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Unemployment, Does It Really Hurt?

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by

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For Tata, Mom, and Julian.

With All My Love.

1. ABSTRACT

This paper analyzes the consequences of changes in the unemployment rate in Colombia on the level of education attained for adolescents between 16 and 17 years old. The Colombian trade liberalization policy of the 1990s, which consisted primarily of a unilateral tariff reduction policy, increased the labor force participation rate of women, reducing some of the female labor market constraints. Therefore, the trade liberalization policy changed the Colombian structure of the labor market, which affected positively the Colombian women's return to education. Increases in the rate of unemployment are associated with an increase in the average number of years of education of young women (16-17 years). This increase might raise women's chances to get away from the vicious cycle of low education, low skills, and low-paying jobs. No significant effect was found for young men of the same age.

2. INTRODUCTION

There is no consensus among scholars about the effect of unemployment on the level of education attained. Some scholars have found evidence that when the level of unemployment increases, the average educational attainment increases. One explanation would be that in times of economic distress, the probability of finding a new job, or keeping the one a person has, decreases. Therefore, the opportunity cost of education decreases. The rational response for people would be to stay in school longer (or to return to school earlier) than they would have, had labor market conditions been better. Another explanation is that, when the unemployment rate increases, people become more aware that to minimize the negative consequences of unemployment in the future, since people

with lower levels of education are more heavily affected than those with higher levels, it is imperative to attain higher levels of education and training in sectors that are viewed by employers as desirable.

On the other hand, some scholars have found that when the rate of unemployment increases, the level of education attained decreases. Some of those scholars argue that unemployment does not affect everybody equally and that the dependents of low-educated workers may attain lower levels of education when the rate of unemployment increases. The reason for this is that poor families (likely with low educated parents) lack savings, assets, and access to credit to help them smooth the consequences of unemployment.

Therefore, the disposable income of those households is negatively affected if someone in the household becomes unemployed. That reduction of income negatively affects the family's expenditures, which in turn may negatively affect the level of education attained by children in these families in two possible ways.

Direct: 1) families may no longer have enough resources to continue paying the required tuition and related expenses needed for their children to continue in school. If that is the case, children may have no other option than to drop out of school. 2) In households with low income levels where the breadwinner becomes unemployed, working-age children may be forced to withdraw from school and look actively for a job, so they can help provide for their families. Also, in households with low-educated adults, young people may have a higher probability of finding or keeping a job than the low-educated adults in the household.

Indirect: 1) because of reduced resources in the family, children may perform poorly in

school because of lack of necessary materials, payment of miscellaneous fees, and nutritional restrictions, and 2) because of the related stress of living in households where the disposable income is decreasing. The possible consequences of children performing worse in school are that they may not be promoted to the next grade, or they may become discouraged and feel that they would be better off dropping out of school. In any case, the net result would be a lower level of educational attainment.

In addition, there is plenty of research showing that individual decisions may vary by gender. In developing countries, women have often been observed to make more further-oriented choices, (i.e. give up short-term gratification), with the aim of obtaining a better reward in the future, than men (Bauer and Chytilová 2013). In other words, their discount rate of the future is lower than the same for men. Hence, it is reasonable to expect that, in times of economic distress, women's strategy would be obtain further education to minimize the negative consequences of unemployment in the future. In fact, in the last couple of decades, women in Colombia are indeed obtaining higher levels of education compared to men. Likewise, if young women observe their parents or adults, become unemployed (and suffer its consequences), they might conclude that their best strategy is to obtain more education to diminish the chances of being negatively affected in the future.

At the beginning of the 1990s, Colombia undertook an aggressive policy of unilateral tariff reduction, which was proportionately larger in sectors employing a higher fraction of low-skilled workers. There is evidence that the trade liberalization policy provoked an increase in the labor force participation rate of women. Hence, a valid question to ask is: if trade liberalization has provided more labor market opportunities for women in Colombia, have

those new opportunities affected the level of education achieved by young women as well? In other words, have young women in Colombia (16-17 years old) taken advantage of labor opportunities that were not available for them before, to the point that some of them prefer to take those jobs instead of further educating themselves? Hence, if that is the case, if the labor market became constrained and, therefore, the rate of unemployment of women increases, they may respond by choosing to obtain higher levels of education instead.

This paper presents evidence that young women 16-17 years old (after the trade liberalization of the 1990s) consistently achieved higher levels of education. No such effect was found for men of the same age.

3. LITERATURE REVIEW

3.1. UNEMPLOYMENT AND EDUCATIONAL ATTAINMENT

Scholars have found mixed results concerning to the effect of deteriorating labor market conditions (measured as the unemployment rate) on the level of education acquired by young people. Some scholars have found evidence of a negative relation between unemployment and educational attainment. Mensah and Kiernan (2010) found that unemployment and economic disadvantages have a negative effect on the level of education acquired for boys and girls alike. Similarly, Martinez and Ruiz-Castillo (1999) and Micklewright et. al. (1990) found that the probability of leaving school early increases when the unemployment rate increases.

In contrast, other authors have found a positive relationship between unemployment and educational attainment. Rees and Mocan (1997) found that when the unemployment rate

increases in a district the proportion of students that drops out from school decreases. Smith and Naylor (2001) found a positive relationship between unemployment and graduation rates. Following these lines, Betts and McFarland (1995) conclude that increases in the unemployment rate are associated with a rise in the percentage of people attending school.

To try to explain these mixed results, Hoynes et al. (2012) found evidence that a sluggish economy does not affect everybody equally. They found evidence that in times of economic unrest, low-income workers and their families suffer more severely. Therefore, children of low-income parents may find it difficult to continue their education. Likewise, Nilsen et al. (2000) found evidence that low-educated workers have a higher probability of losing their jobs and a lower probability of finding a new one. For these families, the authors argue, adolescent children have a higher probability of obtaining a job than their low-educated parents. The reason is that young, inexperience, and uneducated people receive lower wages but are more likely to be in better physical condition to perform a wider range of tasks, compared with low-educated adults living in the same household.

3.2. GENDER AND THE LABOR MARKET IN COLOMBIA

In Colombia, women have been successful in penetrating occupations and sectors that were previously reserved for men (Badel and Peña 2010; Goldin 2014; Isaza 2014). However, a sizable gender segregation and wage discrimination in the labor force continues to exist (Badel and Peña 2010; Isaza 2014). Tzannatos (1999) shows that women in Colombia are concentrated in a limited number of industries1 even when women

1 Such as garment manufacturing, retail, sales, personal services, administration, and educational services.

and men have comparable labor market attributes, and that even when women and men are employed in the same industry, they carry out different tasks, which leads them to different careers and monetary returns, which are usually better for men. Moreover, Ederington et al. (2009) show that female workers in Colombia are concentrated in export-oriented and service-oriented industries.

Badel and Peña (2010) argue that, despite Colombia having one of the highest female labor force participation rates in Latin America, women in Colombia suffer from a U-shape gender wage gap, which (controlling for observable labor market characteristics) is largest at the extremes of the wage distribution. Therefore, the authors refer to a "glass ceiling effect" and, what they call, a "quicksand floor effect". In addition, cultural norms, customs, stereotypes, and family responsibilities may prevent women from fully engaging in the labor market. However, globalization and its related increase in demand for workers may provide a strong enough incentive to overcome non-economic barriers to women's engagement in the labor market.

Households in Colombia tend to resemble the patriarchal family pattern predominant in Spanish-speaking South America, where the labor force participation rate is consistently higher for men than for women (see Parrado 2002; Muñoz Cardona 2014). Indeed, in 2015 the labor participation rate for men was 79.8%, while the same for women was just 57.9% (Human Development Report 2015) see Chart 5. Therefore, males in Colombia are more likely to be the breadwinners of the household. Indeed, the World Bank (2015) estimated that, in 2010, 34% of the Colombian households had a woman as head of household.

3.3. WOMEN AND EDUCATION IN COLOMBIA

Colombia has an eleven-year system of elementary and secondary education which is free and compulsory. In regards to higher education, Colombia offers technician, undergraduate, master's, and doctoral degrees. The educational sector in Colombia is comprised by public and private schools. In regards to primary and secondary education, public schools offer an adequate regional coverage, however, the quality of education in many public schools is not optimal. Likewise, private schools offer an ample choice in terms of quality and costs. Even though public schools are available to anyone, many poor and medium-income families choose private-inexpensive schools because they provide a better alternative in regards to reliability and, sometimes, in regards to quality, if compared with public schools located in the same areas (Immerstein 2015).

In Colombia, the basic education cycle is compulsory for all Colombian children between the ages of five and 15, however, this law is not enforced. In other words, if a student (or their parents) wants to drop out of school, that student can do it at any age or grade. Therefore, there is no mechanism in place to ensure that people stay enrolled in school even at the primary level. In addition, in Colombia, the highest percentage of dropout rates occurs during high school, between 50% and 60% Ocampo (2007).

Moreover, education in Colombia does not affect everyone equally; the net effect depends on the quality of education to which people are exposed. The EFA Global Monitoring Report 2013/14 shows that Colombia's education investment has a stronger effect on wages for those who already have high income. This can be explained by the quality of education that rich households can afford compared to that of poor households. UNESCO

(2013) notes that even though Colombia has been one of the faster growing economies in the region, the poorest people have not had the opportunity to enjoy the benefits of this growth. UNESCO claims that Colombia's unequal access to good quality education is one of the main factors behind inequality.

Countries such as Colombia, the United States, and Brazil have managed to close the educational gap between genders. Indeed, Badel and Peña (2010) show evidence that not only the educational gap between genders in these countries has closed, but also that now women tend to attain higher levels of education compared to men. There are four possible explanation for this phenomenon in Colombia.

First, since education enhances productivity, women with higher levels of education expect to obtain higher monetary returns for their work, so women rationally aim to achieve higher levels of education. Second, if the labor market in Colombia discriminates against women, overeducation can be viewed as "a compensation for a lack of other human capital endowments" (Groot and Van Den Brink 2000). Therefore, Colombian women may choose to obtain higher levels of education to mitigate against discrimination in the labor market, hence, to increase their chances of a higher return for their work.

Third, the introduction of more capital-intensive production processes, after the economic liberalization of the 1990s, opened new employment opportunities for women as physical strength becomes less relevant (Isaza 2014). Therefore, women in Colombia may choose to obtain higher levels of education to attain the intellectual attributes that are needed to perform tasks in technologically advanced sectors. Fourth, education can be used as a tool for assortative matching, so education is a vehicle to match with a better type of spouse.

Croson, and Gneezy (2009) argue that (since the divorce rate has increased significantly in the world, and the probability of remarrying is greater for men) assuming women are risk averse, women will insure more than men against the risk of divorce. Therefore, they educate further. In times of economic depression, the relevance of marrying an educated person, which would provide some insurance against deterioration in the labor market in the future, might be more evident and, therefore, women might choose to educate further.

4. COLOMBIA IN CONTEXT

4.1. 1990s REFORMS

Parra and Salazar (2000) argue that the 1990s reforms were implemented because Colombia suffered from a combination of a lack of competitiveness, barriers to foreign investment, high levels of state ownership in the economy, and excessive financial controls, such as forced investments, and a high cash position, among others. Therefore, during the 1990s (under the government of Cesar Gaviria) a wide range of market-friendly reforms were implemented, such as tariff reduction, and liberalization of the monetary, exchange, and financial systems.

4.2. CONSEQUENCES OF THE 1990S REFORMS

Arbeláez et al. (2001) maintain that the economic reforms had a healthy effect. However, Attanasio et al. (2004) show that the consequences of trade liberalization were felt more heavily in labor-intensive sectors, which employed a high percentage of low-skilled workers. In addition, Ederington et al. (2009) find that the Colombian reforms of the 90s

increased the relative employment of blue-collar women. The authors explain that this increase was due to higher employment in industries that, after the trade liberalization, changed their production processes to use new technologies. Therefore, the increase in employment was due to industries that lowered their need for physically demanding skills.

5. DATA

This research is trying to see if changes in the unemployment rate had any impact on the number of years of education that young people (16-17 years old) attained in Colombia. In other words, this research uses the average unemployment rate, when people were 16 and 17 years old to see if changes in that level affected the number of years of education people attained.

This study uses several datasets provided by the Administrative Department of National Statistics of Colombia (DANE)2. Detailed information about these datasets and variables are provided in Table 1. To conduct the econometric analyses, this study uses the National Survey of Quality of Life (NSQL) for the years 2010 to 2013. To generate yearly unemployment rates, for each of the seven largest cities in Colombia, this study combined three different surveys: The National Household Survey (NHS), The Continuous Household Survey (CHS), and The Great Integrated Household Survey (GIHS).

The surveys mentioned here collected data from each member of random households. New samples are drawn every period. Each of the datasets collects representative data of the seven largest cities in Colombia. In addition, each survey provides information regarding employment status and other socio-demographic characteristics. However, these

surveys apply different methodologies with regard to periodicity, areas surveyed (some surveys include additional Colombian cities and rural areas), and some of them contain additional variables.

For that reason, it is not adequate to directly use the official labor-related data constructed by the Colombian government, and available on the DANE website, since the different series are not compatible in time. In addition, some series of interest (for instance: employment rate for women 20 or more years old) are not produced by the government, therefore, one needs to use the microdata, provided by the different surveys, to obtain customized indicators. Combining the NHS, the CHS, and the GIHS, it was possible to construct compatible series of unemployment rates (in each of the seven largest cities in Colombia) for different sectors of the population: women vs. men, young vs. old people, by different levels of education, etc., from 1984 to 2009.

The subjects analyzed in this paper were people 21 years old or older at the time of their interview, to ensure that every person analyzed has already made their secondary education decisions. Table 2 presents the year a subject was born, the year the subject was interviewed, the age at the time of the interview, the corresponding years when that subject was 16-17 years old, and the unemployment rate of the whole country (for people 15 years old and older, discriminated by gender) for each year.

The datasets used to perform the econometric analyses in this paper, i.e. the NSQL, provide information regarding gender, age at time of interview, level of education of the subject as well as that of their parents', and city where the subject was living at the time of

2 DANE is the Colombian agency in charge of collecting statistical data at the national level.

the interview.

Summary statistics of the population of interest are presented in Tables 3 and 4, and Charts 1 through 3. It is worth clarifying that, in Colombia, primary education is finished in fifth grade, and secondary education (high school) is finished in grade eleven instead of twelve. That is the reason why most of the population (in each survey) attained eleven grades of education and, similarly, there is another peak at fifth grade (see Chart 1). In addition, Charts 2 and 3 show clearly a positive correlation between the level of education of parents and the number of years of education attained by their corresponding offspring.

6. IDENTIFICATION: THE ANALYSIS

Since the DANE consistently collected surveys for the seven largest cities in Colombia, this study will be restricted to analyzing only people that, at the time of their interview, were 21 years old or older, and were living in one of the seven largest cities of Colombia; (i.e. Barranquilla, Bogotá, Cali, Medellin, Bucaramanga, Manizales, and Pasto). Chart 4 presents yearly unemployment rates from 1984 to 2014 by city. Since this paper is analyzing people 21 years and older at the time of the interview, the population of interest is people born between 1968 and 1992. People born in 1992, and interviewed in 2013, were 21 years old at the time of their interview. The reason for choosing 1968 as a starting year is due to issues related to availability of labor-related data before 1984, 1968 (year born) +16 (year of interest) = 1984. The combined dataset that fits such criterion provides information for 43,511 individuals.

7. RESULTS UNDER VARIOUS SPECIFICATIONS

This paper models the number of years of education individuals attain (grade) as a linear function, OLS, whose independent variables are: gender, level of mother's education, level of father's education, birth year, city, year of interview, and year and city-specific average unemployment rates at ages 16 and 17.

7.1. SPECIFICATION 1

The purpose of this first specification is to try to answer the question of whether the average unemployment rate, for subjects ages 16-17 in the seven different cities, had any effect on the number of years of education that people attained in Colombia, after controlling for several characteristics. For instance, if a person was born in 1980 in Cali, this paper uses the average unemployment rate of the years 1996 and 1997 (1980+16 and 1980+17) of Cali to conduct the analysis. The OLS specification becomes:

$$Y_{i,c,t,b} = \alpha_o + \alpha_1 * G_i + \alpha_2 * \text{Ed Mother}_i + \alpha_3 * \text{Ed Father}_i +$$

$$\alpha_4 * AU16\_17_{c,\,((b+16)+(b+17))/2} + \lambda_b + \Gamma_c + \varepsilon_{i,c,t,b}$$

Y = Number of Years of Education **G = Gender**

i = Individual **λ = Birth Year Fixed Effect**

c = City **Γ = City Fixed Effect**

t = Time of Interview **ε = Error term**

b = Birth Year

Ed Mother: a categorical variable that informs the level of education of the subject's mother. The different categories are: None, Some Primary, Primary Completed, Some Secondary, Secondary Completed, Some College, Complete College, and Unknown. Table 9 presents coefficients when the category base is "none".

Ed Father: this categorical variable represents the education level of the father of each subject in the dataset. It is defined the same way as the mother's education, and Table 10 presents coefficients when the category base is "none".

AU16_17: this variable is constructed by taking the average unemployment rate during the years: year born + 16 and year born+17 of each individual in the sample. This variable takes different values for the 7 cities depending on the city where each subject was interviewed. Since the datasets do not provide information about the city where each subject was living when they were 16-17 years old, this paper assumes that each subject was living in the same city when they were interviewed as when they were 16-17 years old. To the extent that this assumption is violated, measurement error would reduce the apparent effect.

Specification 1 shows that the average unemployment rate at ages 16-17 (discriminated by city) has a positive and significant effect on the number of years of education subjects (living in one of the seven largest cities of Colombia) achieve. Furthermore, it seems that the entire effect is driven by the women in the dataset. When the same specification is run

for only men, the significant effect disappears. In contrast, when the same specification is run just for women, average unemployment at ages 16-17 continues being significant and, in fact, the corresponding coefficient increases in magnitude (Table 5).

7.2. SPECIFICATION 2

To try to understand better why changes in the average unemployment rate (at ages 16-17) do not have a significant effect on the number of years of education achieved for men but, in contrast, does have a significant positive effect for women, I created separate average unemployment rates for women and men. The idea is to see if women respond differently to changes in the unemployment rate of women compared with their response to changes in the unemployment rate of men. The same analysis is made for men and for the whole sample. Since unemployment rates of women and men tend to be highly correlated, I had to set up the second specification in such a way that it is possible to disentangle the effect of the unemployment rate of each gender on the level of education acquired. The new OLS specification becomes:

$$Y_{i,c,t,b} = \alpha_o + \alpha_1 * G_i + \alpha_2 * \text{Ed Mother}_i + \alpha_3 * \text{Ed Father}_i +$$

$$\alpha_4 * \text{AUW16\_17}_{c,\,((b+16)+(b+17))/2} +$$

$$\alpha_5 * (\text{AUW16\_17} - \text{AUM16\_17})_{c,\,((b+16)+(b+17))/2}$$

$$\lambda_b + \Gamma_c + \varepsilon_{i,c,t,b}$$

The notation of this model is analogous to the first model.

AUW16_17: is constructed by taking the average unemployment rate (of women 20 or

more years old) during the years: year born + 16 and year born+17 of each subject. This variable takes different values for the 7 different cities.

AUM16_17: is defined the same way as AUW16_17 is, but it contains only unemployment data of men.

AUW16_17-AUM16_17: provides the gap between the average unemployment rate of women and men (20 or more years old) during the years: year born + 16 and year born+17 of each subject. This variable is constructed as the simple difference between AUW16_17 (average unemployment rate of women at ages 16-17, per city) and AUM16_17 (average unemployment rate of men at ages 16-17, per city). This variable takes different values for the 7 different cities.

After rearranging terms, the final model is:

$$Y_{i,c,t,b} = \alpha_o + \alpha_1 * G_i + \alpha_2 * \text{Ed Mother}_i + \alpha_3 * \text{Ed Father}_i$$

$$+\beta_1 * \text{AUW16\_17}_{c,\,((b+16)+(b+17))/2} + \beta_2 * \text{AUM16\_17}_{c,\,((b+16)+(b+17))/2}$$

$$+ \lambda_b + \Gamma_c + \varepsilon_{i,c,t,b}$$

Where:

$\beta_1 = \alpha_4 + \alpha_5$

$\beta_2 = -\alpha_5$

β_1 and β_2 capture the net average response to the unemployment rate (at ages 16-17 by city) of women and men respectively. The results corresponding to Specification 2 are

shown in Table 6. Specification 2 shows that, for the whole sample, when the unemployment rate of women increases, the average number of years of education attained increases as well. In contrast, (and for the whole sample) when the unemployment rate of men increases, the average number of years of education decreases for women and men. As in Specification 1, when Specification 2 is run just for women, the effect found for the whole sample continues to be significant and increases in magnitude. In contrast, when Specification 2 is run just for men, the coefficients became insignificant just as it happened with Specification 1.

So far, this paper presents strong evidence that the unemployment rate at ages 16-17 is not a strong predictor of the number of years of education men achieve in Colombia. By contrast, women do seem responsive to changes in the labor market. It is, then, logical to wonder whether this responsiveness has always been a characteristic of the labor market for women. Ederington et al. (2009) present strong evidence that, after Colombia's trade liberalization, a greater proportion of women joined the labor force. Therefore, it is reasonable to test whether the change in Colombia's trade liberalization (aside from pulling more women into the labor market) changed the labor market for young women in such a way that, if the unemployment rate increases, the average years of education young women achieved, increases as well.

Since the greatest change in Colombia's trade liberalization was during 1990-91 (tariffs in Colombia were drastically reduced during 1990-91, Attanasio et al. (2004)), I run separate regressions (using Specification 2) for people who were 16-17 years old before 1990, and for people who were 16-17 years old during or after 1990. The results corresponding to people 16-17 years old before 1990, therefore, born before 1973 are presented in Table 7.

It is evident that the unemployment rate (when people were 16-17 years old and born before 1973) did not have any significant effect on the number of years of education young people achieved. Moreover, the results are not significant either for women or men, when the regression is run for each separately.

On the other hand, when Specification 2 is run for subjects who were 16-17 years old during or after 1990 (i.e. born after 1972), the average unemployment of women is significant for the whole sample and for women and men separately (Table 8). However, after testing to see if the variables corresponding to the average unemployment rates of women and men should be dropped from the model, the test suggests that both variables should be dropped only for the regression that is run just for men, at 5% significance level.

This specification suggest that trade liberalization and associated reforms had an especially important effect for the labor market for and educational choices of women. Young women became responsive to changes in the unemployment rate. This result is consistent with findings made by other scholars, showing that insertion of women into the labor market increased after the 1990s reforms.

8. RESULTS FOR CONTROL VARIABLES

Since the parameters estimated for the controlling variables do not change much from model to model or when the sample is changed, Tables 9 to 12 show the results of control variables when Specification 1 is used.

The level of education of the mothers in the sample has a significant and positive effect on the number of years of education individuals in Colombia achieve. Table 9 presents the

corresponding coefficients when a level of education of "none" is used as the base level of comparison. The magnitude of the positive effect is greater however if the level of education of mothers is greater. Indeed, if mothers completed college, their children achieve almost six more years of education when compared to children whose mothers have no education at all.

The same effect can be seen for the level of father's education but the magnitude of the positive effect on the number of years of education their children achieve is smaller. Therefore, if fathers achieve complete college, their children will achieve almost four more years of education than those whose father achieved no education at all (see Table 10).

In regard to cities, Table 11 presents the corresponding coefficients when Bogotá, the capital city of Colombia, is used as the base level of comparison. Table 11 shows that, if the subjects were living in a city other than Bogotá, they achieved, on average, fewer years of education compared to subjects living in the capital city, Bogotá. The worse cases are Manizales and Pasto where subjects attained, on average, more than two fewer years of education than those living in Bogotá.

Males in Colombia achieve, on average, nearly a year less education compared to women. Moreover, people in Colombia have been achieving greater levels of education through time. These results are presented in Table 12.

Finally, the youth unemployment rate (at ages 16-17) has a positive and significant effect on the number of years of education people in Colombia achieve as seen in tables 5, 6, and 8. However, the effect seems to affect only women. When unemployment rates are separated for women and men, those unemployment rates appear to affect only young

women and not young men. The average effect of a 1percent increase in the unemployment rate of women at ages 16-17 is an increase of 0.0719 years of education for the whole sample and 0.0922 for only women. The same effect for men is not statistically significant. The average effect of a 1% increase in the average unemployment rate of men at ages 16-17 on the number of years of education is a 0.0388 reduction for the whole sample, and a 0.0485 reduction for only women. The same effect for men is not statistically significant. These youth unemployment effects parallel the overall effects reported above.

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TABLE 1: Surveys.

Name of Survey	Abbreviation	Period	Periodicity of Data Collected	Unit of Observation	Sample Design	Variables
National Household Survey	NHS	1984 to first semester of 2001	Quarterly	Each member of each household	Stratified Random	Created: unemployment by gender, age, city, and level of education.
Continuous Household Survey	CHS	Second semester of 2001 to the first semester of 2006	Monthly	Each member of each household	Stratified Random	Created: unemployment by gender, age, city, and level of education.
Great Integrated Household Survey	GIHS	Second semester of 2006 to 2009.	Monthly	Each member of each household	Stratified Random	Created: unemployment by gender, age, city, and level of education.
National Survey of Quality of Life	NSQL	2010 to 2013	Annually	Each member of each household	Stratified Random	Gender, age at time of interview, level of education of the subject as well as that of their parents', and city where the subject was living at the time of the interview.

Universe of Study: Each survey analyzed non-institutional civilian population residing in the main seven cities of Colombia.

TABLE 2: POPULATION OF INTEREST: Year Born, Year of Interview, Age at Time of Interview, Year when Subject was 16-17 Years Old from Where the Unemployment Rate was Taken, and Unemployment Rate of the Whole country, Discriminated by Gender, for Each Year.

	Unemployment Rate Taken from Year:																									Year Interviewed and Age at Time of Interview			
Year Born	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1968	16	17																									42	43	44	45
1969		16	17																								41	42	43	44
1970			16	17																							40	41	42	43
1971				16	17																						39	40	41	42
1972					16	17																					38	39	40	41
1973						16	17																				37	38	39	40
1974							16	17																			36	37	38	39
1975								16	17																		35	36	37	38
1976									16	17																	34	35	36	37
1977										16	17																33	34	35	36
1978											16	17															32	33	34	35
1979												16	17														31	32	33	34
1980													16	17													30	31	32	33
1981														16	17												29	30	31	32
1982															16	17											28	29	30	31
1983																16	17										27	28	29	30
1984																	16	17									26	27	28	29
1985																		16	17								25	26	27	28
1986																			16	17							24	25	26	27
1987																				16	17						23	24	25	26
1988																					16	17					22	23	24	25
1989																						16	17				21	22	23	24
1990																							16	17				21	22	23
1991																								16	17				21	22
1992																									16	17				21
U.K. Women	7.40	7.91	8.07	7.29	7.19	6.15	6.70	6.73	7.05	5.90	6.27	5.66	7.17	6.02	10.15	12.65	14.57	12.18	12.06	11.75	10.45	9.44	8.62	7.59	7.55	6.69	U.K: Unemployment Rate for People 16 Years Old and Older			
U.K. Men	8.51	8.51	8.14	6.92	6.66	5.64	6.16	5.75	5.72	4.65	4.69	5.04	6.66	7.61	9.74	11.00	13.22	12.92	12.41	11.07	10.10	8.93	8.05	7.25	7.59	6.84				

TABLE 3: SUMMARY STATISTICS OF POPULATION OF INTEREST

Year		2010	2011	2012	2013	Total
Observations		8,166	10,472	12,385	12,488	43,511
Females	**Percentage**	52.90%	53.38%	53.25%	53.08%	53.17%
	St. Dev.	0.50	0.50	0.50	0.50	0.50
Age	**Mean**	30.93	31.44	32.03	32.47	31.81
	St. Dev.	6.34	6.53	6.90	7.20	6.83
Year Born	**Mean**	1978.82	1979.33	1979.76	1980.27	1979.63
	St. Dev.	6.34	6.54	6.90	7.20	6.82

TABLE 4: SUMMARY STATISTICS OF POPULATION OF INTEREST

Percentage of People Interviewed in Each City per Survey					
City	**Year**				
	2010	**2011**	**2012**	**2013**	**Total**
Barranquilla	5.31	5.49	4.8	5.25	5.19
Bucaramanga	5.02	5.65	4.44	4.25	4.79
Bogotá	17.54	14.59	18.18	19.03	17.44
Manizales	5.29	4.16	4.98	4.92	4.83
Medellín	27.1	21.77	25.23	23.82	24.35
Cali	27.2	23.36	29.63	30.04	27.78
Pasto	12.54	24.97	12.73	12.68	15.63
Total	100	100	100	100	100

TABLE 5: SPECIFICATION 1

VARIABLES	(All) No. of Years of Education	(Women) No. of Years of Education	(Men) No. of Years of Education
Average unemployment rate at ages 16-17	0.0255***	0.0337***	0.0155
	(0.009)	(0.012)	(0.013)
Observations	43511	23134	20377
Adjusted R^2	0.3518	0.3438	0.3560

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

TABLE 6: SPECIFICATION 2

VARIABLES	(All) No. of Years of Education	(Women) No. of Years of Education	(Men) No. of Years of Education
AUW16_17	0.0331***	0.0437***	0.0201
	(0.009)	(0.012)	(0.013)
difAU16_17	0.0388*	0.0485*	0.0252
	(0.022)	(0.029)	(0.031)
Observations	43511	23134	20377
Adjusted R^2	0.3519	0.3439	0.3560

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

AUW16_17 = Average unemployment rate for women at ages 16-17
difAU16_17 = Difference between the average unemployment rate for women and the average unemployment rate for men at ages 16-17

TABLE 7: SPECIFICATION 2: People Born Before 1973

VARIABLES	(All) No. of Years of Education	(Women) No. of Years of Education	(Men) No. of Years of Education
AUW16_17	0.0223	0.0872	-0.0497
	(0.093)	(0.128)	(0.136)
difAU16_17	0.0545	0.1439	-0.0652
	(0.169)	(0.235)	(0.238)
Observations	8806	4755	4051
Adjusted R^2	0.3205	0.3084	0.3326

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

AUW16_17 = Average unemployment rate for women at ages 16-17
difAU16_17 = Difference between the average unemployment rate for women and the average unemployment rate for men at ages 16-17

TABLE 8: SPECIFICATION 2: People Born After 1972

VARIABLES	(All) No. of Years of Education	(Women) No. of Years of Education	(Men) No. of Years of Education
AUW16_17	0.0337***	0.0353***	0.0303**
	(0.009)	(0.012)	(0.013)
difAU16_17	-0.0212	-0.0324	-0.0091
	(0.028)	(0.037)	(0.040)
Observations	34705	18379	16326
Adjusted R^2	0.3465	0.3377	0.3502

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

AUW16_17 = Average unemployment rate for women at ages 16-17
difAU16_17 = Difference between the average unemployment rate for women and the average unemployment rate for men at ages 16-17

TABLE 9: CONTROL VARIABLE RESULTS: Education Mother

Level of Education Base: None

VARIABLES	(1) No. of Years of Education
Some Primary	1.2451***
	(0.069)
Primary Completed	2.6131***
	(0.077)
Some Secondary	3.4246***
	(0.087)
Secondary Completed	4.4217***
	(0.089)
Some College	5.1166***
	(0.125)
Complete College	5.8783***
	(0.134)
Unknown	0.2558***
	(0.091)
Observations	43511
Adjusted R^2	0.3518

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

TABLE 10: CONTROL VARIABLE RESULTS: Education Father

Level of Education Base: None

VARIABLES	(1) No. of Years of Education
Some Primary	0.8250***
	(0.071)
Primary Completed	1.9559***
	(0.081)
Some Secondary	2.3444***
	(0.094)
Secondary Completed	2.7873***
	(0.092)
Some College	3.6501***
	(0.129)
Complete College	3.9211***
	(0.127)
Unknown	0.2589***
	(0.078)
Observations	43511
Adjusted R^2	0.3518

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

TABLE 11: CONTROL VARIABLE RESULTS: Cities

City Base: Bogotá

VARIABLES	(1) No. of Years of Education
Barranquilla	-1.1943***
	(0.102)
Bucaramanga	-1.1225***
	(0.109)
Manizales	-2.0953***
	(0.103)
Medellín	-1.4455***
	(0.064)
Cali	-1.0882***
	(0.060)
Pasto	-2.0398***
	(0.077)
Observations	43511
Adjusted R^2	0.3518

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

TABLE 12: CONTROL VARIABLE RESULTS USING SPECIFICATION 1: Miscellaneous

VARIABLES	(1) No. of Years of Education
Male	-0.6851***
	(0.032)
Birth Year	0.0423***
	(0.003)
Year of Interview: Base: 2010	
2011	-0.2219***
	(0.065)
2012	-0.0649
	(0.062)
2013	0.0613
	(0.061)
Observations	43511
Adjusted R^2	0.3518

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

CHART 1: SUMMARY STATISTICS OF POPULATION OF INTEREST

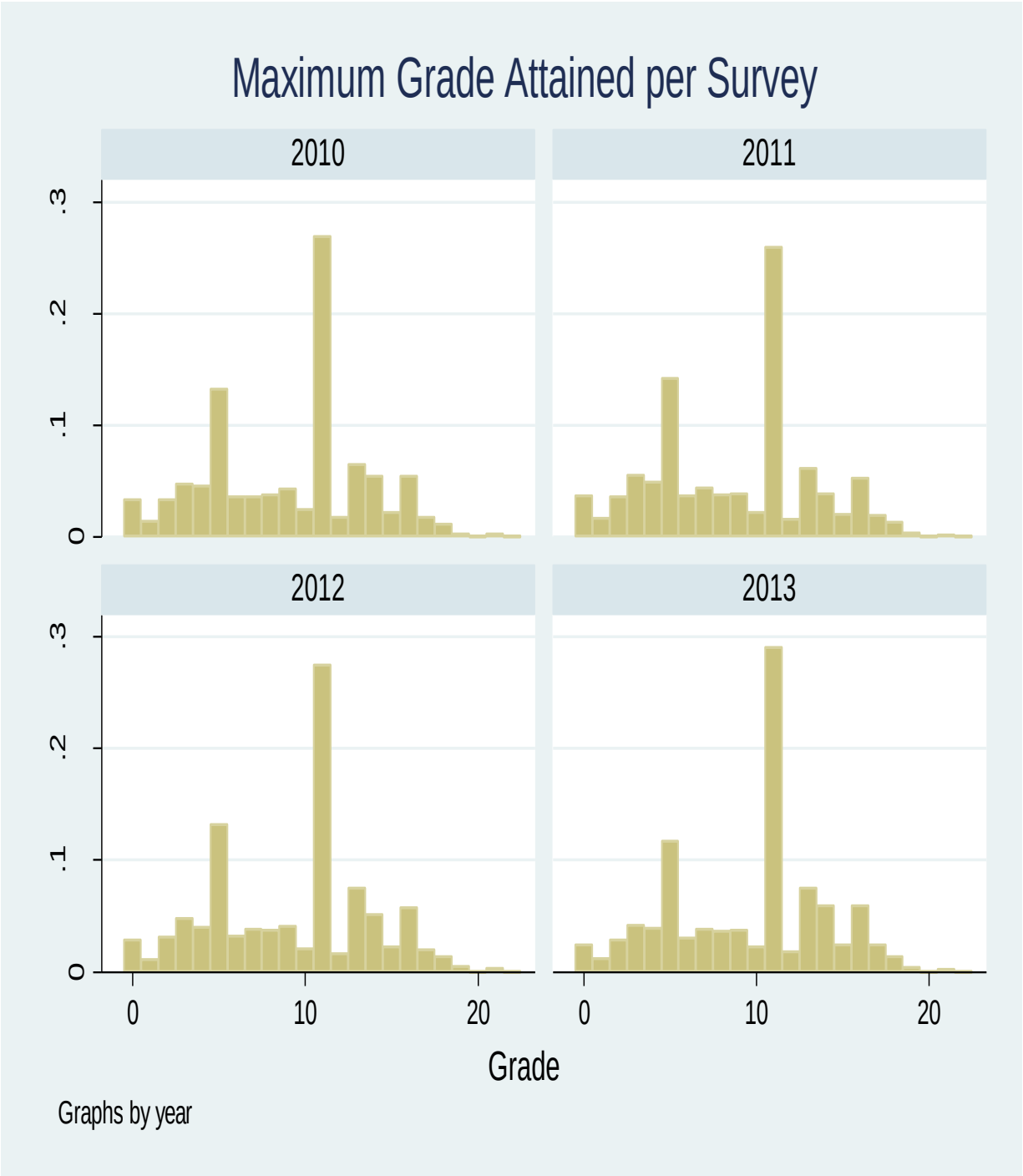

CHART 2: SUMMARY STATISTICS OF POPULATION OF INTEREST

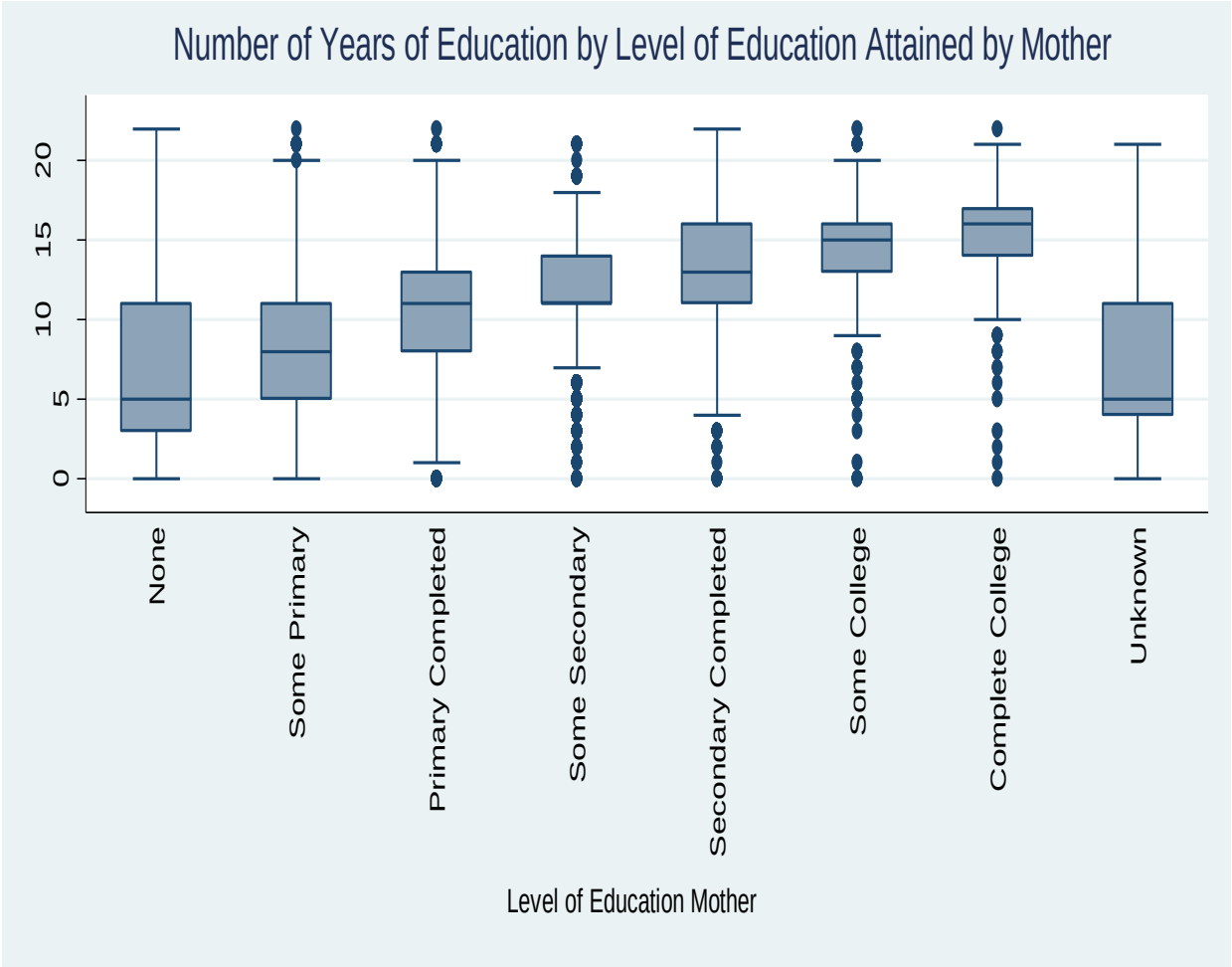

CHART 3: SUMMARY STATISTICS OF POPULATION OF INTEREST

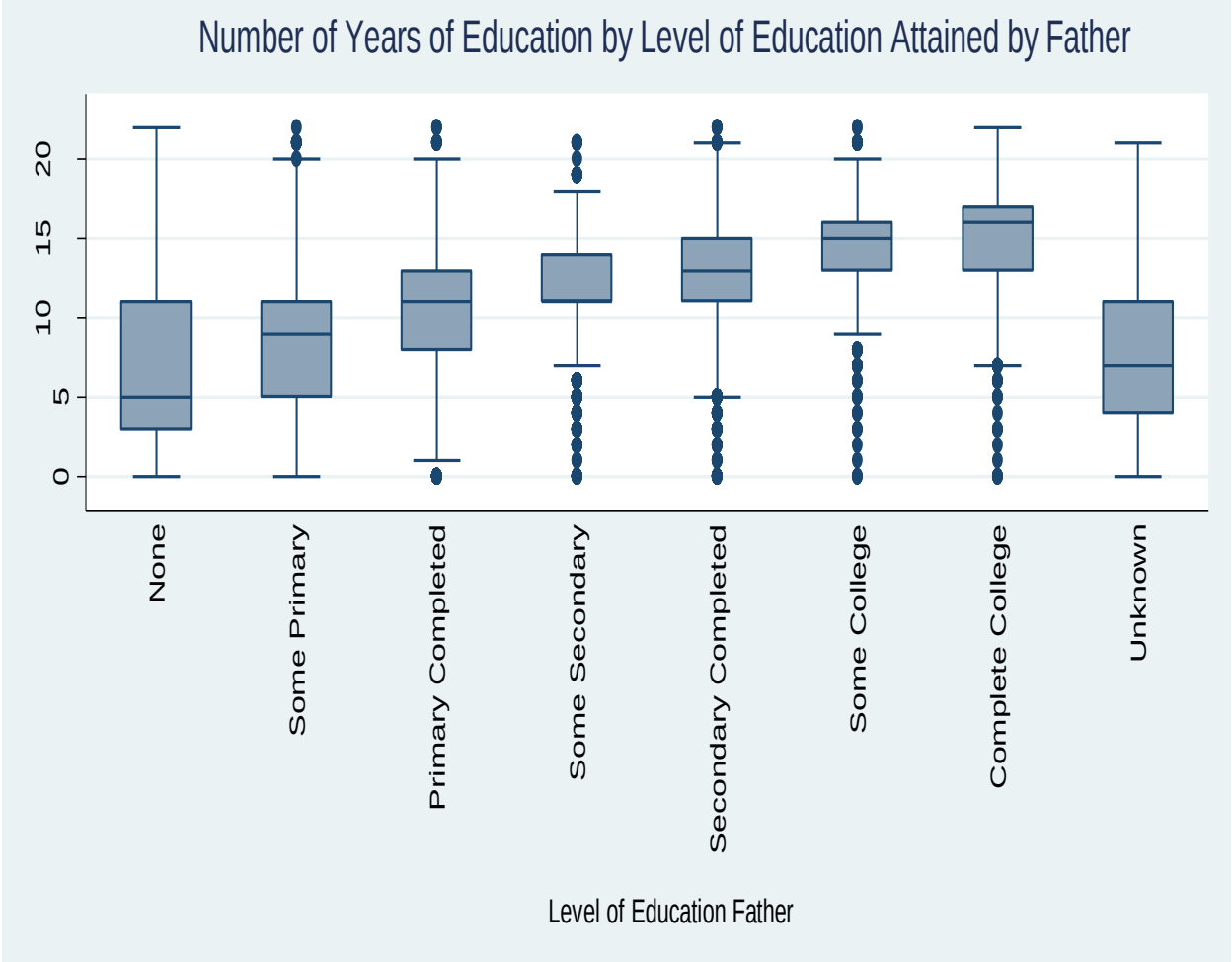

CHART 4: UNEMPLOYMENT RATE IN COLOMBIA 1984 TO 2014 PER CITY

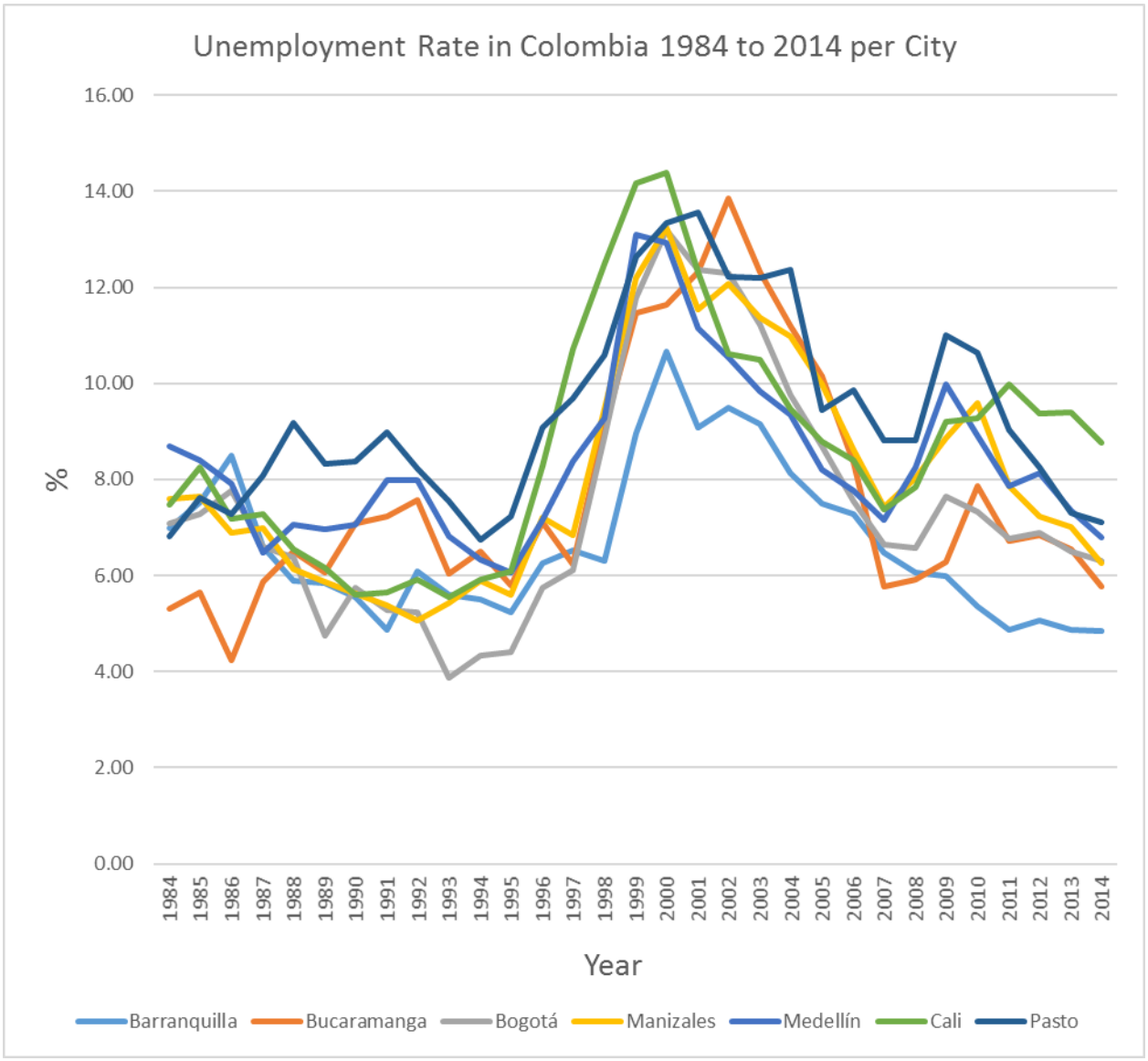

CHART 5: LABOR FORCE PARTICIPATION RATE IN COLOMBIA BY GENDER

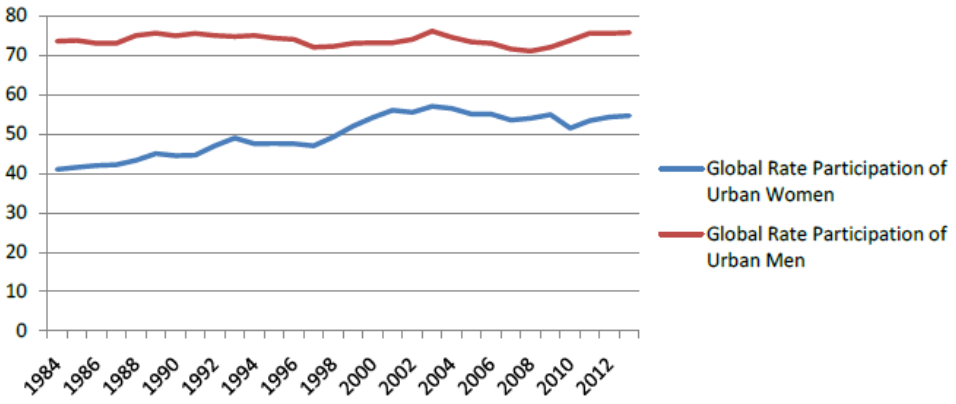

Figure 5. General participation rate urban for sex. Source: DANE. Household Survey 1984-2000, National Household Survey, 2001-2006 and Great Integrated Household Survey, 2007-2013.

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