fully dedicated themselves to household chores (Ibáñez and Moya, 2008). Second, insertion in labor markets was difficult due to low formal human capital levels (5.7 years of education) and inadequate labor experience for urban areas, as nearly 60 percent of migrants dedicated themselves to agricultural activities before migration (Ibáñez and Moya, 2008). However, since women were skilled in occupations better suited to compete in urban labor markets, such as cleaning, cooking or taking care of children, their performance in labor markets was better than men (Meertens, 1999). Lastly, the economic conditions are extremely difficult, labor income falls more than 50 percent after displacement, and consumption is near subsistence levels (Ibáñez y Moya, 2007). Presumably, as a result of all these conditions, reservation wages of the displaced population are low, and they are willing to accept any job offer. Garay (2008) found that 88 percent of the displaced population is working without any formal labor contract.

This suggests that forced displacement is a natural experiment to understand how labor market adjusts to exogenous shifts in supply. Although households migrate, these massive population movements are not a response to economic incentives (Engel and Ibáñez, 2008). The paper's analysis will use these exogenous flows and its geographical variation to identify the impact of immigration on the Colombian labor markets. A short description of the Colombian labor markets is presented below in order to understand the results of the paper.

2.2. Labor Markets in Colombia

The particularities of the Colombian labor market are important to our analysis, as it implies different types of adjustments to large supply shocks. In addition, most of the public policy regarding labor markets has targeted labor demand, and little attention has been given to the effects of changes in the supply of labor. Our analysis indicates that supply shocks are fundamental to any policy formulation, especially considering that Colombia has one of the highest unemployment rates in Latin America.

Colombia has a large and binding national minimum wage. Several studies reveal that the minimum wage is binding for the formal sector, and also acts as a numeraire for labor contracts in the informal sector (Kugler and Kugler, 2003; Maloney and Núñez, 2003; Bell, 1997). The minimum wage legislation, adds on rigidities in the formal economy as it limits the ability of firms to hire workers willing to work for less. Besides the minimum wage regulation, non-wage costs are high in Colombia; these two factors add on to promote informalization of the economy. Bernal and Cárdenas (2003) estimate non-wage labor costs rose to 52 percent in 1996 from 47.1 percent in the late eighties. This increase in non-wage costs has resulted in a significant reduction in labor demand. High payroll taxes have also contributed to reduce wages and employment (Kugler and Kugler, 2003). Since the informal sector provides a solution to avoid the inefficiencies of labor market regulations, it has grown significantly (Maloney and Núñez, 2003).

A series of labor reforms was undertaken in the early 1990s, aimed to reduce labor demand rigidities. First, a large trade reform was implemented gradually during the first part of the decade. This reform increased labor demand elasticities for unskilled workers (Kugler and Kugler, 2003). Second, the government has carried out two labor reforms since 1993 with the purpose of reducing non-wage labor costs. The effects have been however neutral at best. The reforms implemented in 1990 ended up increasing non-wage costs, and producing

larger employment volatility in response to economic shocks (Bernal and Cárdenas, 2003). In 2002 a new reform was implemented, however evidence on its impact is mixed. While Nuñez (2005) finds the reform contributed to expand the formal sector; Gaviria (2004) finds no impact of the reform on labor formalization.

If the reforms had an effect on the formalization of the economy, we find that the supply shocks metropolitan areas in the past 10 years seemingly offsets any positive effects of these reforms. On the one hand, we believe that the large supply shocks in combination with demand side rigidities not only increased the informal sector, but severely affected wages in this sector. On the other hand, for workers at the margin, the combination of large migrant influxes and demand rigidities, rather than generating large wage declines, had an impact on employment, forcing them to switch from the formal to the informal economy. In the next section we will present the theoretical framework, followed by the results that provide evidence for these arguments.

III. Theoretical Framework

The purpose of this paper is to identify the impact of immigrant flows on labor markets. We examine labor markets adjustments after an exogenous shift in labor supply caused by forced displacement in Colombia. We identify first adjustments on natives' wages, using the approach suggested in LaLonde and Topel (1991). Because excessive regulation and a binding minimum wage introduces significant rigidities to the Colombian labor markets, we also identify the quantity adjustments produced by the IDP shock, represented by cities' average for labor participation, employment and unemployment rates, based on the method of Altonji and Card (1989).

As in most studies, we assume immigration is an exogenous outward shift in labor supply. This increment in labor supply is not however homogenous along skill groups. The skill distribution of migrants, though diverse, usually diverges from the skill distribution of natives, implying that the skill group with a disproportional increase is the most affected by the sudden expansion in labor supply (Altonji and Card, 1989). In our particular case, the skills of the displaced population are concentrated on the lower tail of the skill distribution. To identify precisely the impact on the different groups of the skill distribution, we define two groups, skilled and unskilled, similarly to Altonji and Card, 1989; Borjas, 2003 Card, 2005; Card, 2007, among others. To define skill groups, we rely on the official definition of formal and informal workers used by the National Statistics Department. The informal sector

is defined based on an indirect formula used widely internationally. Such definitions classify as informal employees and employers those who work for firms with 10 or less workers, independent workers except professionals and technicians, domestic workers, and household workers with no remuneration. Given that educational levels are important criteria for the definition, we assume informal workers are unskilled, and formal workers are skilled.

We expect displaced persons to be perfect substitutes of low skill natives, defined as informal workers, but we do not distinguish between natives and IDPs. Nonetheless, as stressed by LaLonde and Topel (1991), IDPs are expected to assimilate to urban labor markets over time, entailing a greater degree of substitution as they assimilate, not only with informal workers, but also with formal workers. Our data does not cover a large enough period to identify the long-term adjustments.

In contrast to Lalonde and Topel (1991) and Card (1989), new IDPs are not only a substitute for earlier cohorts of IDPs or migrants, but rather we believe they are substitutes for other low skill natives. First, we concentrate on short-term impacts of IDPs as the large inflows of displaced persons were fairly recent. Thus, we cannot examine the impact on earlier cohorts of IDPs. Second, the profile of migrants and IDPs diverges significantly. The skill distribution for migrants is above that of informal workers, whereas IDPs' skill distribution is below that of informal workers. We also assume that the demand for each type of labor is a decreasing function of the wage, and that other prices are exogenous to the city.

Consider a large number of geographically defined local labor markets. Informal and formal labor are combined in concave local production function represented by:

$$(1) \quad Y_c = F(\theta_c g(M_{cS}, M_{cUN}), \alpha_c h(N_{c1}, \dots, N_{cL}))$$

where Y_c refers to total output produced in locale c , and M_{cj} is total human capital supplied by labor aggregate j , divided in skill (S) and unskilled (UN) workers, in locale c . The function h contains capital and other resources that are incidental to the analysis. We assume that equation (1) is weakly separable in labor and other production inputs. θ_c and α_c are locale specific factor neutral shifters of the effective quantities of labor and other factors. These shifters may represent forces that shift the local demand for labor. Each worker provides one unit of relevant human capital, and the marginal product of group j at locale c is

$$(2) \quad W_{cj} = F_1(\cdot) \theta_c g_j(M_{cS}, M_{cUN}).$$

The separability assumption implies that other inputs different than labor enter the marginal product of labor only through $F_1(\cdot)$. Thus, shifts in θ_c and α_c , or other components, leave relative wages for labor inputs unchanged. The log wage of unskilled workers in locale c is represented by

$$(3) \quad \log W_{cUN} = w_{cUN} = \log(F_1(\cdot)\theta_c) + \ln g_j(M_{cs}, M_{cUN})$$

The stock of capital of individual j depends on his characteristics X_{cjl} such that

$$m_{cjl} = X_{cjl}\delta + \beta_0 + \varepsilon_{cjl}$$

With this assumption, the log wage of individual l is

$$(4) \quad w_{cjl} = \beta_c + \beta_0 + X_{cjl}\delta + \sum_i \gamma_{ij} \ln M_{ci} + \varepsilon_{cjl}$$

where β_c represent locale effects such as demand shocks, transitory fluctuations in demand or local amenities. For example, immigrants may produce a demand shock on the output markets, increasing labor demand and mitigating the negative impact on labor markets. Two facts lead us to believe that a demand shock is unlikely in our case. Increased labor demand attributable to the rise in demand of locally produced goods generated by new IDPs might be small or negligible since on average they are close to subsistence levels. In addition, we are concentrating on the short-term impacts; thus, reactions from local labor markets are highly unlikely as firms do not have time to adjust (Altonji and Card, 1989). Despite expecting little reaction on the short-run, we include city fixed effects and city fixed effects interacted with years to control for any potential positive demand shocks (Altonji and Card, 1989; Lalonde and Topel; 1991; Schoeni, 1997; Kugler and Yuksel, 2008).

Besides positive demand shocks, some natives may decide to out-migrate as a response to migration flows, mitigating further the impact of the newly increased supply (Altonji and Card, 1989; Borjas, 1994). The evidence on this respect is not conclusive as some studies find no evidence of out-migration, while others find particular groups may out-migrate in small proportions (Altonji and Card, 1991; Card and DiNardo, 2001; Kugler and Yuksel, 2008). Given that we are examining the short-term impacts, we can assume with ease outmigration as a response of the native population is unlikely.

The IDP shock is represented by M_{cj} . Since migrants presumably select the city based on labor conditions, among other factors, immigration is endogenous. Most studies use the geographical variation in the location of earlier migrants to instrument for the arrival of

new migrants (Altonji and Card, 1989; Lalonde and Topel, 1991; Card, 1989, Schoeni, 1997). Other studies rely on natural experiments, such as the Mariel Boat lift, the repatriation of French citizens from Algeria or Hurricane Mitch, producing exogenous migrant flows (Card, 1989; Hunt, 1992; Carrington and deLima, 1996; Friedberg, 2001; Angrist and Kugler, 2003; Kugler and Yuksel, 2008). To instrument for migration flows, we also rely on a natural experiment: forced displacement caused by the internal conflict in Colombia, which has produced massive outmigration of populations from rural to urban areas. Forced displacement originates in nearly 90 percent of the Colombian municipalities, and the final destination of this population is dispersed all over the territory, providing a wide geographical variation. Even though the expulsion of this population is not related to labor conditions, the decision to locate in a particular city may depend, at least partially, on labor conditions. We instrument the displacement shock using the number of massacres of civil population perpetrated by illegal armed groups in origin cities, which captures the decision to out-migrate, interacted with distance to the destination municipalities, which captures the decision to immigrate to a particular city. The instrument is in turn weighted by the proportions that arrive at locale c from origin x . Equation (4) describes the first part of our empirical analysis in which we use micro data for the period 2001 to 2005 to estimate the effects of IDP shocks on wages.

Barriers to wage adjustments and the restricted ability of the Colombian markets to adjust to new conditions may strengthen the effect of the shock on participation rates and employment (Altonji and Card, 1989; Schoeni, 1997; Carrasco, 2008). Thus, we can expect large wage adjustments for individuals working in the informal sector as this sector is not obliged to comply with labor regulations, while quantity adjustments, such as a fall in labor participation and employment rates and an increase in unemployment, may emerge in the formal sector given that it is excessively regulated.

In order to estimate elasticities and quantity adjustments to IDP shocks, we follow the model proposed by Altonji and Card (1991). This model relates changes in the share of IDPs in the population and the change in wages or other labor outcomes and is given by

$$(1) \quad \Delta \log y_{ic} = B_i \Delta \left(\frac{I_c}{P_c} \right)$$

Where y_{ic} represents the labor outcome (average wages, labor participation, employment and unemployment rates), i indicates the skill group, c indicates the city and I_c and P_c are the total

number of immigrants and the total population in the city respectively. The empirical strategy implies aggregating the mean of the dependant variable and controlling for the mean experience and schooling, as well as the IDP shock and mean of the working age population.¹ Similarly then for the wage estimation, we include city fixed effects, and city fixed effects interacted with year dummies. The IDP shock is instrumented again with massacres interacted with distance to host cities.

IV. Data, Choice of Demographic Subgroups and Definition of Labor Market Outcomes

Three different sources of data are used for this study. The first is the National Household Survey 2001-2005 (EIH 2001-2005 from its Spanish Acronym), that is representative of the 13 largest metropolitan areas. The second source of data is the data on Internally Displaced Populations (RUPD from its Spanish Acronym) from *Acción Social*, the presidential agency in charge of collecting information on displaced populations. The objective of RUPD is to legally recognize displaced households and thus quantify the demand for humanitarian aid. RUPD is a demand-driven instrument, wherein displaced households must approach government offices to declare, under oath, the circumstances of their displacement. After making such a declaration, government officials validate whether it is truthful and, if so, the legal status to be granted to the members of the displaced household. Data on displacement is available at the individual level, and provides information on origin and destination site, age, as well as on exact date of migration. The third source of data is the data on violence by municipality constructed by CEDE (Center for Economic and Development Studies of the Universidad de los Andes), which provides historical information on terrorist activity by municipality in Colombia.

The National Household Survey is a repeated cross-section of household survey data collected quarterly by the National Statistics Department (DANE). It is representative of the 13 largest metropolitan areas. The surveys included in this paper cover the period ranging from January 2001 to September 2005. This particular period was chosen because in this time frame the conflict intensified and displacement soared. In addition, data on internal displacement is believed to be consistent only from 1998 onwards as the RUPD was launched in 1999, and only registered persons within one year of displacement. The National

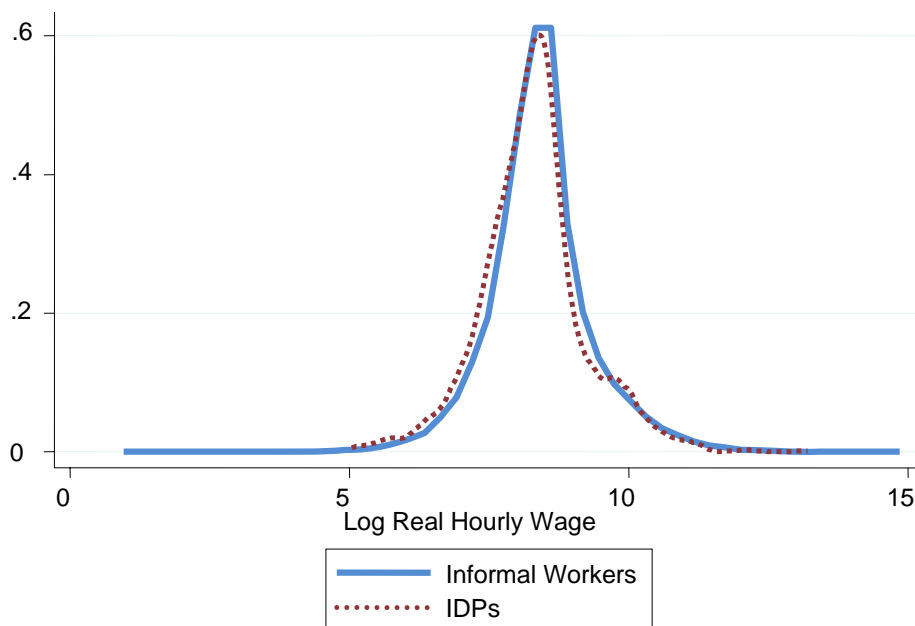
¹ The working age population is defined for Colombia as individuals 12 to 65 years of age.

Household Survey consists of four basic chapters: (i) identification variables; (ii) household characteristics; (iii) education and (iv) labor force information. Also, a special module on migration is included for the first quarter of every year. This module allows for the identification of economic migrants and IDPs. The key variables studied include employment status, wage (wage from main and second occupation), hours worked per week, in addition to socio-demographic characteristics such as age, sex, potential experience, and years of completed schooling.

Four measures of labor market performance are generated: hourly wages, employment rate, unemployment rate, and labor force participation. Employment rate, unemployment rate, and labor force participation are taken directly for each MSA from the monthly reports provided by the Department of Statistics (DANE). Hourly wages are constructed using the national household surveys, for the working age population (12-65 years of age), that have a complete report on all earnings, and are not currently attending school. Our estimates of employment, unemployment and labor force participation for the sample are similar, but smaller to those reported by the Department of Statistics (DANE), and thus we prefer using those reported rather than those calculated from our sample for the city estimations.

For the purpose of the analysis, we perform estimations of the overall labor market and separately for informal workers. We expect the labor market responses of both informal and formal workers to displacement to be different. Because the earnings distribution of the displaced population is similar to that of informal workers, we believe informal workers will be the group most severely affected by such migration flows, as the more directly competing for jobs. Graph 1 depicts the distribution of hourly wages for informal workers and IDPs for the period of study (2001-2005). The distribution for IDPs and informal workers is similar with the distribution for informal workers slightly tilted to the right. The Smirnov-Kolmogorov test shows the distributions are not statistically different.

Graph 1. Kernel Density for Real Wages – IDP and Informal Workers



Source: Authors' calculations based on EIH 2001-2005

We decided not to divide groups by education-experience profiles. Given that a great bulk of the Colombian labor force classifies as informal workers, between 40 and 60 percent of the labor force, neither potential experience nor education appear to explain why people sort in certain occupations, and therefore we concentrate our analysis to formal and informal workers. We also expect those at the bottom of the income distribution to be most likely affected by the effects of these migrations.

We group workers by gender. As section 2 describes, female IDP are better suited to compete in urban labor markets. In addition, many female are obliged to become the main breadwinners of the household because their husbands were killed or abducted. Their household dependency ratio is large as a consequence, and reservation wages may be low. We expect the impact of the IDP shock to be larger for female informal workers.

Wages were deflated by consumer price index March 1998=100 for each metropolitan area, and we control for cost of living across areas. Schoeni (1997) suggests that regional price differences are strongly positively correlated with migration intensity, thus adjusting for

these differences should eliminate any positive bias. Information on the monthly consumer price index by MSA is available from DANE, and used to deflate wages. Precise definitions of local labor markets are presented on Appendix A.

Data from *Acción Social* is used to construct monthly migration shocks, as well as weights for our instrument. The IDP shock is constructed for individuals in working age (12-65 years of age), where the numerator is the cumulative number of IDPs in working age that arrived to each city and the denominator is the number of natives in working age. The instrument is weighted by the percentage population from origin site i as a percentage of the total shock.²

Finally, the data on violence and distance from origin site to destination is used to construct our instrument. The instrument is weighted by displacement shares as previously explained. While massacres explain why people flee from a certain municipality, the variable distance is used interacted with massacres at origin site as we believe that closeness to any of these 13 MSAs, rather than economic conditions explain, settling patterns. The following section describes our results.

² This is, total number of IDPs from origin site i as a percentage of the total number of IDPs received by MSA j in month t .

V. Results

In the past 10 years, unemployment rates in Colombia's 13 largest metropolitan areas have severely increased. This has been usually attributed to labor market rigidities that were exacerbated by economic recession at the beginning of the decade. As shown in Table 1, the unemployment rate for the period of study (2001-2005) was about 17 percent for the 13 largest metropolitan areas. The purpose of our paper is to determine if supply shocks were a contributing factor to the deteriorating labor market conditions in Colombian cities. The 13 largest metropolitan areas in Colombia received about three percent of their labor force in a period of eight years, with some cities receiving more than five percent in the same time frame. The flows appear to be especially large for medium size metropolitan areas.

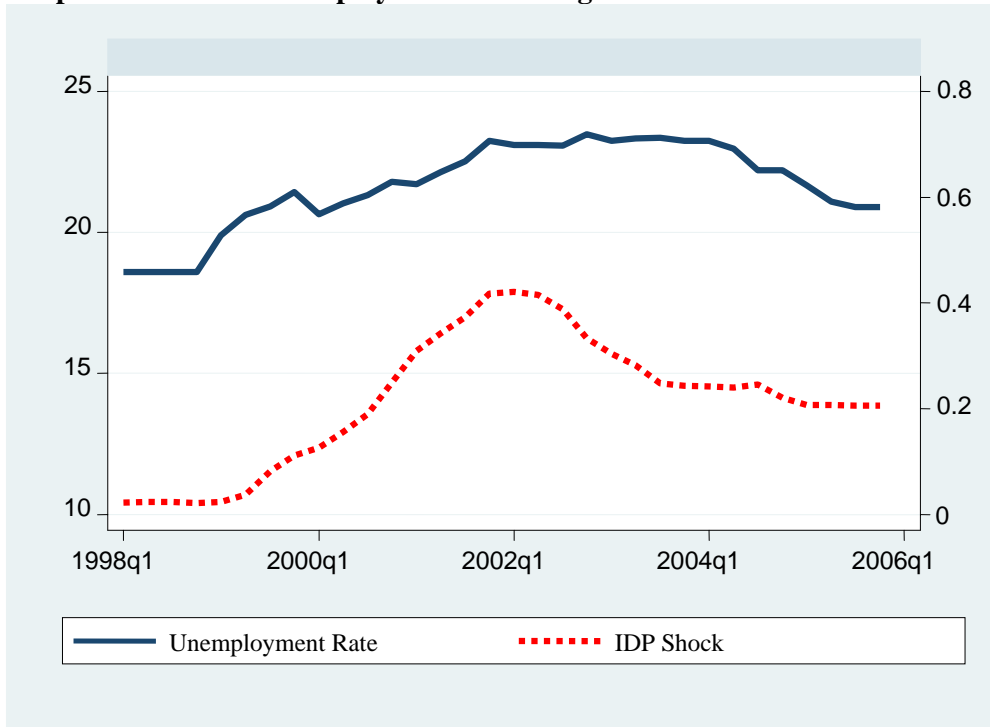
Table 1. Descriptive Statistics 13 Largest Metropolitan Areas in Colombia

Variable	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	0.0326926	0.0191203	0.0122818	0.0761866
Employment Rate	0.5278741	0.0378302	0.4258651	0.5978425
Unemployment Rate	0.1697518	0.0270306	0.1106202	0.2590537
Labor Force Participation	0.6363465	0.047993	0.5044155	0.7237484

Source: Authors' calculations based on EIH 2001-2005, DANE and RUPD.

Our analysis indicates that in some metropolitan areas, the contribution of IDPs to the labor force follows the trend of the unemployment rate. Such is the case for cities like Ibagu  that is depicted in the following graphs (Graph 2). The growing number of unskilled workers in cities appears to be a contributing force in the increase in unemployment especially in smaller metropolitan areas. Despite the appealing evidence in this graph, we need to control for other factors that may be determining the trend as well the behavior of labor markets, and correct for potential endogeneity biases. For example, although displacement and unemployment reached a peak in 2002, the deep recession the country faced in 1999 has been identified as the main driving force. However, after the one year recession, economic growth rates recuperated significantly, and labor reforms were put in place to lessen market rigidities. Notwithstanding, forced displacement continued, and unemployment rates decreased, but persisted at high levels. The results, which are presented in the next paragraphs, reveal that the IDP shock is indeed contributing to deteriorate labor conditions.

Graph 2. Trends of Unemployment rate: Ibague



Source: Authors' calculations based on EIH 2001-2005, DANE and RUPD.

Table 2 shows the escalation of unemployment in each metropolitan area for the period of study. It is noticeable that for the year 2002 unemployment was particularly high in all 13 metropolitan areas and grew *pari passu* with forced displacement similarly unemployment rates were growing.

Table 2. Unemployment and IDP Shock by Metropolitan Area

	2001	2002	2003	2004	2005
Four largest cities					
Bogotá					
<i>Unemployment Rate</i>	18.65	17.91	16.69	14.64	13.26
<i>IDP Shock</i>	0.22	0.59	0.81	1.04	1.23
Medellín					
<i>Unemployment Rate</i>	18.06	16.99	16.14	15.21	14.65
<i>IDP Shock</i>	0.78	1.27	1.47	1.69	1.23
Calí					
<i>Unemployment Rate</i>	17.87	15.91	15.28	14.18	13.11
<i>IDP Shock</i>	0.35	0.75	0.94	1.09	4.10
Barranquilla					
<i>Unemployment Rate</i>	16.02	16.62	16.31	14.95	13.56
<i>IDP Shock</i>	0.81	1.49	1.80	2.13	2.33
Other cities					
Bucaramanga					
<i>Unemployment Rate</i>	18.22	20.04	17.87	16.69	15.19
<i>IDP Shock</i>	1.03	1.85	2.20	2.51	2.73
Cartagena					
<i>Unemployment Rate</i>	17.43	14.83	15.50	14.81	16.00
<i>IDP Shock</i>	1.18	2.14	2.54	2.84	3.06
Cucutá					
<i>Unemployment Rate</i>	15.37	17.17	17.49	15.79	14.62
<i>IDP Shock</i>	0.85	1.94	2.20	2.47	2.63
Ibagué					
<i>Unemployment Rate</i>	23.19	23.22	23.38	22.21	20.69
<i>IDP Shock</i>	1.08	2.25	2.94	3.59	3.97
Manizales					
<i>Unemployment Rate</i>	18.58	19.06	18.67	18.75	17.09
<i>IDP Shock</i>	0.25	1.01	1.23	1.40	1.87
Montería					
<i>Unemployment Rate</i>	17.59	17.02	16.08	16.70	14.46
<i>IDP Shock</i>	1.89	3.22	3.61	3.86	4.14
Pasto					
<i>Unemployment Rate</i>	19.82	17.79	18.45	17.96	15.09
<i>IDP Shock</i>	0.85	1.94	2.20	2.47	3.06
Pereira					
<i>Unemployment Rate</i>	18.50	17.72	18.09	17.11	16.07
<i>IDP Shock</i>	1.40	3.91	4.98	6.16	6.09
Villavicencio					
<i>Unemployment Rate</i>	16.17	15.56	14.13	12.58	12.17
<i>IDP Shock</i>	1.33	3.05	3.62	3.96	7.62

Source: Authors' calculations based on EIH 2001-2005.

As opposed to international migration patterns to the US, the displaced appear to be a low skill homogenous group, and thus we believe they disproportionately affect the most vulnerable. The characteristics of the displaced population are shown in Table 3. IDPs are most similar to informal workers. However, they have on average less human capital, and appear to have a different experience profile from both the average informal worker and the average native. They are also younger, have larger families, and the head of the household appears to have more economic dependants. In addition, they work a larger number of hours and earn on average about 0.8 of a minimum wage. The poverty conditions of these populations are such that we believe that their reservation wage is low, and they would be willing to accept any job offer. The fact that they are willing to take any job offer entails a greater competition for unskilled workers, implying more substitutability with other unskilled workers at reception sites. Our results suggest that they have negative statistically significant effects on city wages, employment, and labor force participation, and a positive and statistically significant effect on unemployment.

Table 3. Descriptive statistics comparing all workers, informal workers, IDPs.

Variable	IDPs		Informal Workers		All Workers	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Years of residence in locale 0-5	1.71	1.37				
Age	28.16	17.6	40.02	13.7	36.07	17.53
Age Head of Household	44.3	13.08	48.6	14.13	49.16	14.48
Sex (Males==1)	50	50	49	50	54	50
Married	33	47	57	49	46	50
Cohabitation	18	39	28	45	19	39
Number of People per Household	5.79	2.51	4.78	2.37	4.84	2.26
Average Years of Completed Schooling	5.34	4	7.56	4.19	8.5	4.24
Literacy Rate	88	32	96	2	96	2
Years of Completed Education of the Head of the Household	5.96	4.03	7.42	4.28	7.91	4.32
Years of Completed Education of the Spouse of the Head of the Household	5.69	4.26	7.14	4.55	7.77	4.68
Hours worked in first job per week	51.1	23.74	45.66	21.59	47.4	19.25
Hours worked in second job per week	0.12	1.69	0.37	2.93	0.25	2.34
Real Monthly Wage (COP)	232,594	242,296	245,440	384,606	334,610	562,647
Wage in terms of the Minimum Wage	0.81	0.85	0.86	1.34	1.17	1.97

Source: Authors' calculations based on EIH 2001-2005.

The first group of regressions will show the effect of the migration shock on the real wages for the individuals located in each MSA. We defined the shock as the cumulative population received in a certain MSA since 1998. We will proceed by showing the effect of

the aggregate shock over the whole native workforce, in addition to the effects of the shock on wages of both females and males, followed by the results on informal workers that are in turn presented disaggregated by gender.

Table 4 shows the effects of the IDP shock on the overall workforce. The first column shows an OLS regression with no year or city controls, the second column includes fixed effects for the city and the city interacted by the year, and the third column shows the result after instrumenting for the IDP shock. The results suggest a negative and statistically significant effect of the shock on wages. The effect is robust to the different specifications, and our instrument is correctly addressing the attenuation bias generated by IDPs locating in dynamic labor markets. The other variables have the expected signs, and are robust as well to the different specifications. The results suggest that a 10 percent increase in the share of migrants reduce wages by 8.3 percent.

Table 4. Log Real Hourly Wage All Workforce

Variables	OLS (I)	Fixed Effects (II)	IV-Fixed Effects (III)
Potential Experience	0.030 (0.000)**	0.030 (0.000)**	0.030 (0.000)**
Potential Experience Squared	-0.000 (0.000)**	-0.000 (0.000)**	-0.000 (0.000)**
Years of completed schooling	0.141 (0.001)**	0.140 (0.000)**	0.140 (0.000)**
Dummy married (Married & cohabiting=1)	0.067 (0.004)**	0.070 (0.004)**	0.070 (0.004)**
Sex (Males=1)	0.135 (0.003)**	0.140 (0.003)**	0.140 (0.003)**
Log IDP Shock	-0.047 (0.002)**	-0.049 (0.004)**	-0.083 (0.005)**
Observations	573.445	573.445	573.445
R-Squared	0.38	0.39	0.39

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%

The dependent variable is the is the hourly wage of individuals not currently enrolled in school. (I), (II) and (III) control for potential experience, potential experience squared, years of completed schooling, and a marital status dummy. (II) and (III) include city dummies and a time trend.

As a robustness check, we estimate the regressions using the first quarter of every year and eliminating both economic migrants and IDPs. We believe that economic migrants might observe the flows of migration, and select not to migrate, if they believe they will face high competition in a certain reception site, or they might decide to locate in other cities where IDPs represent a smaller share of the workforce. However, we know that economic migrants and IDPs differ substantially in their characteristics. Economic migrants tend to be younger and more educated, have smaller families and most have urban labor market experience. Thus, migrants will not directly compete with IDPs for jobs. Even if migrants could observe or anticipate IDP shocks, we expect the effects on their wages to be small, as they do not appear to be good substitutes. The results of the effects of the shock for the overall native workforce excluding economic migrants and IDPs are presented below (Table 5). The results, while smaller than those reported using the whole sample, are similar in magnitude to those reported on Table 4. In addition, the IV appears again to be solving the attenuation bias generated by IDPs locating in dynamic labor markets.

Table 5. Log Hourly Wage - All Native Workforce

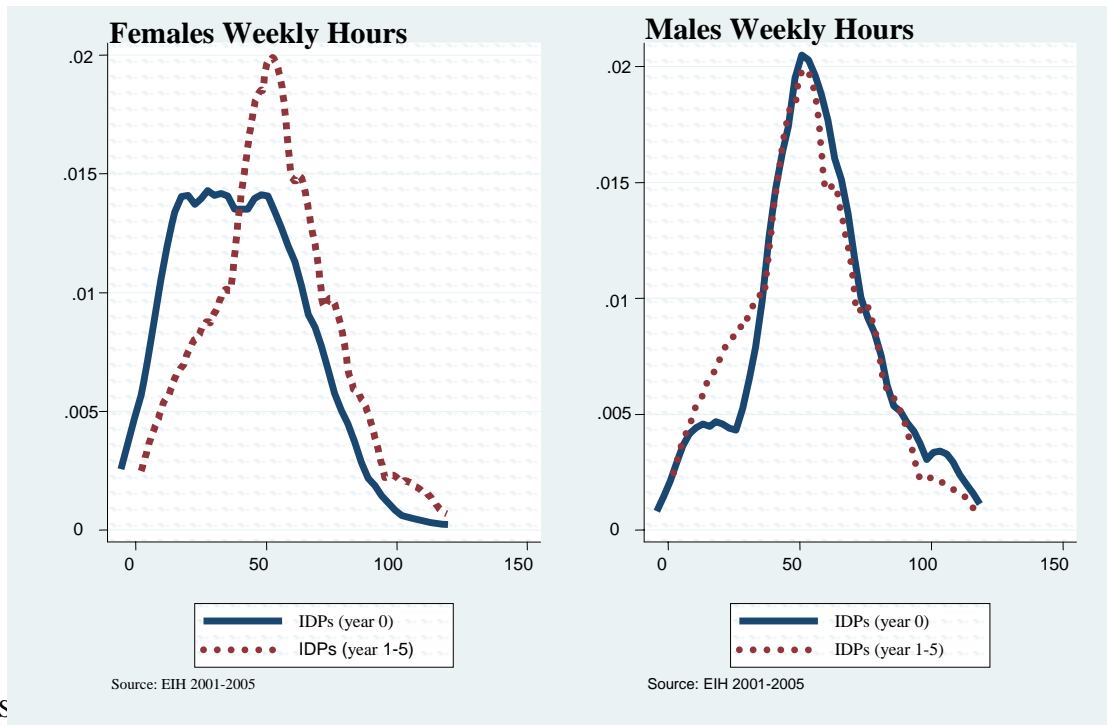
	OLS (I)	Fixed Effects (II)	IV-Fixed Effects (III)
Potential Experience	0.032 (0.001)**	0.032 (0.001)**	0.032 (0.001)**
Potential Experience Squared	-0.000 (0.000)**	-0.000 (0.000)**	-0.000 (0.000)**
Years of completed schooling	0.142 (0.001)**	0.141 (0.001)**	0.141 (0.001)**
Dummy Married (Married & cohabiting=1)	0.078 (0.007)**	0.082 (0.007)**	0.082 (0.007)**
Sex (Males=1)	0.138 (0.007)**	0.143 (0.007)**	0.143 (0.007)**
Log IDP Shock	-0.036 (0.003)**	-0.037 (0.006)**	-0.043 (0.006)**
Observations	139.010	139.010	139.010
R-Squared	0.38	0.39	0.40

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%

The dependent variable is the is the hourly wage of individuals not currently enrolled in school. (I), (II) and (III) control for potential experience, potential experience squared, years of completed schooling, and a marital status dummy. (II) and (III) include city dummies and a time trend.

Table 6 shows the estimations by gender. As stated before, qualitative evidence reveals displaced women are better suited to compete in urban labor markets as their labor experience is more akin to some urban low skilled occupations. Upon arrival to cities, the participation of female IDPs in the labor market may be larger. Graph 3 shows that, in addition, the assimilation of female IDPs, in contrast to male IDP, is greater. Since time of arrival, there is a sharp increase in the hours worked for female, while for men the hours worked remain constant. The difference in the two distributions of hours worked is statistically significant for female IDPs, implying larger degree of substitutability with other unskilled females in urban labor markets.



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The results corroborate this by suggesting a larger effect on female wages, which presumably is a consequence of a greater degree of assimilation of females to cities. The effect on wages appears to be twice as large for females as for males: a 10 percent increase in the IDP shock reduces female wages by 11.2 percent, and male wages by 6.3 percent. We believe this is evidence of a greater degree of assimilation of female IDPs to urban labor markets, and of a female competitive advantage in urban labor market jobs.

Table 6. Log Real Hourly Wage: Females and Males

	OLS (I)	Fixed Effects (II)	IV-Fixed Effects (III)
Females Log IDP Shock	-0.066 (0.002)**	-0.070 (0.006)**	-0.112 (0.007)**
Observations	262.649	262.649	262.649
R-Squared	0.38	0.39	0.38
Males Log IDP Shock	-0.032 (0.002)**	-0.033 (0.005)**	-0.063 (0.006)**
Observations	310.796	310.796	310.796
R-Squared	0.39	0.40	0.40

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%

The dependent variable is the is the hourly wage of individuals not currently enrolled in school. (I), (II) and (III) control for potential experience, potential experience squared, years of completed schooling, and a marital status dummy. (II) and (III) include city dummies and a time trend.

Because IDPs have low human capital, an inadequate experience for urban markets, and are similar to informal workers, they will most likely join the informal sector upon arrival. This implies that they will disproportionately affect the informal workforce, as they will be competing more directly with them for jobs. The results for only informal workers are presented in Table 7. For purposes of estimating consistently the number of informal workers, we restrict the sample to the second quarter of every year for the EIH as information on informality is only collected in these periods.

Our results indicate that the effect of the IDP shock falls disproportionately on informal workers. An increment of 10 percent in the share of IDPs over the working age population will generate a real wage decline of 12.6 percent. As expected, since IDPs are better substitutes of informal workers, the impact will be greater than for other workers. This is exacerbated by the fact that the informal sector is not constrained by the minimum wage legislation; thus, an inflow of less skilled workers, with presumably a low reservation wage, will exert a high impact on wages as the results show.

**Table 7. Log Real Hourly Wage - Informal Workers
(Second Quarter 2001-2005)**

	OLS (I)	Fixed Effects (II)	IV-Fixed Effects (III)
Potential Experience	0.026 (0.001)**	0.027 (0.001)**	0.028 (0.001)**
Potential Experience Squared	-0.000 (0.000)**	-0.000 (0.000)**	-0.000 (0.000)**
Years of completed schooling	0.100 (0.001)**	0.100 (0.001)**	0.095 (0.001)**
Dummy Married (Married & cohabiting=1)	0.014 (0.009)	0.015 (0.009)	0.028 (0.005)**
Sex (Males=1)	0.119 (0.008)**	0.125 (0.008)**	0.137 (0.005)**
Log IDP Shock	-0.058 (0.004)**	-0.114 (0.011)**	-0.126 (0.011)**
Observations	101921	101921	101921
R-Squared	0.16	0.18	0.18

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%

The dependent variable is the is the hourly wage of individuals not currently enrolled in school. (I), (II) and (III) control for potential experience, potential experience squared, years of completed schooling, and a marital status dummy. (II) and (III) include city dummies and a time trend.

This impact is larger for female informal workers, who appear to carry most of the burden from the shock. While a 10 percent increase in the share of displaced cause a 9.7 percent fall in wages for male informal workers, for female informal workers this fall is 17.2 percent. These results further support our hypothesis: the best substitute for an IDP is a female working in the informal sector, and thus this will be the sector most severely affected by the forced migration flows.

Table 8. Log Real Hourly Wage: Informal Females and Males

	OLS (I)	Fixed Effects (II)	IV-Fixed Effects (III)
Females			
Log IDP Shock	-0.094 (0.006)**	-0.178 (0.018)**	-0.172 (0.018)**
Observations	47522	47522	47522
R-Squared	0.12	0.14	0.15
Males			
Log IDP Shock	-0.027 (0.006)**	-0.070 (0.014)**	-0.097 (0.014)**
Observations	56588	56588	56588
R-Squared	0.22	0.23	0.22

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%

The dependent variable is the is the hourly wage of individuals not currently enrolled in school, (I), (II) and (III) control for potential experience, potential experience squared, years of completed schooling, and a marital status dummy. (II) and (III) include city dummies and a time trend.

The exogenous shock produced by the IDP also contributed to an expansion in the informal sector. The results for unemployment rates presented in the paragraphs below reveal that the shock not only produced a significant drop in wages, but also quantity adjustments. If unemployment increases, many workers seek alternatives in the informal sector. The results for the probability of being an informal worker are presented in Table 9. The results show that indeed the probability of being employed in the informal sector increases with the shock. A 10 percent increase in the share of IDPs over the workforce, increases the probability of being an informal worker by about two percent. The most optimistic results for evaluations of the 2002 labor reform show the reform increased labor formalization by six percent. Therefore, the IDP shock, besides working in the opposite direction, appears to offset the impact of the reform.

Table 9. The Probability of Being an Informal Worker

	LPM (I)	Probit (II)	IV-Probit (III)
Potential Experience	0.032 (0.001)**	0.033 (0.001)**	0.016 (0.001)**
Potential Experience Squared	0.000 (0.000)**	0.000 (0.000)**	0.000 (0.000)**
Years of completed schooling	-0.03 (0.000)**	-0.032 (0.000)**	-0.03 (0.000)**
Dummy Married (Married & cohabiting=1)	-0.03 (0.003)**	-0.031 (0.003)**	-0.034 (0.003)**
Sex (Males=1)	0.127 (0.003)**	0.134 (0.003)**	0.122 (0.003)**
Log IDP Shock	0.011 (0.001)**	0.012 (0.001)**	0.018 (0.008)*
Observations	312484	312484	312484
R-squared	0.09	0.0733	0,100

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%

The dependent variable is the is a dummy variable indicating if the individual works for the informal sector, we include city dummies and a time trend for (II) and (III).

In the formal economy we do not expect that the IDP shock will affect severely wages, rather we believe the effect will be on quantities, affecting employment in particular. In order to estimate the effect of the IDP shock on labor quantities, we estimate regressions using monthly aggregates of employment, unemployment and labor force participation. Table 10 shows the results. Besides reducing wages, the IDP shock decreases labor force participation. This result is not surprising. The large drop in wages may imply that the new levels may fall below the reservation wage of many workers; thus, they may decide to learn a new skill, or enroll again in formal education in order to switch to a better remunerated sector, such as the formal sector where wages are greater and they may face a lower degree of competition. The results suggest that a one percentage point in the IDP share will decrease labor participation by 3.1 percentage points.

The effect on employment and unemployment are also statistically significant, but the magnitude is lower than the impact on wages. We expect that quantity adjustments occur in the formal sector where the minimum wage legislation is binding. However, as we have shown, IDPs appear to be substitutes for informal workers, implying the shock may be lower for the formal sector. The results for employment and unemployment rates are also large. An

increment of one percentage for the share of migrants will decrease employment by four percentage points and increase unemployment by two percentage points.

Table 10. Instrumental variable estimations – Employment rates, unemployment rates and labor force participation

	Employment Rate	Unemployment Rate	Labor Force Participation
IDP Shock (Mean)	-4,069 (0.697)**	2,319 (0.777)**	-3,086 (0.838)**
Experience (Mean)	-0.025 (0.007)**	0.027 (0.006)**	-0.008 (0.006)
Experience Squared (Mean)	0.000 (0.000)**	-0.000 (0.000)**	0.000 (0.000)
Married (Mean)	0.052 (0.055)	-0.090 (0.047)	-0.014 (0.044)
Sex (Mean)	-0.064 (0.076)	0.089 (0.070)	-0.001 (0.064)
Years of Completed Education (Mean)	-0.002 (0.003)	0.002 (0.003)	-0.001 (0.003)
Populations 12-65	0.000 (0.000)**	-0.000 (0.000)**	0.000 (0.000)**
Observations	741	741	741
R-squared	0.82	0.73	0.92

Source: Authors' calculations based on EIH 2001-2005.

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%

The results show the IDP shock produce a large effect on labor outcomes. Adjustments to the exogenous labor supply shock arise for wages and quantities. Wages fall above eight percent for the native workforce for a 10 percent increase in the IDP share, labor participation drops two percentage point and unemployment raises by four percent. These estimates are larger than other papers that estimate the impact for labor markets in developed countries, where markets adjust rapidly to the shock and mitigate thus the effect. Differently than in developed countries, the Colombian markets are plagued with rigidities that accentuate the negative impact of the shock.

In addition, the effect of the shock falls disproportionately upon the most vulnerable groups of the population: informal and female workers. Wages for female informal workers

declines by 17.2 percent for a 10 percent increase in the IDP shock. The large inflows of IDPs are producing a large negative distributive impact, which is exacerbating the effect stemming from the conflict.

VI. Concluding Remarks

This paper presents evidence on the effect of large exogenous supply shocks on labor market outcomes. The paper builds on a large group of papers that undertake similar approaches. However, we contribute in three respects. First, we use forced displacement produced by the civil conflict in Colombia as a natural experiment. The large immigration flows generated by forced migration are not related to labor conditions in host city, but are the result of heightened attacks against the civil population. Second, we use a robust instrument: the massacres perpetrated by armed groups in each municipality interacted with distance to the destination site. While massacres explain the outflows of population from rural areas, distance to destination municipalities determine which city is selected by the displaced population for the final destination. Third, this is the first paper that examines the impact of immigration on local labor markets of a developing country. Differently than labor markets in developed countries, the excessive regulations produce inflexibility in labor markets, impeding a smooth adjustment when a shock arises.

Our results suggest that the effect of a large inflow of less skilled workers is large. Not only wages decline significantly, but quantity adjustments accentuate the effect. The point estimate from a 10 percent increase in the share of IDP migrants ranges from four to 17.2 percent. Despite being similar for results of vulnerable groups in other papers, our results reveal larger impacts, probably due to the rigidities of the Colombian markets. The burden of the shock falls disproportionately on informal workers, which are directly competing with IDPs. In particular, informal female workers face a large impact. To compete in the informal labor markets for female, the skills requirements are not high and female IDPs are experienced in these occupations. The substitution between both groups of females is presumably high, decreasing wages significantly. On the other hand, male IDPs are less suited for urban labor markets as their experience is mainly in agricultural activities. Their assimilation process is slower; thus, the pressure on wages is somewhat smaller.

Because markets are rigid and the minimum wage legislation is binding, the impact on quantities is also significant. The sharp decline in wages may draw levels below the reservation wage for many workers. As a result, labor force participation decreases by three

percentage points for each percentage point increase in the shock. Employment rates, on the other hand, fall by four percent, and the increments in unemployment rates amount to three percent.

The distributive impact of the displacement shock is considerable. On the one hand, forced immigrants faced a large welfare losses stemming for the displacement process. On the other, the large inflows of these displaced population is affecting mostly vulnerable groups of the population. Besides contributing by further providing evidence on the impact of exogenous labor supply shifts, this paper shows the detrimental impact of civil conflict on its victims and on labor markets.

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Appendix A

Table 1

IDP Shock, Unemployment Rate, Employment Rate and Labor Force Participation by MSA

Barranquilla				
	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0148842	.0065431	.0005885	.0233495
Unemployment Rate	.1558817	.0169855	.1222237	.1828496
Employment Rate	.4753205	.0137794	.442714	.5074062
Labor Force Participation Rate	.5633306	.020064	.511388	.6044838
Bucaramanga				
	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0180337	.007405	.0013671	.0272705
Unemployment Rate	.1774694	.0208146	.1186984	.210958
Employment Rate	.5531185	.0155134	.5225403	.5905606
Labor Force Participation Rate	.6726494	.0181166	.6425318	.7032035
Bogota				
	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0064717	.0036787	.0001455	.0123311
Unemployment Rate	.1639983	.0229008	.1187921	.2114774
Employment Rate	.5495134	.0168381	.516807	.5824326
Labor Force Participation Rate	.6573294	.0103665	.634476	.6822265
Manizales				
	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0092101	.0050793	.0001047	.0148617
Unemployment Rate	.1850413	.0126161	.1547719	.2122791
Employment Rate	.4914628	.0179037	.4580871	.5234843
Labor Force Participation Rate	.6031691	.0231321	.5541989	.638645
Medellin				
	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0123515	.0048729	.0009306	.0187442
Unemployment Rate	.162869	.016865	.1195673	.2064076
Employment Rate	.5120874	.0152371	.4758126	.5478894

Labor Force Participation Rate	.6117498	.0147749	.587584	.6411941
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	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0074361	.0035785	.0003975	.0122818
Unemployment Rate	.1539004	.0188014	.1186415	.203301
Employment Rate	.5645199	.015125	.5374174	.5978425
Labor Force Participation Rate	.6671994	.0095939	.6429608	.6913427

Pasto

	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0282533	.0122091	.0012941	.040997
Unemployment Rate	.1797785	.0210263	.1414527	.2195255
Employment Rate	.544076	.0147192	.5063319	.5722342
Labor Force Participation Rate	.6636591	.0218698	.6157333	.7037722

Villavicencio

	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0398873	.0222083	.000951	.0761866
Unemployment Rate	.1423394	.0195106	.1106202	.1935188
Employment Rate	.5665033	.0134862	.5407522	.5932035
Labor Force Participation Rate	.660659	.0143423	.6365735	.6970422

Pereira

	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0526824	.0062986	.0412727	.0608944
Unemployment Rate	.1758311	.0132925	.139259	.2068574
Employment Rate	.5200901	.0122476	.4973845	.5511249
Labor Force Participation Rate	.6311328	.0150742	.6056902	.6690598

Cucuta

	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0178688	.0076246	.0004633	.0263357
Unemployment Rate	.1616054	.0243497	.1131792	.2312694
Employment Rate	.535112	.0240262	.4897703	.5801809
Labor Force Participation Rate	.6384527	.0268452	.5897815	.6792321

Cartagena

	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0205423	.0085465	.0007951	.0305946
Unemployment Rate	.1569961	.0162378	.1278013	.2087275

Employment Rate	.4520766	.0133197	.4258651	.5004172
Labor Force Participation Rate	.5364215	.0175779	.5044155	.5950226

Ibague

	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0232971	.0120592	.000608	.039726
Unemployment Rate	.2263206	.0157651	.1861925	.2590537
Employment Rate	.5393017	.0102216	.5189469	.5677034
Labor Force Participation Rate	.6972706	.0163587	.6592882	.7237484

Monteria

	Mean	Standard Deviation	Minimum	Maximum
IDP Shock	.0295239	.0111466	.001649	.0414309
Unemployment Rate	.1647427	.0159512	.1230972	.1977238
Employment Rate	.5591806	.0149047	.525102	.5899949
Labor Force Participation Rate	.6694808	.0130948	.6484182	.7003407

2. Definition of Local Labor Markets

For the purpose of our analysis we consider the 13 largest metropolitan areas. Each metropolitan area is comprised of the following municipalities:

Medellín MSA: Medellín, Bello, Barbosa, Copacabana, La Estrella, Girardota, Itagüí, Caldas and Sabaneta.

Bucaramanga MSA: Bucaramanga, Floridablanca, Girón, and Piedecuesta.

Barranquilla MSA: Barranquilla, Puerto Colombia, Soledad, Malambo and Galapa.

Cúcuta MSA: Cúcuta, Villa del Rosario, Los Patios and El Zulia.

Pereira MSA: Pereira, Dosquebradas, and La Virginia.

Bogotá MSA: Bogotá, Soacha, Mosquera, Funza, Madrid, Chía, Cajicá, Cota, La Calera, Tenjo, Tabio, Sibaté, Zipaquirá, and Facatativa.

Cali MSA: Cali, Palmira, Yumbo, Jamundí, Candelaria, La Cumbre Vijeles and Florida.

Villavicencio MSA: Villavicencio, Apiay, Acacías, Guamal, Restrepo and Cumaral.

Cartagena MSA: Cartagena, Arjona, Clemencia, Mahates, María la Baja, San Estanislao, Santa Catalina, Santa Rosa, Turbaco and Villanueva.

Manizales MSA: Manizales, Neira, Chinchiná and Villamaría.

Ibagué MSA: Ibagué, el Salado, Buenos aires, Cajamarca, Alvarado, Venadillo, Villa Restrepo, Piedras and Doima.

Montería MSA: Montería

Pasto MSA: Pasto