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Factors of regional poverty reduction in Colombia: Do institutional conditions matter?

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Abstract

Colombia has a unique history, which has been heavily conditioned by armed conflict lasting more than 50 years. This study examines the institutional conditions for success and failure in reducing poverty in Colombian departments by considering changes that took place between 2003 and 2014. Fuzzy-set qualitative comparative analysis identifies the changes in regional conditions that reduce poverty over time. The pathways for poverty reduction are multidimensional, and many involve changes in institutional attributes such as government transparency, absence of violence, and electoral turnout. The framework developed in this paper can be used to monitor necessary and sufficient pathways in regional clusters.

KEYWORDS

armed conflict, electoral turnout in Colombian departments, institutional transparency, peace and poverty, qualitative comparative analysis (QCA), regional poverty in Colombia

1 | INTRODUCTION

The academic discussion of poverty covers multiple issues, from its conceptualization to its measurement (Alkire & Santos, 2013; Deaton, 2010; Sen, 2000). Yet poverty is a complex phenomenon that cannot be described by a single dimension (Belhadj & Limam, 2012; Betti, Cheli, Lemmi, & Verma, 2006). Furthermore, a sound explanation of changes in poverty rates requires consideration of constraints and contextual attributes related to the territory at hand (Ele-Ojo, Eme Ichoku, & Fonta, 2013). These attributes may include institutional variables that reflect governance conditions and power relations in each territory.

The present study follows a dynamic approach to assess how changes in different institutional conditions have proved necessary or sufficient to support regional convergence in poverty reduction in Colombia, a country affected by armed conflict lasting over half a century. Although economic growth and social policy might have been part of the

solution, we argue that improvements in institutional and governance performance have also been crucial for improving poverty indicators.

To test this proposition, we use fuzzy-set qualitative comparative analysis (fsQCA; Fiss, 2011; Ragin, 2008), a method that accounts for the way that changes in multiple regional attributes can exert an influence on poverty reduction. fsQCA is based on the use of fuzzy sets and qualitative methodology. It enables the categorization of regions by certain parameters, making it possible to select the pathways that produce a given outcome (in this case, poverty reduction) depending on whether certain indicators improve or worsen. This approach was applied to data on institutional changes between 2003 and 2014 in 24 Colombian administrative departments. This timeframe covered a period of conflict resolution in the country during the preliminary stages of the present peace process. According to the National Household Survey conducted by DANE (2015) (The National Administrative Department of Statistics), average national poverty rates dropped from 48.0% in 2003 to 28.5% in 2014. We examine how regional institutional attributes might have act as favorable conditions for poverty reduction.

This article examines six attributes whose presence or absence may be sufficient or necessary for regional poverty reduction. Three of these attributes are considered institutional conditions. These are peace or personal safety (indicated by a reduction in internal forced displacement), transparent institutions, and citizens' participation in electoral processes. These three dimensions were used to explain how institutional change has affected the evolution of poverty in a region or group of regions. According to the literature review presented in Section 2, we should expect institutional improvement to be a driver of poverty reduction when combined with other economic and social conditions considered in the empirical analysis. fsQCA controls for two economic conditions (income growth and trade opening) and one social condition (education spending).

This article is divided into several sections. Section 2 discusses the role of institutions in poverty and provides a conceptual basis for the selection of relevant territorial conditions. Section 3 presents the background of regional poverty in Colombia and provides historical context. Section 4 describes the fsQCA approach to explaining poverty reduction. Section 5 presents and discusses the main findings. Section 6 concludes with some final remarks.

2 | POVERTY AND INSTITUTIONS

2.1 | Poverty and contextual conditions

Sen's approach to the concept of poverty characterizes poverty as capability deprivation (Anand & Sen, 1997). A central part of capabilities is the set of skills that allow individuals to function properly within society. Poverty can be regarded as a failure to achieve certain minimum capabilities. It also includes the capability to blend in with local activities and/or traditions. According to Townsend (1983), poverty deprives individuals, families, or groups of the living conditions that are typical or at least widely accepted in the societies to which they belong. Societies differ, so the capabilities required to blend in also vary according to the historical and regional context.

Certain authors such as Harriss (2007) have highlighted the shortcomings of existing research in identifying the social and structural determinants that lie at the heart of poverty. The regional context matters. Poverty in some regions seems almost permanent, whereas other regions' wealth fluctuates over time. Determining the causes of this phenomenon in each territory is important because the context and dynamics of poverty may differ from one region to another. The variation of poverty across regions requires a plausible explanation, which can only be achieved by incorporating contextual variables or dimensions related to each region (Neff, 2013). These variables include institutional and political variables that explain a territory's power relations (Putnam, Leonardi, & Nanetti, 1994).

Certain studies (Royuela & García, 2015) have emphasized that in the case of Colombia, social achievements in different regions have converged more than gross domestic product (GDP) per capita has. This observation suggests the need to broaden the scope of regional convergence beyond economic growth. Accepting that poverty has a multidimensional nature (Atkinson & Bourguignon, 1982), we focus on income-based poverty or monetary poverty, which may or

may not be correlated with other indicators of capability deprivation (e.g., health) but has the advantage of being available at the regional or administrative department level (Angulo, Díaz, & Pardo, 2015). Income-based poverty supplies a measure of regional convergence from a social perspective that goes beyond the standard measure of GDP per capita.

Lack of regional convergence in social indicators is partially due to institutional conditions (Moyano-Pesquera, 2017; World Bank, 1997). Regional poverty occurs under clearly differentiated circumstances such as resource scarcity, armed conflict, freedom of choice, forced displacement, and inequality (Belhadj, 2011; Buzzoli and Brück, 2009; Steele, 2011; Zukerman, 2012). Furthermore, these circumstances take place in a specific historical context.

As Pierson (2011) points out, social mechanisms have a strong temporal dimension for at least three reasons. First, many social processes are path dependent. Second, the order of events or processes can determine relevant social outcomes. Third, many important social conditions and outcomes take time to emerge or produce significant change. Therefore, the task of explaining policy outcomes is better conceptualized as a matter of institutional development. In turn, institutional change cannot be properly addressed without addressing issues that occur with a time lapse. The reduction of poverty requires a change in the existing power structures to improve the opportunities of the most disadvantaged (Bastiaensen, Herdt, & D'Exelle, 2005; Sen, 2008). Therefore, the quality of institutions is a relevant factor for political and economic action.

2.2 | Institutional conditions

The role of institutions is threefold. First, according to North (1991), institutions are a set of rules that articulate human and political interactions between individuals and social groups. Their influence on poverty and inequality is profound. Amin (1999, p. 367) defines the economy as "a composition of collective influences which shape individual action and as a diversified and path-dependent entity moulded by inherited cultural and socio-institutional influences." Sen (1983) advocates social agreements in terms of transparent institutions, which are relevant as long as people have the right conditions to use them. Institutions are a mechanism of social stability, and their role is crucial not only in reducing or eliminating poverty but also, in general terms, in the promotion of economic development.

Second, institutions are the backbone of regional development because they influence welfare and mediate the distribution of wealth (Acemoglu & Robinson, 2012; North, 1991). The institutional landscape, as a product of different historical periods based on different systems, rules, and actors, is determined by people and the role people play or are prevented from playing in the political arena (Bastiaensen et al., 2005).

Third, institutions are not only the foundations of human activity but also social tools through which social and economic conflicts are resolved (Thelen, 2005). Control of corruption in stable political systems with effective governments fosters economic growth, which can reduce problems related to the distribution of resources and contribute to reducing poverty (Tebaldi & Mohan, 2010).

More specifically, three conditions related to institutional quality could influence the regional convergence of social indicators in Colombian departments. These conditions are (a) the presence or absence of violence and forced displacement, (b) the presence or absence of transparent and effective institutions, and (c) the presence or absence of citizens' electoral participation. These factors have been tackled from different perspectives in the literature (Flores, 2014; Hegre, Østby, & Raleigh, 2009; Steele, 2011). However, because violence, poor governance, and a lack of political participation overlap considerably with one another in Colombia, it is often difficult to separate these factors to link them individually to poverty.

2.2.1 | Violence and forced displacement

Scholars have linked the phenomenon of poverty primarily to the existence of social conflict (Bretthauer, 2014; Richani, 2013). Caruso and Schneider (2011) suggest that violence can exacerbate the relative disadvantage of a region, creating a vicious circle. In Colombia, constant political disputes sparked a war between the government and various armed groups that lasted more than 50 years. Conflict and a lack of institutional quality have had visibly

detrimental effects on poverty. Gates, Hegre, Nygård, and Strand (2012) conclude that armed conflict leads to forced displacement, capital flight, destruction of infrastructure, investor uncertainty, and paralysis in the affected territory. Conflicts have a causal effect on poverty levels and "wreak havoc on the economy" (Gates et al., 2012, p. 1715). Steele (2011) reports empirical evidence of the historical relationship between armed conflict and "strategic displacement," which refers to the ejection of the civilian population from a territory by armed groups. Steele (2011) affirms that strategic displacement can be explained by local politics and war.

2.2.2 | Good governance and transparent institutions

Quality of institutions can be decisive for development (Grindle, 2004; Herrera, Razafindrakoto, & Roubaud, 2007; Pierson, 2000; Schneider, 1999). The absence of transparent institutions hinders effective governance. According to the World Bank (2001), good governance is widely seen as an essential ingredient for alleviating poverty. Good governance should tend to reduce corruption, improve the accountability and management of public services, maintain economic and social stability, and preserve the peace. All these ingredients are necessary to foster development and growth in a country, region, and/or territory (Collins, 2012; Epstein & Gang, 2009; Erler, 2012; Putnam, 1993). Good governance involves establishing priorities for poverty reduction, learning to keep what already works instead of focusing only on governance gaps, taking the government's role in poverty reduction seriously, and understanding that the context of each region differs in time and form (Grindle, 2004, p. 526). According to Grindle (2004), reducing poverty requires a good governance that adapts to the realities of each country, region, or territory and that understands that recipes may vary dynamically and may be unique or manifold depending on the situation.

Colombia has long been cited as an example of a state with weak institutions (Sanchez & Palau, 2006). Justino (2011) reports empirical evidence that strong and transparent institutions guarantee the maintenance of peace and favor sustainable development and growth over time (Ibáñez & Velásquez, 2009).

2.2.3 | Political participation and distributive policies

Putnam et al. (1994) and Putnam (2000) have examined the role of civil society in generating wealth and the functioning and efficiency of governance. In Putnam's view, the quality of civic life contributes to the strength and efficacy of political institutions. Governments can have similar structures and organizations, but they are inserted in different socioeconomic and cultural contexts. For the purposes of this research, keeping all other factors constant, the findings of interest include the fact that regional governments are more efficient when settled in contexts where there is a strong tradition of citizens' participation. The notions of democracy and its participatory systems are directly related to good governance. At the same time, local people's political involvement provides information on the quality of governance and institutions.

The nature of social citizenship rights affects people's political behavior (Pierson, 1993). Mwangi and Markelova (2009) stress that the poorest tend to have less capacity to influence policy and practice because they lack the educational resources to better defend their rights and because they lack personal connections to the political and economic lobbies of power.

Political scientists have examined the relationship between electoral turnout and the extent of social redistribution (Mahler, Jesuit, & Paradowski, 2014). Higher turnout reflects better representation of low-income groups in the political process, which results in greater efforts to redistribute income to disfavored groups. Lijphart (1997) argues that the nature of the electorate has a significant impact on the content of redistributive policies. Lister (2007) provides some evidence that enhanced social citizenship rights relate to higher levels of participation. This is one link that explains the variations in turnout across countries.

Elections enable the identification of people who disagree with the predominant group, especially in contexts with low electoral turnout. Nevertheless, holding elections allows power groups to identify the political ideas and

affinities of a region's inhabitants. In some regions, violence has not been generalized but has instead selectively targeted certain groups with specific ideologies.

3 | POVERTY AND CONFLICT IN COLOMBIA: SOME BACKGROUND DATA

The available data show that social convergence remains a relevant goal for Colombia, where there is still a marked concentration of wealth. In 2003, according to DANE (2015) figures, the departments with poverty rates above 60% were Nariño (70.0%), Chocó (69.2%), Huila (66.8%), Boyacá (64.6%), Córdoba (64.0%), Cauca (62.0%), and Cesar (60.1%). At the other end of the spectrum, the poverty rates for Bogotá (32.1%), Risaralda (34.6%), and Quindío (38.8%) were below 40%.

It was not until 2008 that the situation in Colombia began to show signs of improvement, despite some departments that lagged behind with persistently high poverty rates (e.g., 65% in Chocó). In 2014, some regions had poverty rates below 20%, as was the case of Bogotá (10.1%), Cundinamarca (16.9%), and Santander (19.6%).

The fact that Colombian regions have endured high levels of poverty over long periods has put considerable pressure on society and has given rise to numerous conflicts. This situation has continually hindered the country's development and economic growth. According to DANE (2015) statistics, between 2000 and 2013, the average poverty rate in Colombia was 40.8%, well above the Latin American average of 33.7%. Likewise, inequality across Colombian regions was still very high, with a score of 5 out of 6 in the UN-Habitat classification.

This study examines the period 2003 to 2014. This period spans significant milestones that have directly and indirectly influenced changes in the institutional landscape. These milestones also correspond to dramatic political changes in Colombia. According to reports on Colombia by Transparency International, corruption monitoring remains fragile (Transparencia por Colombia, 2015). The government has generally implemented anti-corruption laws, despite reports of official impunity (GAN, 2018). Throughout the studied period, violence still hindered participation in civil society (BTI, 2018), particularly for threatened campaigners.

The historical evidence provides a frame of reference to contextualize and better understand the phenomenon of regional poverty in Colombia and its relation with peace. Investigating how violence relates to poverty is necessary in a country like Colombia, where armed conflict has displaced about 6.6 million people in the last 15 years (according to figures from Unified Victim Registry (RUV), 2016), and the differences in terms of rights and opportunities between regions in conflict and those in peace are considerable.

In the period immediately preceding 2003, Colombia was governed by President Andrés Pastrana Borrero of the Conservative Party (presidential period 1998–2002). Despite the "alleged" peace negotiations between the legitimate Colombian government and the Armed Forces of Colombia (FARC) "both actors simultaneously deployed a political logic and a military logic as a way of making war in the midst of peace" (CNMH, 2013). The combination of this double logic brought with it violent interactions that caused the erosion of the legitimacy of the negotiated political solution and the consequent deepening of the war (CNMH, 2013). The armed conflict reached unprecedented levels and forced displacement occurred on a massive scale (CNMH, 2013). According to figures from the RUV, between 1996 and 2002, 3.1 million people were displaced by the armed conflict.

The subsequent presidential terms, 2002 to 2006 and 2006 to 2010, were led by President Álvaro Uribe Vélez of the Social Unity Party, known as the "Partido de la U." During President Uribe's 8 years in office, the armed conflict continued to claim a huge number of victims. According to information from the Uppsala Conflict Data Program (UCDP), since 1989, the highest number of deaths in Colombia due to the armed conflict occurred in 2002, with 3,427 deaths. In Álvaro Uribe Vélez's two presidential terms, 10,163 people died, according to UCDP figures (2017). In this same period, forced displacement affected 4.9 million people.

President Juan Manuel Santos Calderon served during the following two presidential terms. In 2011, an exploratory phase began with delegated members of the FARC-EP. This phase culminated in the signing of the "General Agreement for the termination of the conflict and the construction of a stable and lasting peace" on August 26,

2012. Four years after the process began, on September 26, 2016, the National Government and the FARC-EP signed the final agreement. This was later presented at the polls through a plebiscite on October 2, 2016. After the plebiscite, the Government and the FARC-EP began a second phase of negotiations in which the opposition played a fundamental role. This phase involved a renegotiation of the six main points established in the General Agreement. The new Final Peace Agreement was signed in Bogotá on November 24, 2016.

The number of people affected by the conflict has decreased in recent years. Forced displacement between 2010 and 2015 represented 20% of all displacements over the 15 years of conflict, compared with 35% in the previous 5-year period. Also, deaths from state-based violence decreased from 3,693 between 2004 and 2009 to 1,108 between 2010 and 2015, according to UCDP figures.

In recent years, Colombia's economy showed signs of recovery. According to data from the World Bank, Colombia's economy grew at 4.6% in 2014. Our empirical analysis explores the extent to which improvement in poverty figures has been conditioned by macroeconomic performance and the development of selected institutional conditions.

4 | CONDITIONS AND METHOD

4.1 | Institutional conditions and control variables

In the previous background section, we underlined the role of institutional variables to explain why poverty is present in some regions at a greater extent than in others, in a country subjected to armed conflicts and weak institutions: personal safety, institutional transparency, and participation. The selection of institutional attributes draws on such discussion, although the variables chosen depend on the available information. To acknowledge that other factors could have influenced regional poverty, we included other variables as a control conditions: two of economic nature (per capita GDP and trade openness) and one related to social and education policies (public expenditure on education).

Consequently, six attributes whose presence or absence may be sufficient or necessary for reducing of regional poverty were investigated. Three of them derive from the previous analysis on poverty and institutions. The other three can be considered control conditions. These include economic and social conditions that may exert a strong influence on poverty.

The literature review on the role of institutions in poverty in Section 2 describes the three institutional conditions considered in this study. These are (a) personal safety (proxied by lack of forced displacement), (b) transparent institutions, and (c) citizens' participation in electoral processes (proxied by electoral turnout). Analysis of these three characteristics can explain how institutional change has affected the evolution of poverty in a region or group of regions (Ele-Ojo et al., 2013).

Two other attributes reflect improvements in standard economic conditions for poverty reduction: (a) per capita GDP and (b) trade openness. The economic circumstances of each region must be considered when analyzing poverty. Nevertheless, there is empirical evidence (Guiga & Rejeb, 2012; Iniguez-Montiel, 2014) that economic growth alone is insufficient to eradicate poverty.

As Charlton and Stiglitz (2004) point out, trade drives economic and social development. Certain studies (Hegre et al., 2009) have shown that trade helps reduce the risk of conflict between nations. More specifically, the literature (Glick & Taylor, 2010) has highlighted the relationship between peace and market disruption.

Finally, the change in public education spending is included as a sixth regional attribute. This spending is related to public policies that have a social impact. Education contributes to economic and social welfare in two ways (Baumann & Winzar, 2014). First, education increases the capacity of the economy to innovate in products and processes and therefore helps improve the economy. Second, education enables deployment of the human capital within the labor force, thereby increasing labor productivity.

Because of the dynamic nature of the analysis, we express the institutional, economic, and social conditions in terms of a change of related indicators (see Section 4.3). The general hypothesis is that an improvement in institutional quality in terms of safe, transparent, responsible institutions is expected to determine social convergence in

Colombian regions and reduce poverty. Conversely, a shift toward institutional weakness is expected to drive an increase in poverty. Success in poverty reduction over time is expected to occur only when there is the right combination of institutional, economic, and social conditions.

4.2 | Qualitative comparative analysis

Understanding regional poverty requires comparative analysis that provides a clearer view, in qualitative and quantitative terms, of the factors that have promoted and mitigated poverty in the Colombian departments over time.

Given the range of conditions that can lead to poverty, the chosen method was fsQCA (Fiss, 2011; Nieto Alemán, Roig-Tierno, Mas-Verdú, & García Álvarez-Coque, 2018; Ragin, 1987, 2008; Schneider & Wagemann, 2012). fsQCA is based on the use of fuzzy sets and qualitative methodology. It enables the categorization of regions by certain parameters, making it possible to identify the pathways for success or failure according to the presence or absence of certain attributes. This technique also distinguishes between necessary and sufficient pathways for the presence or absence of poverty. Thus, fsQCA was performed on data from a sample of 24 Colombian regions. The unit of analysis of this study was the department (that is, the administrative division in Colombia). Some approaches to measuring multidimensional poverty are based on fuzzy-set theory (Lemmi & Betti, 2006; Nieto Alemán et al., 2018).

Qualitative comparative analysis (QCA) was developed by Charles Ragin in 1987 building on Boolean logic. This technique is based on the creation of two groups of factors: the outcome or result (the phenomenon to be explained) and the causal conditions or explanatory factors. The outcome for this study is regional poverty or, from a dynamic perspective, relative change in regional poverty. The causal conditions that form the pathways to success or failure in poverty reduction refer to changes in institutional and economic conditions. fsQCA combines detailed analyses of each case with systematic comparisons between formalized cases. The fsQCA research process is iterative. It involves several rounds of analysis during the research process. The initial results lead to a broader selection of cases and/or redefinition of the fuzzy set that describes the conditions and the outcome. fsQCA is suited to analyzing small or medium-sized databases (e.g., 15 to 50 individuals; Fiss, 2011) such as the one used in this study (24 Colombian departments).

Table 1 shows the definition of the outcome (poverty reduction or increase) and the different conditions selected including three institutional attributes, two economic attributes, and education spending.

This approach is dynamic in the sense that the main outcome and conditions are measured according to the relative change of poverty rates between 2003 and 2014. These regions are categorized in terms of intensity of change, so the calibration classifies the given regions in categories according to presence or absence of an improvement in institutional, economic, and social conditions.

fsQCA departs from standard correlation-based statistical analysis, which isolates marginal impacts of single conditions that may be simultaneously necessary and sufficient. In contrast, fsQCA identifies the combined effect of conditions that together form pathways or recipes for an outcome to occur. fsQCA was used to show which configurations or pathways support the existence of these relationships and assess how their presence or absence affected regional poverty changes in the selected period (Schneider & Wagemann, 2012). Schneider and Eggert (2014) argue that four forms of causality can be identified with fsQCA: (a) a condition that is necessary but not sufficient; (b) a condition that is sufficient but not necessary; (c) a condition that is both necessary and sufficient; and (d) a sufficient configuration of conditions, without a single condition being sufficient or necessary by itself.

Without disregarding the first three forms, this study focuses on the fourth form of causality. The outcome in this dynamic context is the success or failure in meaningfully reducing regional poverty: ▼POVERTY or ∆POVERTY, where ▼and ∆ denote the relative decrease and increase, respectively, between 2003 and 2014.

Based on the six conditions shown in Table 1 (DISPLACE, TRANS, TURNOUT, TRADE, INCOME, and SPENDING_EDU), 2^6 configurations were defined as producing relatively meaningful favorable changes in causal conditions (▼DISPLACE, ∆TRANS, ∆TURNOUT, ∆TRADE, ∆INCOME, and ∆SPENDING_EDU) or negative or unfavorable

TABLE 1 Regional conditions influencing poverty

Attribute		Concept (▼Reduction; ∆Increase)
Outcome	Absence of poverty	▼POVERTY: Decrease in the proportion of the population living under the poverty line in a particular department.
Institutional conditions	Absence of forced displacement	▼DISPLACE: Decrease in the number of people who suffer forced displacement in a particular department. In Colombia, a displaced person is a person who has been forced to migrate within the national territory, abandoning his or her place of residence or usual economic activities because his or her life, physical well-being, safety, or personal freedom has been violated or is directly threatened by violations of international humanitarian law or serious, blatant violations of international standards of human rights due to internal armed conflict (Paragraph 2, Article 60, Law 1448 of 2011).
	Transparency	∆TRANS: Improvement in transparency measures including corruption risks in the institutions. Three factors are indicative of transparent management: visibility, sanctioning, and institutionality (Transparencia por Colombia).
	Electoral turnout	∆TURNOUT: Increase in the percentage of the population voting in electoral processes, measured as a percentage of the population eligible to vote.
Economic conditions	Trade openness	∆TRADE: Increase in trade liberalization of the economy, referring to the size of commercial exchange in the Colombian economy: Exports + Imports/GDP.
	Income	∆INCOME: Increase in per capita GDP.
Control condition	Education	∆SPENDING_EDU: Increase in education spending.

Source: Compiled by the authors.
Note. GDP: gross domestic product.

changes (∆DISPLACE, ▼TRANS, ▼TURNOUT, ▼TRADE, ▼INCOME, and ▼SPENDING_EDU). Thus, 64 possible configurations or pathways were studied to test for sufficiency or necessity for the outcome. The outcome here was either success or failure in poverty reduction. Thus, two analyses were conducted: one for success and one for failure.

4.3 | Sources and calibration

The basic data used to classify the Colombian departments into different fuzzy sets were gathered from the DANE (2015), the Ministry of Finance and Public Credit of Colombia, Transparencia por Colombia (Transparency for Colombia), the Unit for Attention and Reparation of Victims (RUV), the Comptroller of Bogotá, the National Registry of Civil Status, and the Financial Superintendence of Colombia (see Table 2).

The first step in fsQCA is calibration, which enables assessment of whether a particular region belongs to the set of regions where the outcome or conditions are present or absent. Unlike its predecessor, crisp-set QCA, fsQCA does not force cases into one of two categories (fully in or fully out of the set). Instead, it allows for the scaling of conditions or explanatory factors in that interval. To describe the diverse cutoff points within these ordinal or continuous values, the outcome and conditions are calibrated (Ragin, 2008).

As indicated by Ragin (2008), the calibration consists of transforming raw data into values belonging to the set. For this study, the direct method of calibration proposed by Ragin was used to define three thresholds: fully inside the set (0.95), fully outside the set (0.05), and the point of maximum ambiguity (0.5).

The cutoff points of the dynamic model were established by drawing on the rates of change of the indicators in Tables 1 and 2, taking the national average in each case as the point of maximum ambiguity. Appendix A shows the percentage changes for the selected indicators.

Table 3 shows the calibrated values of the rates of change (for fully inside the set, fully outside the set, and the point of maximum ambiguity) and descriptive statistics for each condition. For example, to be fully inside the group of regions where poverty reduction is present, the threshold was set at 50% change over the study period. For some indicators, practically all regions improved and had positive values, as was the case for poverty and income.

TABLE 2 Indicators and sources

Attribute		Indicator
Outcome	POVERTY	Proportion of the population living under the poverty line in a particular department. Source: National Household Survey (DANE, 2015).
Conditions	DISPLACE	Number of displaced people from the Unique Victims Registry (RUV in Spanish) 1985–2015. Source: National Information Network (RNI).
	TRANS	Corruption risk index from Transparency for Colombia. Low risk between 89.5 and 100 Moderate risk between 74.5 and 89.4 Average risk between 60.0 and 74.4 High risk between 44.5 and 59.9 Very high risk between 0 and 44.4
	TURNOUT	Percentage of turnout from National Registry of Civil Status. Presidential elections for periods 2002 to 2014.
	TRADE	Exports + Imports/GDP. Authors' calculations based on data from DANE (2015).
	INCOME	Per capita GDP. Authors' calculations based on data from DANE (2015) (population) and financial supervision (GDP at constant 2005 prices).
	SPENDING_EDU	Education spending as a percentage of GDP. National Accounts at constant 2005 prices. Calculations by the authors (based on data from DANE (2015)).

Source: Compiled by the authors.
Note. GDP: gross domestic product.

Calibration enabled an initial categorization of Colombian departments (Map 1). This categorization separated departments that reduced poverty meaningfully between 2003 and 2015 (Bogotá, Cundinamarca, Santander, Antioquia, Atlántico, Valle del Cauca, Meta, Boyacá, Nariño, Caldas, Tolima, and Huila) and departments that failed to exceed the point of maximum ambiguity (Cauca, La Guajira, and Chocó).

Consistency and coverage are useful indicators to evaluate the model solutions. As indicated by Legewie (2013, p. 7), "consistency measures the degree to which a relation of necessity or sufficiency between a causal condition (or combination of conditions) and an outcome is met within a given data set." Coverage is the degree to which the solution explains the scores for each region in the sample. In fsQCA, a condition is considered necessary if it has a consistency of 0.9 or higher (Schneider & Wagemann, 2012).

fsQCA does not require the assumption of causal symmetry. Accordingly, even if the presence of certain conditions leads to success in reducing poverty over time, the absence of those conditions does not necessarily indicate that poverty reduction has failed. Therefore, separate analyses are required to evaluate the two outcomes (success and failure) in reducing poverty over time.

TABLE 3 Calibration and descriptive statistics (percentage rate of change 2003–2014)

Condition/ Concept	Calibration			Statistics		
	Fully inside	Maximum ambiguity	Fully outside	Max	Min	Average (standard deviation)
▼POVERTY	50	25	5	68.5	4.8	34.4 (16.1)
∆TURNOUT	20	0	−5	67.1	−9.4	10.9 (16.0)
∆INCOME	150	100	75	323.3	61.9	116.7 (48.8)
∆TRADE	200	0	−200	113,661.7	−99.8	5,193.0 (23,151.8)
▼DISPLACE	100	0	−50	94.7	−142.2	34.6 (67.3)
∆TRANS	50	0	−20	69.2	−45.2	17.5 (27.8)
∆SPENDING_EDU	15	0	−15	48.1	−54.8	−6.0 (20.7)

Source: Compiled by the authors.
Note. See Appendix A.
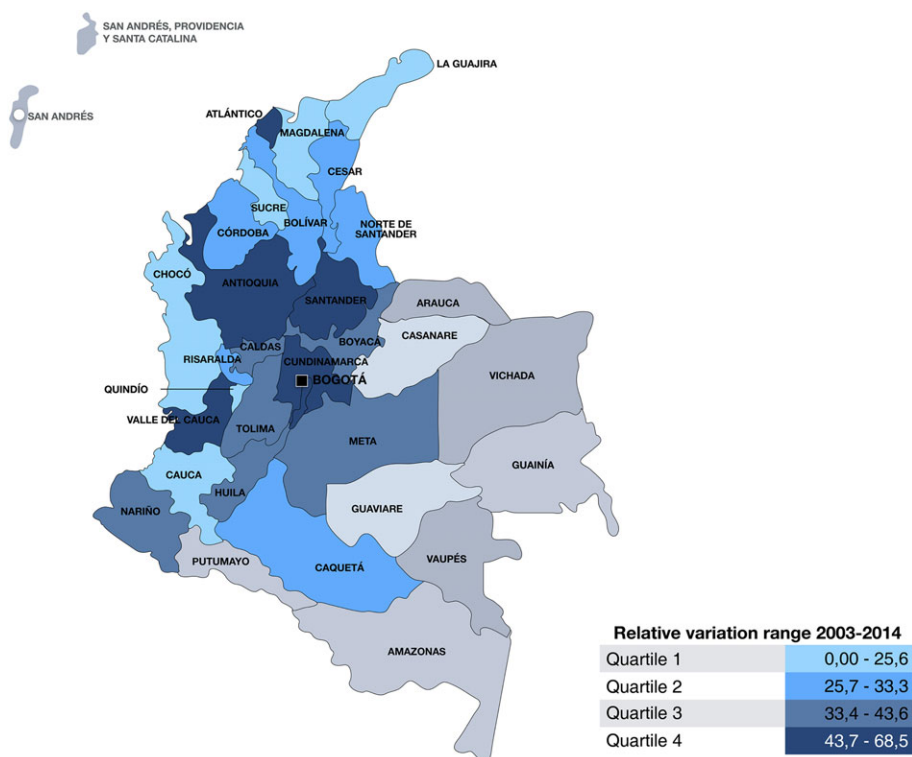
MAP 1 Categorization of Colombian Departments by poverty reduction
Source: Authors' elaboration from DANE (2015). [Colour figure can be viewed at wileyonlinelibrary.com]

5 | FINDINGS AND DISCUSSION

5.1 | Analysis of necessity

The next step consists of analysis of necessary conditions for meaningful changes in poverty rates. The symbol ∆ denotes a relative positive change above the ambiguity threshold, and the symbol ▼ denotes a relative negative change below the ambiguity threshold. Separate analyses were performed to identify necessary conditions for a meaningful decrease in poverty (▼POVERTY) and necessary conditions for a nonsubstantial decrease in poverty or failure to reduce poverty (∆POVERTY).

As Schneider and Wagemann (2012) note, a high consistency value may not necessarily indicate that the condition is relevant. Therefore, we calculated the relevance of necessity indicator (RoN). The RoN enabled us to detect the relevance of a condition previously classified as necessary. This analysis revealed no trivial conditions. However, Schneider and Wagemann (2012) and Ragin (2008) suggest that the consistency threshold should be above 0.90. As shown in Table 4, no condition alone is necessary for regions to reduce poverty. This conclusion implies that no single institutional, economic, or social condition is necessary or limiting for configurations leading to success or failure in reducing poverty in Colombian departments.

5.2 | Analysis of sufficiency

Some pathways consisting of a combination of conditions guarantee the presence of poverty reduction (▼POVERTY). These recipes were identified using fsQCA. Subsequently, the pathways or configurations of conditions that

TABLE 4 Analysis of necessary conditions

Conditions tested	Significant poverty reduction ▼POVERTY			Failure to reduce poverty ∆POVERTY		
	Consistency	Coverage	RON	Consistency	Coverage	RON
∆TURNOUT	0.737	0.715	0.625	0.847	0.426	0.452
▼TURNOUT	0.409	0.838	0.929	0.434	0.460	0.796
∆INCOME	0.716	0.819	0.803	0.733	0.434	0.566
▼INCOME	0.506	0.785	0.863	0.695	0.559	0.755
∆TRADE	0.635	0.701	0.693	0.826	0.472	0.561
▼TRADE	0.521	0.853	0.910	0.477	0.403	0.713
▼DISPLACE	0.802	0.764	0.653	0.809	0.399	0.425
∆DISPLACE	0.368	0.788	0.914	0.521	0.577	0.841
∆TRANS	0.840	0.855	0.790	0.624	0.329	0.449
▼TRANS	0.341	0.636	0.834	0.726	0.701	0.860
∆SPENDING_EDU	0.305	0.645	0.863	0.632	0.694	0.879
▼SPENDING_EDU	0.855	0.817	0.712	0.680	0.336	0.404

Source: Compiled by the authors using the R Package "Set Methods" (Medzihorsky et al., 2017).
Note. More detailed results are available at request to the authors.

guarantee the absence of poverty reduction (∆POVERTY) were also determined. We performed the fsQCA by first taking five attributes excluding education spending (Model 1, first five columns in Table 5) and then repeating the exercise after adding education spending (Model 2, last five columns in Table 5) to check the robustness of the conclusions with respect to the inclusion of education policies.

Models 1 and 2 for ▼POVERTY have a consistency of 0.84, which is greater than the minimum threshold of 0.75 (Ragin, 2008). The models suggest that institutional conditions are decisive in the reduction of poverty in Colombian departments, in some cases when combined with economic and social conditions, although Pathways 1c and 2c comprise institutional changes only. These findings suggest that improvements in monitoring corruption along with efficient government and a peaceful political system are sufficient to explain poverty reduction for a group of Colombian regions (Meta, Bolívar, Cesar, Risaralda, Cundinamarca, Tolima, Antioquia, Caldas, Córdoba, Norte de Santander, Huila, and Boyacá).

Pathway 1a comprises improvement in institutional transparency and an increase in income. Pathway 1b comprises enhanced institutional transparency, reduced forced displacement, and higher trade openness. Pathway 1c consists of displacement reduction, improvement in institutional transparency, and higher electoral turnout. Pathway 1d comprises a decrease in displacement, higher electoral turnouts, and an increase in income. Pathway 1e is similar to 1d except that trade opening replaces an increase in income. Similar conclusions can be drawn when education spending is included in the model. Pathway 1e is replaced by Pathway 2e. No sufficient recipes consist only of economic or social conditions: Institutional conditions must be included in the pathways for success in poverty reduction.

In summary, all identified pathways include conditions related to improvements in the quality of institutions. Economic conditions are also present in several configurations. These conditions include improvement in income (two pathways in Models 1 and 2) and trade openness (two pathways in Models 1 and 2). However, they must always be combined with improvements in institutional factors. In Colombia, the armed conflict, lack of institutional transparency, and weak social participation have had detrimental effects on the reduction of poverty over time. However, this situation has been reversed in recent years, thanks to the policies implemented to achieve peace. Forced displacement has decreased in the last five years from 480,000 people in 2003 to 230,000 people in 2014, according to the RUV. Although participation in elections has slightly increased at the national level by 1.5% between 2002 and 2014, the impact of participation has increased more significantly by 5% to 9% in Córdoba, Atlántico, Meta, Sucre, and Cesar, regions belonging to configurations leading to poverty reduction (see Pathways 1c, 1d, and 1e in Table 5). The institutional improvement confirms Putnam's view on the key role of political participation on good

TABLE 5 Analysis of sufficiency for the outcome *poverty reduction*

Antecedent conditions (intermediate solution)										
Model 1: ▼Poverty						**Model 2: ▼Poverty (with education spending included)**				
Condition	1a	1b	1c	1d	1e	2a	2b	2c	2d	2e
ΔTURNOUT			■	■	■			■	■	■
ΔINCOME	■			■		■			■	
ΔTRADE		■		■			■			■
▼DISPLACE		■	■	■	■		■	■	■	■
ΔTRANS	■	■	■			■	■	■		
ΔSPENDING_EDU	−	−	−	−	−					■
Raw coverage	0.631	0.458	0.561	0.521	0.480	0.631	0.458	0.561	0.521	0.239
Unique coverage	0.145	0.009	0.039	0.011	0.006	0.145	0.009	0.039	0.032	0.006
Consistency	0.940	0.926	0.979	0.855	0.899	0.940	0.926	0.979	0.855	0.840
Solution coverage	0.828					0.828				
Solution consistency	0.836					0.836				

|	
Pathway 1a. Meta, Santander, Antioquia, Cesar, Boyacá, Risaralda, Tolima, Cauca, Nariño, Bolívar, Bogotá, Valle del Cauca.	**Pathway 2a.** Santander, Antioquia, Cesar, Boyacá, Risaralda, Tolima, Cauca, Bolívar, Nariño, Bogotá, Valle del Cauca.
Pathway 1b. Meta, Tolima, Norte de Santander, Quindío, Boyacá, Córdoba, Huila.	**Pathway 2b.** Meta, Tolima, Norte de Santander, Quindío, Boyacá, Córdoba, Huila.
Pathway 1c. Meta, Tolima, Cesar, Risaralda, Cundinamarca, Bolívar, Antioquia, Caldas, Córdoba, Norte de Santander, Huila, Boyacá.	**Pathway 2c.** Meta, Bolívar, Cesar, Risaralda, Cundinamarca, Tolima, Antioquia, Caldas, Córdoba, Norte de Santander, Huila, Boyacá.
Pathway 1d. Meta, Cesar, Sucre, Atlántico, Magdalena, Risaralda, Tolima, Antioquia, Bolívar, Boyacá.	**Pathway 2d** Meta, Cesar, Sucre, Atlántico, Magdalena, Risaralda, Tolima, Antioquia, Bolívar, Boyacá.
Pathway 1e. Caquetá; Córdoba, Huila, Norte de Santander, Atlántico, Magdalena, Boyacá, Meta, Tolima	**Pathway 2e.** Caquetá, Córdoba, Magdalena, Huila.
Frequency cutoff: 1 Consistency cutoff: 0.80 Directional expectations: (1,1,1,1,1)	Frequency cutoff: 1 Consistency cutoff: 0.80 Directional expectations: (1,1,1,1,1,1)

Source: Compiled by the authors using the R Package "Set Methods" (Medzihorsky et al., 2018).
Note. ◯ Absence; ■ Presence; ▼ Reduction; Δ Increase.

governance as well as Sen's development approach seen as freedom of choice. Therefore, the institutional dimension plays a decisive role in the reduction of poverty in Colombian regions.

Maps 2a–c show the regional clusters that represent Pathways 1a, 1c, and 1d. (Pathways 1a and 1e are not shown because they have a unique coverage indicator close to 0.) Pathway 1c has the highest consistency and consists entirely of institutional conditions. It is represented by 12 departments. Pathways 1a and 1d are represented by 11 and 10 departments, respectively. They consist of both economic conditions and institutional improvements. Five departments that represent Pathway 1c do not represent Pathways 1a or 1d (Cundinamarca, Caldas, Córdoba, Norte de Santander, and Huila). These five departments form a cluster of regions where institutional conditions play a more decisive role. The same conclusions can be drawn for Model 2, which included education spending as a condition.

In the remaining departments, improvements in economic conditions were more relevant for explaining poverty reduction, although these economic conditions were always combined with institutional improvements. Pathway 1a focuses on enhanced institutional transparency, particularly in regions that belong only to this cluster (Santander, Cauca, Nariño, and Valle del Cauca). Pathway 1d highlights the contribution of greater electoral participation and lower displacement, especially in Sucre, Atlántico, and Magdalena, which are only represented in this
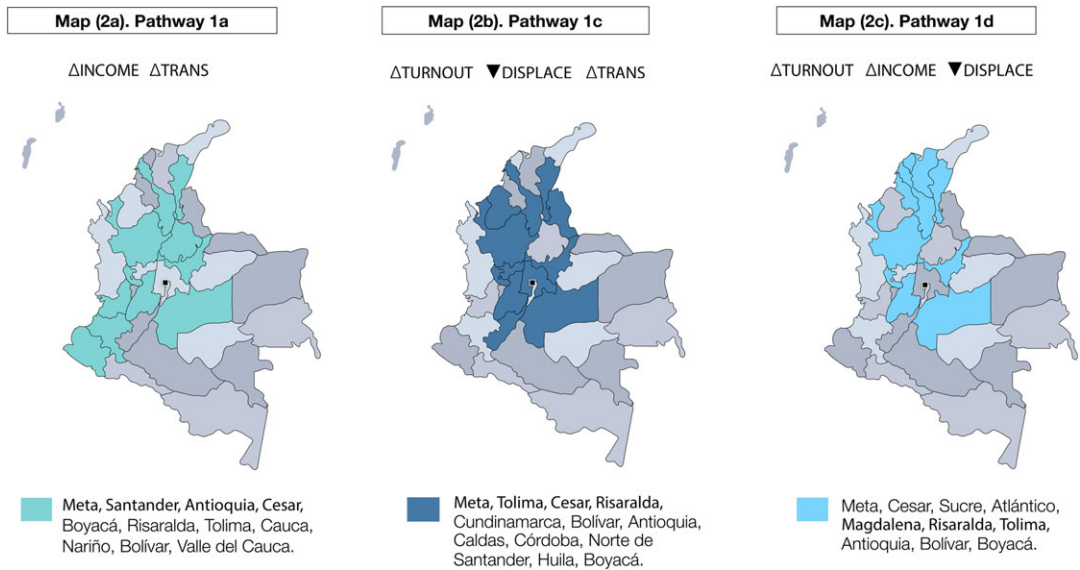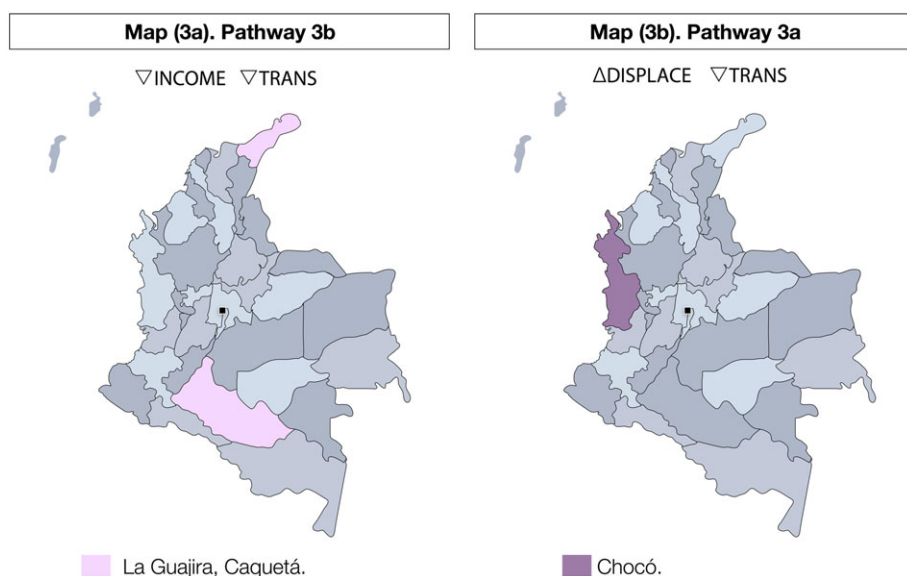
MAP 2   Analysis of sufficiency. Outcome: poverty reduction
Source: Authors' elaboration. [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 6   Analysis of sufficiency for the outcome *failure in poverty reduction*

Antecedent conditions (intermediate solution)					
Model 3: ΔPoverty			Model 4: ΔPoverty (with education spending included)		
Condition	3a	3b	4a	4b	4c
ΔTURNOUT					
ΔINCOME		○			
ΔTRADE					○
▼DISPLACE	○		○		
ΔTRANS	○	○	○	○	
ΔSPENDING_EDU	—	—		■	■
Raw coverage	0.350	0.498	0.350	0.523	0.373
Unique coverage	0.063	0.211	0.103	0.056	0.042
Consistency	0.777	0.774	0.777	0.912	0.898
Solution coverage	0.561		0.667		
Solution consistency	0.792		0.826		
Pathway 3a. Chocó.			Pathway 4a. Chocó		
Pathway 3b. La Guajira, Caquetá			Pathway 4b. La Guajira, Magdalena, Caquetá.		
			Pathway 4c. Bolívar, La Guajira		
Frequency cutoff: 1 Consistency cutoff: 0.80 Directional expectations: (0,0,0,0,0)			Frequency cutoff: 1 Consistency cutoff: 0.80 Directional expectations: (0,0,0,0,0,0)		

Source: Compiled by the authors using the R Package "Set Methods" (Medzihorsky et al., 2018).
Note. ○ Absence; ■ Presence; ▼ Reduction; Δ Increase.

MAP 3 Analysis of sufficiency. Outcome: failure in poverty reduction
Source: Authors' elaboration. [Colour figure can be viewed at wileyonlinelibrary.com]

pathway. However, Pathway 1d has lower consistency and fails to explain the change in Sucre (24.57%) and Magdalena (19.16%), where the pace of reduction in poverty rates was below the average of 34.43% between 2003 and 2014. Indeed, more thorough analysis is needed to explain these regions' failure to achieving a poverty reduction rate above the Colombian average.

The analysis of sufficiency can also be applied to explain the conditions that lead to failure in poverty reduction. Table 6 shows these conditions. Columns 3a and 3b show the pathways for the model excluding education spending (Model 3), and the last three columns show the pathways for the model including education spending (Model 4). The model consistency is 0.79 for Model 3 and 0.83 for Model 4. Interestingly, in Models 3a, 3b, 4a, and 4b, institutional conditions are also present, meaning that these conditions are present in the sufficient pathways for failure. The conditions that are present in these pathways are the absence or worsening of institutional transparency (Pathways 3a, 3b, 4a, and 4b) and greater internal displacement (Pathways 3a and 4a).

Pathway 3b (Map 3a) is represented by La Guajira and Caquetá. Both regions have been heavily affected by violence, and their levels of corruption have remained stable, hindering the reduction of poverty over time. Pathway 3a (Map 3b) combines an increase in forced displacement and no significant improvement in transparency. The risk of corruption in the department of Chocó remains high, and forced displacement has shown no signs of recovery. Forced displacement in Chocó represented 3% of the national total in 2003 but 6.5% of the national total in 2014.

Including changes in public spending on education in the model yields ambiguous conclusions. Model 4a is the same as Model 3a, thus lending support to the hypothesis that worsening institutional conditions also play a role in the failure to reduce poverty. The other two models (Models 4b and 4c) cover departments where public spending on education increased despite scarce effectiveness in poverty reduction, which may be due to the failure to improve institutional transparency (Model 4b) or the lack of trade openness (Model 4c).

6 | CONCLUDING REMARKS

Reducing poverty requires a change in existing power structures and institutional conditions to provide opportunities to the most disadvantaged individuals. This proposition is supported by the results of our exploration of social

convergence in Colombian departments. This research makes an additional contribution by providing a framework to monitor the conditions that form pathways for success and failure in regional poverty reduction. The role of macro-economic conditions or public policies (such as education spending) should not be disregarded for some successful pathways. However, this study provides evidence of the relevance of improvement in institutional quality measured by personal safety, good governance, and people's participation in democratic processes.

The fsQCA results show several pathways that are sufficient for success in reducing poverty. One pathway involves an increase in per capita GDP but also requires institutional improvements in terms of transparency indices. This seems to be the recipe followed by Santander, Cauca, Nariño, and Valle del Cauca. Another pathway with high consistency consists only of institutional conditions. This is the recipe followed by Cundinamarca, Caldas, Córdoba, Norte de Santander, and Huila. Worsening institutional conditions matter when the outcome of the model is the failure to reduce poverty. This is the case in Chocó.

Improvements in institutional transparency and personal safety have been decisive factors for reducing poverty in some regional clusters in Colombia. Power relations and the political context exert a direct influence on poverty. This feature differs from one region to another, which is why a territorial approach is valuable to understand this phenomenon throughout an entire country. Thus, territorial development can directly influence the reduction of poverty, which would entail "an improvement in the well-being of people, over time, a reduction in vulnerability and the eventual gradual elimination of poverty: the causal relationships that keep people poor" (Mwangi & Markelova, 2009, p. 309).

Although the proposed methodology has been applied to the investigation on the factors leading to monetary poverty, the framework could be easily extended to other sources of capability deprivation, such as public health, housing, and so on. In addition, although the selection of factors covers a relevant range of variables affecting regional poverty, we recognize that further research could enlarge the scope to other possible regional conditions, depending on the research questions to be posed and on the data availability.

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APPENDIX A

VARIATION OUTCOME AND CONDITIONS (PERCENTAGE CHANGES BETWEEN 2003 AND 2014)

Departments	▼POVERTY	∆TURNOUT	∆INCOME	∆TRADE	▼DISPLACE	∆TRANS	∆SPENDING_EDU
Antioquia	47.40	2.31	116.18	−24.35	63.73	26.83	−12.31
Atlántico	45.42	17.54	115.33	25.51	69.33	−3.67	−20.11
Bogotá	68.54	−9.39	101.24	51.58	−62.54	0.00	−17.07
Bolívar	25.97	11.55	103.85	−86.97	79.09	6.27	1.63
Boyacá	40.87	0.30	135.81	408.40	73.47	11.72	−29.02
Caldas	38.27	2.20	88.09	−99.13	91.34	29.80	−16.13
Caquetá	27.24	67.13	98.92	113,661.73	15.74	−30.41	2.64
Cauca	12.58	1.81	155.85	177.56	−134.45	6.64	−7.57
Cesar	31.95	20.04	133.62	−99.42	93.66	15.00	−6.51
Choco	4.77	6.81	102.63	1,163.93	−2.56	−45.20	−3.63
Córdoba	27.66	12.97	72.84	58.97	8.70	69.21	37.41
Cundinamarca	66.67	3.41	97.37	−99.82	94.71	31.70	−13.83
Huila	34.28	14.89	87.98	7,211.70	4.06	43.70	12.11
La Guajira	9.09	8.87	61.88	−82.65	72.07	−10.88	48.07
Magdalena	19.16	11.95	112.44	12.12	87.44	−4.85	18.33
Meta	43.31	18.88	323.34	217.87	71.42	42.34	−54.76
Nariño	38.71	38.24	104.79	−4.04	−142.16	15.19	−4.11
Norte de Santander	32.26	1.66	99.70	169.34	62.17	16.96	−1.46
Quindío	18.30	−3.12	94.30	878.83	29.36	35.96	−11.62
Risaralda	31.50	5.13	111.44	−93.30	63.34	28.88	−14.15
Santander	55.86	−7.05	140.55	−65.51	79.61	69.03	−22.86

(Continued)

Departments	▼POVERTY	∆TURNOUT	∆INCOME	∆TRADE	▼DISPLACE	∆TRANS	∆SPENDING_EDU
Sucre	24.57	22.78	130.61	−16.92	90.27	−8.82	−3.77
Tolima	37.38	14.76	111.22	1,363.89	45.07	45.72	−8.19
Valle del Cauca	44.63	−1.34	100.75	−98.50	−23.53	29.53	−17.72

Note. Authors' elaboration from sources indicated in Table 2.