Chapter 7
Colombia in Motion: Land, Rural Development, and Inequality

Rachid Laajaj
Freddy Felipe Parra-Escobar

This chapter approaches the current state of some of the issues that will be dealt with by the agreements signed in November 2016 in the Colon Theater in Bogotá. Specifically, it shows the organization of rural property in Colombia and how this could be affecting some households' productive decisions such as access to loans and making productive investments.

→ 65 year old María Alicia Torres who earns a living from her crops and producing milk. However, she is thinking of renting the land and leaving the milk business because of the small profit margin.

7.1. Introduction

→ This chapter approaches the current state of some of the issues that will be dealt with by the agreements signed in November 2016 in the Colon Theater in Bogotá. Specifically, it shows the organization of rural property in Colombia and how this could be affecting some households' productive decisions such as access to loans and making productive investments. It also outlines the behavior of the land market over recent years and its possible impact on the concentration of land in rural areas. Lastly, it reviews the possible transition of inequality to future generations through children´s inadequate cognitive development.

The conflict in Colombia has been centered in the country's rural areas. The actors recognize that

→ Thirteen children between zero and sixteen live on the Tapia Álvarez family's plot of land in Chinú (Córdoba). Four nuclear families live there, and each one has built their house. Inés Álvarez, who is a mother, grandmother, and great-grandmother lives in her house in the center.

the concentration of property and the backwardness of the rural zones are the main causes of this confrontation. Part of the peace agreement signed between the government and the FARC includes undertaking comprehensive rural reform, the primary objective of which is to improve households' access to and use of land: to achieve this, three main areas need work. Firstly, it seeks to grant land to peasants who do not own land or do not have the necessary area to undertake their productive activities. Secondly, it intends to deliver land with credits and technical help in order to make the peasants work more productive. Lastly, it seeks to grant people formal land titles. The impending post-conflict phase implies a huge amount of challenges for the rural sector. As such, it is necessary to find out the current state of the country's rural areas in order to scale the magnitude of changes that need to be undertaken. Through the ELCA, it is possible to discover in detail the situation solely in four rural micro-regions in the Colombian countryside and can not be extrapolated to other rural areas.

7.2. Land tenure, access to credits, and investments in land

Land property rights have a great impact on the economic activity of rural areas as they predetermine household's productive decisions. When property rights are well defined, the probability of the land being expropriated is reduced; thus, there are incentives to invest in it. Similarly, there is also

a reduced need to allocate resources to protecting land (Besley & Ghatak, 2010). Additionally, it increases households' participation in land and credit markets (Besley & Ghatak, 2010). In order to investigate the impact of property rights, ELCA has a series of questions that allows us to know whether the households are formal landowners as well as the household tenants' type of tenancy. ELCA also provides detailed information on the loans that the households acquire and the investments that they make in their land.

Table 7.1 presents the percentage of households by type of ownership. It can be seen that the percentage of households with formal[1], informal[2], and without property ownership but that use the land for productive means have remained constant over time; there has been a slight decrease in the number of informal landowners and tenants. The number of households without property and without the use of land has changed more substantially, which is reflected in the 7 percentage-point increase between 2013 and 2016: equivalent to a 75% increase in the proportion of households that are under this type of ownership. This behavior could indicate that rural households' access to land decreased between 2010 and 2016; one possible reason for this is that households can move from the farming sector to a more profitable economic activity. Another reason could be shocks that have driven households to make these decisions. Given the scope of this chapter, the reduction in access to land cannot be exclusively attributed to one of these avenues: it will be the task of future research to provide answers to these questions.

Table 7. 1.
Type of household land ownership

	Total		
	2010	2013	2016
Landowner - Formal	42,27	42,91	41,39
	(0,81)	(0,81)	(0,80)
Landowner - Informal	29,13	30,70	26,97
	(0,74)	(0,75)	(0,72)
Non-Landowner - Tenant	17,78	16,84	14,95
	(0,62)	(0,61)	(0,58)
Non-Landowner - Non-Tenant	10,82	9,54	16,68
	(0,51)	(0,48)	(0,61)
Observations	3.752	3.752	3.752

Source: ELCA 2010,2013 and 2016. Authors' own calculations

Note: A household is considered as (1) formal if there are property deeds for at least one of the pieces of land it owns registered in the Public Records Office; (2) informal if it does not have property deeds registered for any of the pieces of land it owns; (3) tenant (non-owner) if they recognize to not be owner of any of the pieces of land that they are living on.

Moreover, access to loans in rural zones has increased since the beginning of the survey. In 2010, 35% of the homes had at least one loan. This percentage had increased to 50% in 2013 and maintained stable in 2016. Greater access to loans registered in the period of ELCA's analysis had been, to a large extent, by informal land owners and tenants. In 2010, these groups had access to a moderate amount of credit: 26% of households with informal property and 29% of tenants had at least one loan when they were interviewed. In 2013, the percentage of informal households and tenants with loans increased by close to 20 percentage points for both groups. There was only a slight percentage change in the following round.

Another aspect of the results worth highlighting is the greater access to formal loans that the informal property owners and tenants have had. The percentage of households with this type of tenancy that took loans with financial institutions increased by

1. A household is consider as a formal owner if it has a property title – register in the Public Instruments Office- of at least one of the properties under its ownership
2. A household is consider as an informal owner it does not have a property title register of none of the properties it owns

Table 7.2.
Loans and investments

	Formal owner			Informal owner			Tenant (non-owner)			Total		
	2010	2013	2016	2010	2013	2016	2010	2013	2016	2010	2013	2016
Panel A: Loans												
Loan (=1)	45,20	55,96	56,66	25,98	45,14	49,36	29,09	49,53	48,13	34,71	49,81	50,57
	(1,25)	(1,24)	(1,26)	(1,33)	(1,47)	(1,57)	(1,76)	(1,99)	(2,11)	(0,79)	(0,83)	(0,83)
Formal loan	35,23	44,53	47,33	11,89	21,70	30,66	11,09	20,41	31,02	21,50	30,80	36,46
	(1,20)	(1,24)	(1,27)	(0,98)	(1,22)	(1,45)	(1,22)	(1,60)	(1,95)	(0,68)	(0,76)	(0,80)
Semi-formal loan	5,37	8,20	5,99	4,48	6,77	6,43	5,40	6,49	8,91	5,25	7,74	6,70
	(0,57)	(0,68)	(0,6)	(0,63)	(0,74)	(0,77)	(0,88)	(0,98)	(1,2)	(0,37)	(0,44)	(0,41)
Informal loan	11,17	15,71	11,53	10,25	22,31	19,68	14,84	29,27	18,18	11,62	19,91	15,04
	(0,79)	(0,91)	(0,81)	(0,92)	(1,23)	(1,25)	(1,38)	(1,81)	(1,63)	(0,53)	(0,66)	(0,59)
Observations	1.584	1.610	1.553	1.093	1.152	1.011	667	632	561	3.656	3.656	3.656
Panel B: Investments												
Investment (=1)	28,22	45,09	42,11	20,04	40,36	43,13	15,74	31,17	23,17	21,09	37,96	33,53
	(1,13)	(1,24)	(1,25)	(1,21)	(1,45)	(1,56)	(1,41)	(1,84)	(1,78)	(0,67)	(0,8)	(0,78)
Irrigation systems	1,14	3,79	5,22	0,55	2,00	3,17	0,60	1,11	1,96	0,77	2,49	3,39
	(0,27)	(0,48)	(0,56)	(0,22)	(0,41)	(0,55)	(0,3)	(0,42)	(0,59)	(0,14)	(0,26)	(0,3)
Home/ Structure	16,79	33,91	31,49	14,36	32,20	36,40	9,15	22,47	17,65	13,24	28,97	26,31
	(0,94)	(1,18)	(1,18)	(1,06)	(1,38)	(1,51)	(1,12)	(1,66)	(1,61)	(0,56)	(0,75)	(0,73)
Soil conservation	6,06	4,60	7,79	1,56	1,82	3,76	2,55	1,90	3,92	3,56	2,93	4,98
	(0,6)	(0,52)	(0,68)	(0,37)	(0,39)	(0,6)	(0,61)	(0,54)	(0,82)	(0,31)	(0,28)	(0,36)
Trees	9,72	10,31	9,59	5,49	7,20	5,44	4,50	6,49	3,03	6,67	7,93	6,04
	(0,74)	(0,76)	(0,75)	(0,69)	(0,76)	(0,71)	(0,8)	(0,98)	(0,72)	(0,41)	(0,45)	(0,39)
Natural disasters	-	5,65	1,93	-	6,34	2,08	-	5,38	0,71	-	5,42	1,50
	-	(0,58)	(0,35)	-	(0,72)	(0,45)	-	(0,9)	(0,36)	-	(0,37)	(0,2)
Observations	1.584	1.610	1.553	1.093	1.152	1.011	667	632	561	3.656	3.656	3.656

Source: ELCA 2010,2013 and 2016. Authors' own calculations

approximately 10 percentage points between 2010 and 2013. There was also a 9-percentage point increase for households with informal property and an 11 percentage point increase for tenants between 2010 and 2013. This is a signal that the access to credit that the different types of ownership have has been converging over recent years despite the lack of collateral (i.e. land), which makes it difficult to obtain a loan from a financial entity (Besley & Ghatak, 2010). It seems that having a loan is no longer important as a determinant to be able to access the credit market. However, informal loans continue to be more common in households under these two types of tenancy in comparison to formal landowners.

Lastly, the number of rural households that invest in their land has increased compared to the baseline. In 2010, 21% of households made some form of investment in their land; this percentage increased to 38% in 2013, and there was later a fall to 34% in 2016. This increase in the number of households that made investments in their lands was accompanied by a reduction in the existing gap between formal and informal landowners. In 2010, there was a higher percentage of households with formal property that invested in their land compared to households with informal property. By 2016, this difference becomes much smaller and is not significant.

Regarding the type of investment made by households, irrigation systems and soil conservation were two areas in which investment increased for all ownership groups. However, this type of investment is more common for formal landowners. This is consistent with the economic theory, which predicts that households with formal property deeds are more likely to make productive investments in their land as the probability of making a return is higher in comparison with households that do not have property deeds (Besley & Ghatak, 2010). Investment in housing and permanent or semi-permanent structures is the most frequent. In this case, formal and informal landowners invest equally. One possible explication for this behavior is that the construction of these types of structures by informal households can reduce the probability of

→ Although it is now less important, fishing continues to be a way of earning money in Barrancabermeja.

being removed from their land. These results suggest that having property deeds gives households a certain economic advantage due to the increase in the probability of making investments that have long-term returns.

7.3. The market and land concentration

Access to and use of land play a very important role in generating income for rural households. This is due to the fact that land is the most relevant productive asset in agricultural production. However, the land markets in the Colombian countryside are imperfect, which impedes a large number of households from having access to land. Furthermore, in places where there is large concentration of land, the land markets are less active, which leads to even less access to land for small producers (Gáfaro, Ibáñez, & Zarruk, 2012). ELCA provides information on the land market's behavior over recent years as it includes a complete module which gathers information on land transactions undertaken by households. As such, it is possible to monitor the land concentration between the small landowners in some regions of the Colombian countryside by using the information gathered by the survey.

Table 7.3 presents the percentage of households and the average amount of land that each household sold, lost, and/ or acquired between 2010 and 2016. These values are also presented for each quartile for the distribution of total consumption per capita. It can be seen that the percentage of households that sell land has increased over time; the increase has risen from 1% in 2010 to 2.6% in 2016. Similarly, the average amount of land sold has increased from 0.01 hectares in 2010 to 0.04 hectares in 2016. When we observe land acquisition over the past three years, we can see that the number of households that obtained new land increased from 2010 to 2013; however, later, in 2016,

Table 7.3.
Acquiring, sale, and loss of land by consumption quartile

	Percentage of households			Amount of land (hectares)		
Quartiles	2010	2013	2016	2010	2013	2016
Sold						
1	0,75	1,39	1,60	0,004	0,034	0,013
2	0,75	0,96	2,35	0,008	0,019	0,055
3	0,96	3,20	2,88	0,018	0,051	0,026
4	1,39	3,74	3,73	0,049	0,048	0,075
Total	0,96	2,32	2,64	0,020	0,038	0,042
Lost						
1	-	3,09	0,85	-	0,046	0,008
2	-	2,03	1,49	-	0,019	0,034
3	-	2,45	0,64	-	0,034	0,006
4	-	2,56	1,49	-	0,032	0,015
Total	-	2,53	1,12	-	0,033	0,016
Acquired						
1	6,29	8,42	5,12	0,077	0,061	0,123
2	6,08	7,89	5,65	0,158	0,122	0,120
3	6,18	9,28	5,33	0,118	0,123	0,092
4	7,46	11,21	5,54	0,185	0,221	0,193
Total	6,50	9,22	5,41	0,135	0,132	0,132

Source: ELCA 2010,2013 and 2016. Authors' own calculations

Note: The percentage of households and average amount of land measured in hectares is presented. The sample corresponds to the households that stayed in the rural zone for all three rounds. Households with less resources are found in the first quartile, and households with the most resources are found in the fourth quartile.

it decreased to values that are even less than those registered in the baseline. The average amount of land acquired remains unchanged at 0.13 hectares.

Acquiring land mostly happens as a result of a purchase or an inheritance. Households do not generally acquire land through government mechanisms such as agrarian reform programs or the Victims Law. While in 2016 93% of the land acquired was done so through purchases or inheritances, less than 1% was done so through government programs. An additional point that reflects how little households use government programs to acquire land is the source of the resources used to purchase the land. In 2016, close to 86% of land purchased were financed, to some degree, with households' own resources while less than 1% used resources that came from government subsidies. It is worth noting that households do view loans from financial entities as a source to finance the purchase of land: close to 29% of the purchases of land in 2013 and 2016 were financed, in part, with resources from this source.

There was a drop in the percentage of households that reported the loss of land between 2013 and 2016. When we analyze this event by level of consumption, it can be seen that, in 2013, the number of households in the lowest consumption distribution quartile is higher than the other three quartiles, which all have a similar percentage. The amount of land lost for this period behaves in a similar way: the households form the first quartile are those that, on average, report a higher number of lost hectares in comparison to the other groups. In 2016, there was a drop in the percentage of households from each group that lost land in each distribution quartile. The households in the second and fourth quartile are those that most lose land,

→ Very early in the morning, the fishermen go to the port on the banks of the Magdalena River to sell what they have caught.

Acquiring land mostly happens as a result of a purchase or an inheritance. Households do not generally acquire land through government mechanisms such as agrarian reform programs or the Victims Law. While in 2016 93% of the land acquired was done so through purchases or inheritances, less than 1% was done so through government programs.

and the households with the least amount of resources are those that least loose land during this period.

When we review the dynamism of the land market by level of consumption, it can be seen that, in 2010, the households located in the highest distribution quartile sell twelve times more land that the households with the lowest level of consumption. As such, the percentage of households with a large amount of resources that sold land is higher than that of the rest of the groups. In 2013, we observed that the number of households that sold land increased for each group. It can also be seen that the difference between quartiles was reduced: households from the highest quartile sold 1.4 times more land than households from the lowest quartile. In 2016, the number of households that sold land remained relatively unchanged for all the groups compared to what took place in 2013; however, households from the highest quartile sold 5.7 times more land than the households from the lowest quartile.

→ 71 year-old Benedicto Rodríguez continues to carry bundles of potatoes, corn, milk, and other products on his bike. In the town, he exchanges them for other basic products that he needs or he sells them. He also works in beekeeping.

Furthermore, the acquisition of land behaved differently between 2010 and 2016. In 2010, households with a higher level of consumption acquired more land compared to other households: the former acquired 2.4 times more land than households from the lowest quartile. As such, the number of households from the highest quartile that acquired land was higher than the number of households from the lowest quartile. This gap widened in 2013 when households with high consumption acquired

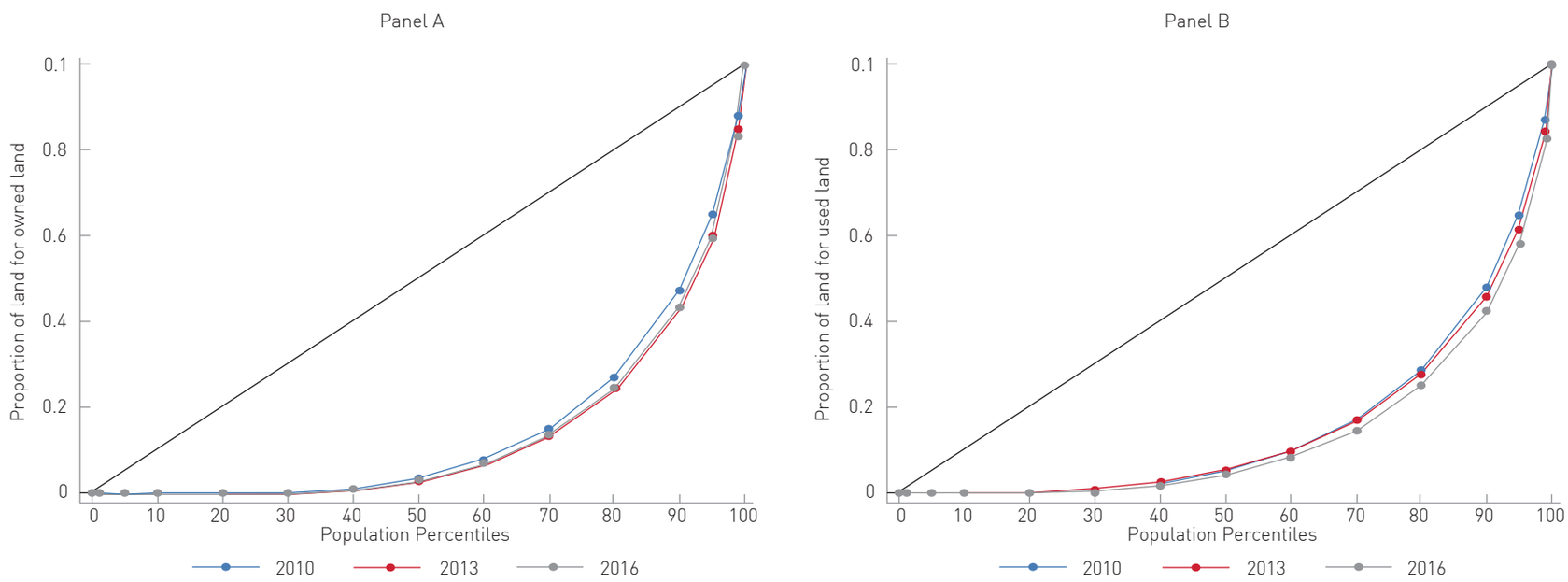
Between 2010 and 2013, the land was increasingly concentrated in less households: 7.7% of the population owned 50% of the land registered in ELCA. For this reason, it is possible to see a shift to the right in the Lorenz curve from 2010 to 2013. However, between 2013 and 2016, the land distribution remained relatively unchanged, and a considerable shift cannot be seen in the Lorenz curve during this period.

3. The Lorenz curve is a representation of a variable in a population. Each point of the Lorenz curve shows what proportion of an analyzed variable was held by a determined percentage of the population. An equal distribution of land would be shown by a 45 degree line (i.e. each percentage of the population owns 1% of the land). The further away the Lorenz curve from the equal distribution line, the more unequal the sample analyzed (Lora & Prada, 2016).

3.6 more land than households that have a low consumption. However, the difference decreased in 2016 to the lowest level registered in the three rounds: households from the highest quartile acquired 1.6 times more land that those in the lowest quartile. Similarly, the percentage of households that acquired new land was similar for every group. As a result, as households with more resources acquire more land, it is plausible to expect an increase in the concentration of land for this group of households between 2010 and 2013 and then to see a slight decline in 2016.

As a result of the behavior of the land market between 2010 and 2016, the land concentration presented changes during this period. Panel A in Graph 7.1 shows the Lorenz curve[3] for the land that belongs to households during the three-year availability in the survey. From the moment at which ELCA started to gather information, the land distribution was unequal. In 2010, 9.1% of the sample owned 50% of the total amount of land reported in ELCA. Between 2010 and 2013, the land was increasingly concentrated in less households: 7.7% of the population owned 50% of the land registered in ELCA. For this reason, it is possible to see

Graph 7.1.
Lorenz curve for own and used land



Source: ELCA 2010,2013 and 2016. Authors' own calculations

4. The Gini coefficient is the ratio between the area between the equal distribution line and the Lorenz curve. A Gini coefficient equal to 0 represents that the analyzed variable is perfectly distributed between the whole population. A Gini coefficient equal to 1 means that the whole resource belongs to one person. When the Gini coefficient is closer to 1, it means that the resource is distributed between fewer people (Lora & Prada, 2016).

a shift to the right in the Lorenz curve from 2010 to 2013. However, between 2013 and 2016, the land distribution remained relatively unchanged, and a considerable shift cannot be seen in the Lorenz curve during this period. The change in inequality in land ownership can also be analyzed using the Gini coefficient.[4] In 2010, the coefficient for ELCA landowners reached 0.74; it rose slightly in 2013 to 0.76, and then remained unchanged in 2016.

An increase in the inequality in the possession of land can also be observed in the average amount of land that is owned by households. Between 2010 and 2016, there was an increase in the average number of hectares of land owned by the total number of landowners. However, for the household with more land, there was a much higher increase. In 2010, a ELCA household had an average of two hectares of land while a household within the 5% that owned the largest amount of land owned an average of 13.8 hectares. In 2013, these values increased to 2.4 and 19.6 hectares, respectively. In 2016, the average number of hectares for the whole sample remained unchanged, unlike the large landowners who had a small increase to an average of 20.2 hectares of land.

This change in the distribution of land could be related to the behavior of the acquisition and sale of land between 2010 and 2013. First, there was a general increase in the acquisition and sale of land between 2010 and 2013, which, in both cases, was led by the households in the highest quartile of the consumption distribution. However, the amount of land acquired was higher than that sold, and thus it can be inferred that households with more resources bought up a larger amount of land in this period, which led to a greater concentration of this resource. Between 2013 and 2016, there was a decrease in the acquisition of new properties, which was characterized by the disappearance of the existing gap between the different distribution groups. Additionally, the sale of land remained relatively unchanged during this period, which is why there were no big changes in land concentration for this period.

→ Inéz Álvarez's hands feeding a newborn chicken. The chickens walk between the houses of the plot of land in Chinú (Córdoba) and live together with the pigs and hens. They feed the household.

Panel B in Graph 7.1 shows the Lorenz curve for the land used by households. In 2010, 9.3% of the sample used 50% of the land reported in the survey. In 2013, the land used was concentrated by even fewer people: 8.4% of the surveyed population

used 50% of the reported land. This behavior can be seen by the displacement of the Lorenz curve towards the right between these 3 years. Between 2013 and 2016, the land used became even more concentrated: 7.2% of the population used 50% of the reported land. As such, there was also a right displacement of the Lorenz curve during this period. The Gini coefficient also indicates the same behavior for the concentration of land used. In 2010, the value was 0.69; this increased to 0.7 in 2013 and then increased again in 2016 to 0.73.

In conclusion, it seems that inequality in land ownership stopped increasing between 2013 and 2016. However, the inequality in the use of land continued to increase progressively. Therefore, although there have been no changes in property concentration, this does not guarantee that inequality in access to land is decreasing. This could also be related to the decrease in the number of people who use land for agricultural activities – as shown in the previous section. More research is needed to understand if this behavior is a result of difficulties in accessing land of if households are making

→ Livestock has a strong impact on the department of Córdoba on the northern coast of Colombia. This photo shows a farm in Ciénaga de Oro.

the transition to other types of productive activities. Furthermore, the information in this section shows that land concentration does not only occur among large landowners. Due to the make-up of the rural ELCA sample (excluding large landowners), the inequality described also corresponds to small landowners. As such, there is evidence that this phenomenon is also taking place for households with a small of medium amount of land.

7.4. Rural inequality and early childhood cognitive development

Early childhood cognitive development is known to be a determinant of several economic factors in people's adult lives (Behrman, Fernald, & Engle, 2013). Over recent years, evidence has been found that children from lower-income households have a lower cognitive development than children from households with high-income (Schady, Behrman, Araújo, 2014). As such, it has been documented that children with low levels of cognitive development are more likely to perform poorly at school, be paid a low salary, and be involved in criminal activities. They also have high rates of unemployment, teenage pregnancy, and consumption of psychoactive

→ Karen Lucía Naranjo Petro visits her grandfather's (José Petro) farm at weekends in Cereté (Córdoba). She enjoys eating guava, coconuts, bananas, and other fruit. The family mainly works in agriculture.

substances (Schady et al., 2014). The inequality in ELCA's rural sample that was described in the previous section can have implications on the development of children's cognitive abilities.

ELCA's longitudinal structure allows us to find out if there are indeed gaps developing in Colombia's rural population. The two first columns in Table 7.4 present the results from an ordinary least squares regression in which the dependent variable is the Peabody picture vocabulary test (PPVT) score,[5] which is standardized by age. The independent variables are the number of hectares that the household has in 2010, and there is a control for a wealth index and total consumption per capita (in tens of thousands of pesos in 2016). Estimating the model shows that the amount of land owned by the household in 2010 is associated with higher scores on the PPVT that children obtained in 2016. Moreover, land ownership does not show a statistically significant correlation with the test score in 2010.

Another factor that affects children's cognitive development is nutrition during their first few years of life. There is evidence that shows how children's nutrition level during early childhood affects their cerebral development (Bryan, Osendarp, Donna, et al., 2014). Household's agricultural production can be considered to be a good predictor of its members' nutritional status. Dillon, McGee, and Oseni (2014) show that higher income from household agricultural activity and a greater diversity in the agricultural products that are grown increase people's dietary diversity. This is closely related to caloric availability, which, in turn, is an important component of nutritional wellbeing.

In order to understand if household agricultural activity is correlated with children's cognitive development, we included the number of agricultural products grown per household in 2010 in the regression as a way of measuring the diversity of production. The estimation of results using this variable are presented in the last two columns in Table 7.4. There is no evidence of any effect that the number of agricultural products in 2010 have on the PPVT score in 2010; however, there is for performance in 2016. Specifically, it can be seen that children belonging to households that grew a higher number of agricultural products present higher scores in the verbal aptitude test. Additionally, it can be seen that it is the diversity of the past production rather than contemporary production that has an effect on cognitive development. This is consistent with the latest findings on the relation between diversity in production and children's

Table 7.4.
Cognitive development and nutritional diversity

Dependent variable: PPVT score standardized by age				
	(1)	(2)	(3)	(4)
	2010	2016	2010	2016
Own land (ha.)	0,013	0,020**		
	(0,008)	(0,008)		
Number of crops			0,002	0,022***
			(0,007)	(0,006)
Wealth index	0,013**	0,002	0,019***	0,008
	(0,007)	(0,007)	(0,006)	(0,006)
Total consumption	0,002***	0,002***	0,002***	0,002***
(per capita)	(0,000)	(0,000)	(0,000)	(0,000)
Observations	1.952	1.952	2.210	2.210
R-squared	0,054	0,055	0,044	0,047

Source: ELCA 2010,2013 and 2016. Authors' own calculations

Note: All the dependent variables correspond to baseline values (2010). Total per capita consumption is written in tens of thousands of Colombian pesos. The period used for the dependent variable is indicated in the title of each column. Standard errors are written in brackets. *** p<0.01, ** p<0.05, * p<0.1

5. The Peabody picture vocabulary test has been used in the economic literature to measure cognitive development. This variable has been useful for making predictions in different contexts (Schady et al., 2014).

→ José Petro's plantations have provided him the means to raise his children. He still enjoys it when his friend Enrique Velásquez, or "Quillo" (photo) as he calls him affectionately, helps him to get the coconuts down from the tree, open them and drink their water.

nutritional state, which, in turn, affects their cognitive development.

These results suggest that the inequalities observed can be transmitted from one generation to the next. This can even happen if the children in their adulthood decide to not to continue living in the country and working in agricultural production. The deficiencies in the development of their cognitive capabilities can result in the same inequalities persisting even though they have decided to migrate to urban areas or other productive sectors.

7.5. Conclusions

The information gathered by ELCA gives us an idea of the current condition of the four micro-regions surveyed and the changes over recent years. This chapter allows us to establish three important characteristics belonging to the rural zones during the period of analysis. First, although the inequality in land ownership did not get greater between 2013 and 2016, access to land reduced during these years. This can be seen in that the concentration of land used steadily increased since 2010. This suggests that fewer and fewer households are undertaking agricultural activities as a source of income. This fact can be explained by households transferring to more economically viable productive sectors or by shocks that lead households to abandon agricultural production. Moreover, the results indicate

→ In Cereté (Córdoba), the majority of people travel by bike on unpave roads where they can enjoy the vegetation as well as the as cotton plantations, the corn, fruit, and livestock.

that only a very low percentage of households have used governmental programs.

Second, the fact that both formal and informal landowners getting loans seems to indicate that being in the possession of deeds has been becoming less important as a determinant in accessing to this market. However, getting informal loans is still more common for informal than formal landowners. As such, the results suggest that formal property owners have an economic advantage over informal property owners as they make higher-return investments for agricultural activities such as irrigation systems or soil conservation programs. This can be explained by the fact that owners of deeds have the possibility of seeing long-term returns on their investments.

Lastly, inequality in the rural sector could last for several generations due to the deficiency in cognitive development of low-income household

children. Inequality could even be transmitted to children who decide as an adult to migrate to urban areas or different productive sectors from agriculture. The results suggest that this is possible due to the correlation between the number of agricultural products grown by household and children's development in the verbal aptitude test. Based on this, it is easy to think that children from households that do not have sufficient resources to have a variety in their nutrition could, therefore, not have sufficiently developed cognitive capabilities; this would determine their future lives.

The post-conflict era that the country will begin to live after the signing of the peace agreement between the government and the FARC has once again brought rural policies to the public stage. This allows us to hope that the pattern of inequality in the countryside can be reversed over coming years. This is essential for both the reduction in rural poverty and to resolve the historical causes of the conflict. As such, appropriate rural development is important not only for these two reasons: as shown in this chapter, agricultural production affects people's living conditions in several ways including cognitive development in early childhood.

→ 65 year-old María Alicia Torres and her 77 year-old husband Octavio Enrique Ballesteros have dedicated their whole live to the country. Every early morning and afternoon they milk cows together, and from this livelihood they raised their two children.

References

Behrman, J., Fernald, L., & Engle, P. (2013). Preschool Programs in Developing Countries. In *Education Policy in Developing Countries*. Chicago: University of Chicago Press.

Besley, T., & Ghatak, M. (2010). Property Rights and Economic Development. In *Handbook of Development Economics* (pp. 4525-4595). Elsevier.

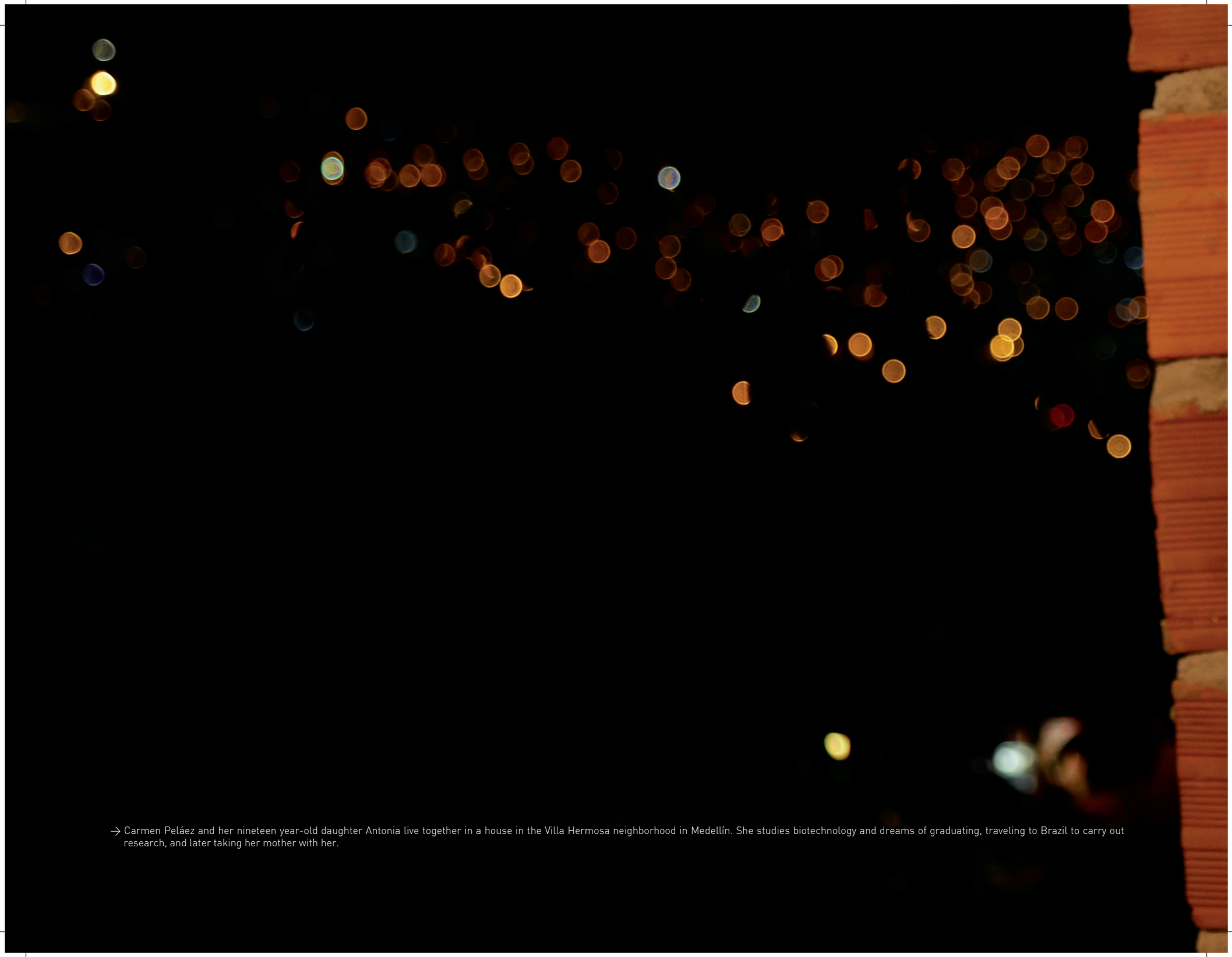
Bryan, J., Osendarp, S., Donna, H., Calvaresi, E., Baghurst, K., & van Klinken, J. W. (2004). Nutrients for Cognitive Development in School-aged Children. *Nutrition Reviews, 62*(8)*, 295-306*.

Dillon, A., McGee, K., & Oseni, G. (2014). Agricultural Production, Dietary Diversity, and Climate Variability. *World Bank Policy Research Working Paper, 7022*.

Gáfaro, M., Ibáñez, A.M., & Zarruk, D. (2012). Equidad y eficiencia rural en Colombia: Una discusión de políticas para el acceso a la tierra. *Documentos CEDE, 38*.

Lora, E., & Prada, S. (2016). *Técnicas de medición económica, metodología y aplicaciones en Colombia*. Cali: Universidad Icesi.

Schady, N., Behrman, J., Araujo, M.C., Azuero, R., Bernal, R., Bravo, D., López-Boo, F., Macours, K., Marshall, D., Paxson, C., & Vakis, R. (2014). Wealth Gradients in Early Childhood Cognitive Development in Five Latin American Countries. *IDB Working Paper Series, 482*.



→ Carmen Peláez and her nineteen year-old daughter Antonia live together in a house in the Villa Hermosa neighborhood in Medellín. She studies biotechnology and dreams of graduating, traveling to Brazil to carry out research, and later taking her mother with her.

→ Brothers and first and second cousins...the relationship does not matter, amongthirteen children between zero and sixteen who live in the La Esperanza store in Chinú (Córdoba) enjoy every moment in the country. They play football, marbles, and fool around with the animals...