Valero Magali (Orcid ID: -)

Development Policy Review

Why has there been a fall in child labour and an increase in school attendance in Mexico?

Jorge Valero Gil Facultad de Economía, Universidad Autónoma de Nuevo León, Mexico.

Magali Valero University of Michigan at Dearborn, USA. Corresponding author.

Submitted 15 March 2021

Accepted 5 November 2021

Summary

Motivation: It is imperative to understand the factors affecting child labour and school attendance in order to develop policies aimed at improving children's lives. The need for such policies is because poor households may underinvest in human capital. Individual factors have been shown to affect child labour and school attendance, but we examine which factors cause the strongest effects by considering them simultaneously.

Purpose: We evaluate the factors that have led to the changes in child labour and school attendance of children aged 12–14 in Mexico during the 2000–2020 period. We consider income, the education of the household head, government cash transfers, access to public health institutions, remittances, and demographic characteristics as possible sources of the changes.

Methods and approach: We use a variant of the Oaxaca–Blinder decomposition, which allows decomposition when the variables to be explained are dichotomous. The change in child labour and school attendance over time can then be decomposed into explained and unexplained portions, with each factor contributing a specific amount to the explained portion of the change.

Author Manuscript

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/dpr.12611

This article is protected by copyright. All rights reserved.

Findings: The most important factor influencing improvements in child labour and school attendance was the improvement in the parents' human capital, measured as years of education. The result is not due to a high correlation between income and education, as significant explanatory power is lost as we exclude education from the analysis. The result is also robust to separating Mexican states into those with high and those with low incidence of poverty. The increase in government assistance and greater access to social health insurance also play an important role.

Policy implications: Public policies aimed at increasing school attendance and those aimed at reducing child labour should consider improved education as a major goal. In addition, important consideration should be given to the possible impact on children of poverty-fighting policy changes. Our findings suggest that government policies aimed at reducing poverty in Mexico are important in influencing both child labour and school attendance, and policy changes have had undesirable effects on both.

Keywords: Becas Bienestar programme, child labour, conditional cash transfers, Mexico, Progresa-Oportunidades-Prospera programme, remittances, schooling, welfare policies

1 INTRODUCTION

Children's opportunity to attend school rather than to have to work is an essential element of sustainable development. Given that children have not reached their full physical and mental development, they may not be able to assess the consequences of working and not going to school, consequences which are important for their future. There are multiple policies aimed at reducing child labour and increasing school attendance. It is important to identify the factors that have led to changes in these two areas so that appropriate public policies can be implemented; because without government intervention and/or social norms, poor households may underinvest in human capital and childcare (Becker & Murphy, 1988).

This study evaluates the factors that explain the decline in child labour and the increase in school attendance of children aged 12–14 in Mexico between 2000 and 2020. We analyse how changes in household income per capita, the education of the head of household, access to public health institutions, government monetary support, income from remittances, and demographic changes affecting households have contributed to the change in child labour and school attendance. Current literature shows many of these factors individually affect school attendance and/or child labour, while we evaluate them jointly to understand their relative importance in the changes in child labour and school attendance in Mexico.

We study both child labour and school attendance because children have time constraints so decisions around whether to send a child to work and/or to school are made simultaneously. The factors that influence whether the child

Author Manuscript

works and/or attends school may be the same, or they may have similar substitution and income effects (Grootaert & Kanbur, 1995, p. 14). Child labour and school attendance is not necessarily a direct trade-off as children also have leisure time. For instance, Ravallion and Wodon (2000) show how a subsidy in rural Bangladesh increased the time spent at school by more than it reduced time spent in work, as children can also reduce their leisure time. It is also possible that children can both work and attend school and, further, that working is what makes it possible for children to go to school (Patrinos & Psacharopoulos, 1997, p. 398). Working could also increase the cost of schooling, for instance Psacharopoulos (1997) finds that working children have about two years less schooling than non-working children of the same age. We pay particular attention to the role of income and education as possible sources of changes in child labour and school attendance. Carneiro and Heckman (2002, 2003) and Chevalier et al. (2013) highlight long-term factors such as permanent household income and the home environment as important determinants of schooling, and distinguish them from current household income. The education level of the household head could also be positively associated with children's education, and we distinguish it from the current household income.

Mexico faces a significant poverty problem and there have been important efforts to increase school attendance. Among them, a pioneer programme to fight poverty and promote children's education, the Programa Progresa-Oportunidades, the first cash-transfer programme conditional on children attending school. The Progresa programme was the federal government's main strategy to fight poverty and was linked to Sustainable Development Goal 1: end poverty in all its forms everywhere. This programme was cancelled in 2019 and later replaced by a school scholarship programme, Programa de Becas Bienestar. Another important factor is the access to public health institutions. In 2004 such institutions were greatly expanded with the creation of the "Seguro Popular" ("Popular Insurance")—aimed at providing medical attention to those working in the informal economy, which is where child labour is usually "hidden."[1] This programme ended in 2019 and was replaced by another called Instituto de Salud para el Bienestar (INSABI). In addition, Mexico is a large recipient of remittances, an additional source of income that could affect child labour and school attendance. Given these changes in government programmes over time, we focus on changes in two time periods, 2000–2010 and 2010–2020.

We use the data from the population censuses of 2000, 2010, and 2020, which include more than 1.6 million observations of children between the ages of 12 and 14, with 2000 being the smallest sample, with more than 460,000 observations. The large sample makes it possible to distinguish between the

[1] In Mexico, access to health care in public institutions is provided through employment in the formal sector. Starting in 2004 there w as an expansion in health services through the "Seguro Popular," intended for the population not covered by the formal economy.

Author Manuscript

relative effects of the different factors on child labour and school attendance. We also distinguish between rural and urban sectors, between children aged 12, 13, or 14 and between boys and girls. Given the significance of income inequality in Mexico, we also subdivide Mexican states according to their incidence of poverty. To decompose the causes of changes in child labour and school attendance we use the Blinder–Oaxaca methodology of decomposition, specifically the Fairlie (2005) technique, which allows the decomposition for the case in which the variables to be explained are dichotomous.

Although we observe an overall improvement in child labour and school attendance during the period studied, we find important differences among the two sub-periods. Child labour fell and school attendance increased between 2000 and 2010, but during the 2010–2020 period we observe a deterioration among some subpopulations, for instance, an increase in child labour among boys in rural areas and a fall in school attendance among both boys and girls in rural and urban areas. The deterioration in child labour between 2010 and 2020 is concentrated among states with a high incidence of poverty.

We find that the most important factors reducing child labour are also the most important in increasing school attendance. The most important factor affecting both child labour and school attendance is the improvement in the parents' human capital, measured as years of education of the head of the household. Between 2000 and 2010 the years of education of the household head increased by 19% in the urban and by 37% in the rural households in the sample and by 3% and 15% in urban and rural households between 2010 and 2020. Because the years of education of the head of the household is correlated with current per capita income, as a robustness check we remove education of the head of the household from the analysis and find likelihood ratio (LR) and Pseudo R2 substantially fall, indicating that not all the information in education is captured by the remaining variables. We also study states with a high and low incidence of poverty separately, to see if our results still hold. Education of the head of household is still the most important variable that explains changes in child labour and school attendance in both high- and low-poverty states, although we see income gaining more importance in the former. Additionally, we find that government help during the 2000–2010 period worked towards reducing child labour and increasing school attendance, but then that such programmes lost their importance by 2010–2020. Our results suggest that public policy aimed at reducing child labour and increasing school attendance will have a stronger impact if it is focused on improving the education of heads of household and improving workers' access to public health institutions. Further, government programmes that tie subsidies to addressing poor to school attendance and health conditions were more effective in improving child labour and school attendance than those which did not.

The remainder of the article proceeds as follows. In Section 2, we discuss the factors that affect child labour and school attendance in the context of the current literature. Section 3 discusses the data used in our analysis. Section 4

Author Manuscript

studies the relationship between per capita income, child labour, and school attendance, using kernel regressions. In Section 5, we discuss the methodology of decomposition that will be used. Section 6 presents our main results showing the contribution of each factor to the decrease in child labour and to the increase in school attendance. In Section 7, we conduct some robustness tests. Finally, Section 8 concludes.

2 FACTORS AFFECTING CHILD LABOUR AND SCHOOL ATTENDANCE

2.1 Income

In economic models, income is the most important factor influencing child labour (Baland & Robinson, 2000; Basu & Van, 1998; Becker, 1967). The premise is that when income is low households are unable to transfer future resources to the present to devote children's time for school. Edmonds (2006) and Edmonds and Schady (2012) verify that child labour is a facet of poverty. In a study of Vietnam, Edmonds (2005, 2008) finds that higher income per capita is associated with less child labour and more school attendance. A similar result for Brazil was found by de Carvalho Filho (2012). A higher anticipated income decreases child labour and increases school attendance, even if this income is only promised but not yet acquired (Edmonds, 2006).

Carneiro and Heckman (2002, 2003) show that, while there is certainly a relationship between short-term income and school attendance (in their study, going to college), long-term income is more important. They offer two explanations for this. The first is a credit restriction that does not allow for paying for the child's education; the second is the child's inability to secure a home environment enabling her or him to succeed in school, such as a family environment that is favourable or unfavourable to the education of children, and to the formation of attitudes and social skills. They find that these latter factors affect school attendance more than the income or credit restriction in the short term.

Education

Parental education is one of the ways to create a better environment for children and to improve school attendance (Chevalier et al., 2013). There are channels through which parents' higher education can lead to more education of their children. First, better educated parents can be more efficient in the production of human capital of their children (Becker et al., 2015; Spenkuch, 2015). In addition, such parents dedicate more time to their children (Campaña et al., 2017; Dotti Sani & Treas, 2016; Guryan et al., 2008). Moreover, children of more educated parents achieve higher test scores (Davis-Kean, 2005). Finally, perhaps more educated parents have better information about future returns to the education of their children, while less educated parents underestimate these future returns (Jensen, 2010; Kaufmann, 2014). Additionally, it is possible that parental education generates a wealth effect that

Author Manuscript

also provides information on the returns on their children's education (Chernikovsky & Meesook, 1985).

Government policies

In Mexico, government policy in the fight against poverty and in favour of children's school attendance was implemented through the Oportunidades-Progresa-Prospera sequence of programmes, which began in 1997.[2] The Prospera programme was specifically designed to promote school attendance among the low-income population (Levy, 2007). This programme, while increasing household income through a cash transfer, made this conditional on the children attending school and meeting certain health and nutritional requirements. Families living in poverty received a transfer and an additional transfer was granted for each of the children in a household. The Prospera programme in Mexico was shown to be effective in both reducing child labour and in increasing school attendance (Behrman et al., 2005; Schultz, 2004; Skoufias & Parker, 2001). In 2018 the Prospera programme was terminated by the new government, and in 2019 it was replaced by the Programa de Becas Bienestar (welfare scholarship programme). Under the Programa de Becas Bienestar, children under 15 years of age qualify for a subsidy based on poverty, there is no family subsidy, and only one award per family is allowed irrespective of the number of children in the household. This programme has no health or nutritional conditions and requires that at least one child in the household attend school. In addition to Programa de Becas Bienestar cash subsidies also increased for the population over 67 years of age to combat poverty, although the policy seeks universalization rather than targeting, and so is not linked to poverty conditions. Given these changes in government programmes over time, households that received subsidies in 2020 may be very different from those that received them in 2010.

Another relevant government policy relates to individuals' access to public health institutions. In 2004, "Seguro Popular" was instituted in Mexico, providing health insurance for the population that is not covered in the formal economy. This programme ended in 2019 and was replaced with the Instituto de Salud para el Bienestar (INSABI) in 2020. Until 2004, the population's access to public health institutions (Seguro Social, or social security) was given to workers (and their families) through firms registered in the formal economy. The workers in the informal economy (and their families) had no access to public health insurance before Seguro Popular and INSABI.[3] Individuals could

[2] The Progresa programme was established in 1997. It was later renamed Oportunidades in 2004 and more recently in 2014 was rebranded as the Prospera Programme. In this article, we refer to this programme through its different phases as the Prospera programme.

[3] We define formal workers as those whose work is within the legal and regulatory framework that encompasses Seguro Social (social security) as in Levy and Székely (2016) and Levy (2008). Seguro Social refers to the federal government organizations which administer Mexico's health care and social benefits, giving access to such benefits to the workers of companies registered in the formal sector of the economy. These organizations are the Instituto Mexicano del Seguro Social (IMSS) and the Instituto de Seguridad Social y Servicios Sociales de los Trabajadores del Estado (ISSSTE). The benefits are given through the workers' companies and are controlled by government and legislation.

Author Manuscript

purchase private health insurance, but it was generally unaffordable for workers in the informal sector. We refer to this access to public health institutions either through the formal (Seguro Social) or informal (Seguro Popular/INSABI) sectors as social health insurance. It is possible that, with the expansion of social health insurance to households not covered in the formal sector of the economy, such households improved their health human capital and their contact with social institutions. This could have led to a fall in child labour and an increase in school attendance, despite still being in the informal economy. It is also possible to link the size of the formal sector to child labour and school attendance. Although child labour was prohibited in Mexico before the age of 13 between 2000 and 2015 and before the age of 15 from 2016, and education being compulsory to the age of 17, prohibitions on child labour have a smaller impact on economies that have a significant percentage of informal work.[4] Ultimately, the overall effect of the changes in access to social health insurance on child labour and school attendance is an empirical question.

Remittances

Remittances are an additional source of income received by households from family members who are migrant workers, which is significant in the case of Mexico—one of the largest recipients of remittances according to the World Bank (2016), and a country which has one of the highest number of emigrants, 13.2 million in 2013, 10.7% of its population. Since the receipt of remittances often implies a father's absence and/or the investment in small family businesses that can occupy child labour, the effect of remittances on child labour and school attendance is ambiguous. Alcaraz et al. (2012) find that the increase in remittances has contributed to reducing child labour in Mexico. Yang (2008) finds a similar result for the Philippines. Cox Edwards and Ureta (2003) find that remittances increase school retention to a greater extent than income in El Salvador, while Acosta (2011) does not identify clear effects. Hanson and Woodruff (2003) and Antman (2012) do find that migration to the US has an effect on education for Mexican households.

Demographic changes in the household

Household size, and thus the percentage of children in the household, can be important determinants of child labour. Basu and Van (1998) model that a smaller household can lead to less child labour, a thesis confirmed by Patrinos and Psacharopoulos (1995, 1997) for Peru and Paraguay. Household size in Mexico decreased between 2000 and 2020, with fewer children per household, which could have contributed to the decrease in child labour.

3 DATA

[4] Betw een 2000 and 2010 child labour w as prohibited in Mexico until the age of 13.

Author Manuscript

We use the Population and Housing Census of Mexico for 2000 (INEGI, 2004), 2010 (INEGI, 2012), and 2020 (INEGI, 2021). The samples comprise some 10% of the population, with over 9.4 million individual cases in 2000, 11.9 million in 2010, and 15.0 million in 2020. We study children between 12 and 14 years of age, as the census does not provide work information for younger children. In the Population Census, the population aged 12 and above is asked: "La semana pasada ¿Trabajó, por lo menos una hora?" ("Last week did you work for at least one hour?"). For individuals who responded that they were engaged in other activities, such as studying, working at home, etc., the enumerator asks again if they worked, and if their occupation is another activity but they also worked, they are classified as workers. Children were considered to be working if they helped in a family business, sold a product, made a product to sell, helped in raising animals, were apprenticed, or carried out another type of activity in exchange for payment. The 2020 Census found that 679,630 children between 12 and 14 years of age were employed.[5]

We define household income as the income of adult household members (aged 18 and over). Household income is important if children only work when the income of the household is not sufficient to cover basic needs (Basu & Van, 1998). One issue to emerge is that, of the sample of the population aged 12 to 14, 12% of urban households and 40% of rural households do not declare income in 2000 (11% and 41%, respectively, in 2010, and 8% and 26% in 2020). The households that declare zero income are not necessarily those with lower education, but are distributed by years of education of the head of the household, possibly because the income information can be denied to the enumerator at all income levels. Therefore, zero income does not correspond to low-income households and cannot be attributed to poverty; hence we exclude these households from our study. We also exclude households for which we have no information on the years of education of the household head.

The censuses provide information on the labour income of each household member, the size of the household, whether adults have access to social health insurance, whether the household receives support from government programmes, whether the household receives remittances, the years of schooling of the head of the household, etc. While the 2000 Census provides quantitative information on income from remittances and from government assistance, the 2010 and 2020 censuses only provide qualitative (yes/no) information, hence we include these two variables in the study as indicator variables.

The variables we use in our analysis are defined as follows. *School attendance* refers to whether the child (aged 12–14) attends school. *Child labour* refers to whether the child (aged 12–14) works. *Education of head* are the years of

[5] An alternative source of data is the Encuesta de Ocupación y Empleo (ENOE) (Occupation and Employment Survey), which has a child labour module that began in 2007. Using this survey, in 2019 there were 0.9 million children between the ages of five and 14 who were working. The larger figure than that shown in the Census could be due to the inclusion of children aged between five and 11 years old, and also including autoconsumption activities that are unlikely to have been included in the Census. In the ENOE the children are surveyed themselves.

Author Manuscript

education of the head of the household. *Log per capita income* is the logarithm of the household's per capita income, defined as the income of adult household members divided by the total number of members (consistent with the definitions in Basu & Van, 1998). *Government help* equals one for households that receive monetary assistance from government programmes and zero otherwise. *Remittances* equals one if the household receives remittances, and zero otherwise. *Social health insurance* equals one if the household receives social health insurance (either through Seguro Social, Seguro Popular, or INSABI), and zero otherwise. *Age* refers to the age of the child (12, 13, or 14). *Household size* is the number of household members. Finally, *% children* indicates the proportion of children in the household.

4 PER CAPITA INCOME, CHILD LABOUR, AND SCHOOL ATTENDANCE

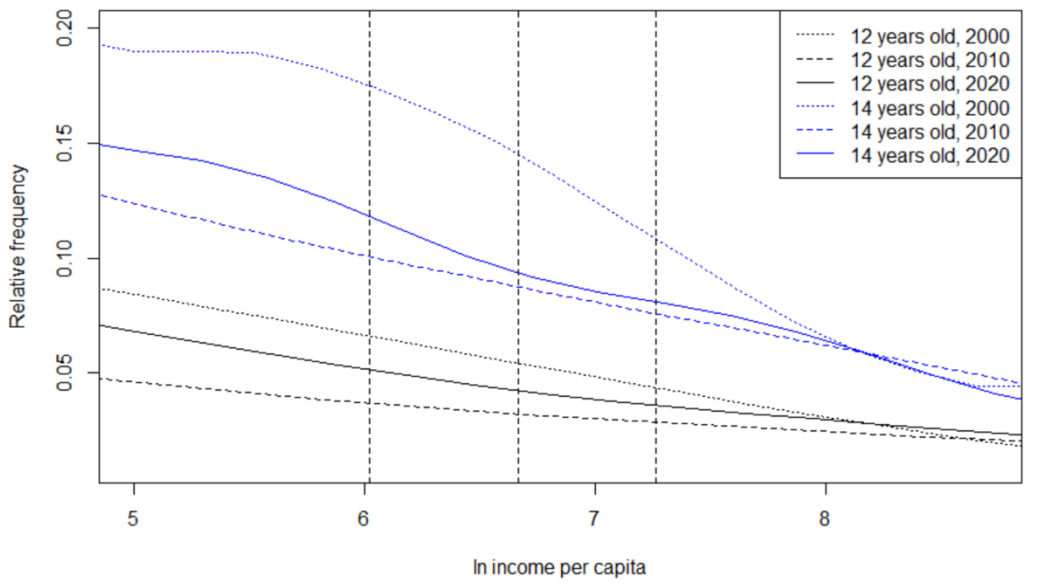
Per capita income is widely used in the literature as an important determinant of child labour; we start by studying the relation between per capita income, child labour, and school attendance. We compute kernel regressions, the local linear estimator, using Gaussian kernels of order two (between the log of per capita income and the proportion of children working or attending school). We use package “np” of Hayfield and Racine (2008, version 2017) in R. To estimate kernels, we use local linear estimators and use cross-validation of least squares to select bandwidths.

The relation between per capita household income with child labour and with school attendance is shown in Figure 1. The horizontal axis measures the logarithm of household per capita income and the vertical axis measures the percentage of children working (top figure) and the percentage of children attending school (bottom figure). The steeper the slope of the lines, the greater the role of permanent income (Carneiro & Heckman, 2002). Therefore, lines with close to horizontal slopes indicate that the proportion of child labour (or school attendance respectively) does not depend on per capita income. We observe that lower income relates to more child labour and less school attendance. The vertical lines represent the quantiles of income per capita of 25%, 50%, and 75%. For each income level up to the third quartile there is a reduction in child labour and an increase in school attendance between 2000 and 2020. However, we note important differences between the two periods studied. While there is an improvement in both child labour and school attendance during the 2000–2010 period, between 2010 and 2020 we observe an increase in child labour and a decrease in school attendance, particularly among poor households. For the fourth quartile we find no significant changes in school attendance between 2000 and 2010, but a deterioration between 2010 and 2020.

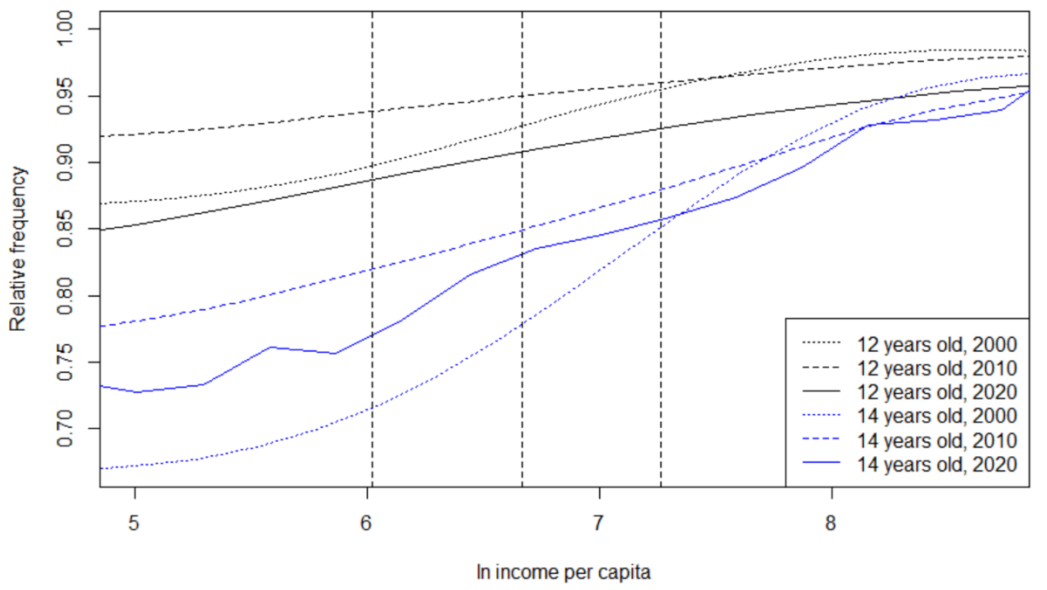
Author Manuscript

Figure 1. Relation of log per capita household income with child labour and school attendance

Frequency of working children 12 & 14 years old, 2000, 2010, and 2020.



Frequency of school children aged 12 and 14 years old, 2000, 2010, and 2020.



5 METHODOLOGY OF DECOMPOSITION

Author Manuscript

We now turn to the question of what has led to the changes in child labour and the increase in school attendance in Mexico between the years 2000 and 2020. Given the important differences observed in the prior section we study the periods 2000–2010 and 2010–2020 separately. We use the method in Fairlie (2005) implemented by Jann (2006) in Stata. The method is based on the decomposition of Oaxaca (1973) and Blinder (1973), which allows the difference in the variable of interest between two groups to be broken down into two components: the first due to differences in the explanatory variables, and the other due to differences in group processes in determining the levels of the variable of interest and to unmeasurable and/or unobserved endowments. Fairlie (2005) provides an extension of the Blinder–Oaxaca decomposition technique for the case in which the outcome variable is binary, using estimates from a logit or probit model. We use Fairlie's (2005) decomposition method as we are looking for the causes of the differences in school attendance and child labour over time, where both are binary variables.

Following Fairlie (2005), the decomposition between 2000 and 2010 for a non-linear equation is:

$$\overline{T}_{2000} - \overline{T}_{2010} = \left[\sum_{i=1}^{N_{2000}} \frac{F\left(X^i_{2000}\hat{\beta}_{2000}\right)}{N_{2000}} - \sum_{i=1}^{N_{2010}} \frac{F\left(X^i_{2010}\hat{\beta}_{2000}\right)}{N_{2010}} \right] + \left[\sum_{i=1}^{N_{2000}} \frac{F\left(X^i_{2010}\hat{\beta}_{2000}\right)}{N_{2010}} - \sum_{i=1}^{N_{2010}} \frac{F\left(X^i_{2010}\hat{\beta}_{2010}\right)}{N_{2010}} \right]$$

(1)

Tj is the dependent variable, either child labour or school attendance, in year j. This variable takes a value of either 1 (if the child works or attends school) or 0 (if they do not), the average value is $\overline{T}_j$. Nj refers to the size of the census sample in year j, **X** is a vector of explanatory variables, **β** is the vector of estimated coefficients, and year j can be either 2000 or 2010. The first term on the right side of the equation refers to the portion of the difference in the proportion of children working (attending school) between 2000 and 2010 that is due to the differences in the distributions of X between the two years, valued in year 1, and the second term refers to the difference that originates from the different **β** assessments of each year and to unexplained items. Because our focus is the effect of changes in policies, changes in the means of the variables and not in the changes in the estimated parameters, we focus on the first term of the equation. If the model only had three variables and if $N_{2000} = N_{2010}$, the independent contribution of X_1 to the differences in child labour (school attendance) $\overline{T}_{2000} - \overline{T}_{2010}$ could be found as:[6]

$$\frac{1}{N_{2000}} \sum_{i=1}^{N_{2000}} F\left(\hat{\alpha}^* + X^i_{1,2000}\hat{\beta}^*_1 + X^i_{2,2000}\hat{\beta}^*_2 + X^i_{3,2000}\hat{\beta}^*_3\right) - F\left(\hat{\alpha}^* + X^i_{1,2010}\hat{\beta}^*_1 + X^i_{2,2000}\hat{\beta}^*_2 + X^i_{3,2000}\hat{\beta}^*_3\right)$$

(2)

In other words, the contribution of each variable to the differences in child labour (school attendance) between 2000 and 2010 is equal to the change in

[6] For a discussion of the methodology see Fairlie and Robb (2007) and Fairlie (2005, 2017).

Author Manuscript

the average predicted probability if we replace the 2000 distribution for the 2010 distribution for that variable, while maintaining the distributions of the other variables constant. We can similarly obtain the contributions of the other variables to the differences in child labour (school attendance); the sum of such contributions from all variables is equal to the first term of the equation (1). Using Fairlie's (2005) decomposition technique, and because using 2000 or 2010 as the base year can lead to different estimates (Cain, 1986), we pool the observations of both years to estimate the β * coefficients using logit models. We then calculate the predicted probability of a child working/attending school, for each observation in the sample. The two groups need to be of equal size, so we take a random subsample of the larger group. Then, we rank each observation separately in the 2000 sample and the 2010 sample according to the predicted probabilities, and match each observation in the 2000 sample to an observation in the 2010 sample. We use the one-to-one matches to get the independent contribution of X_1, to the differences in child labour (school attendance) between 2000 and 2010; then we get the independent contribution of X_2, and so on. We then start again by taking another random subsample of the larger group, while randomizing the order of the variables at the same time. We do 1,000 replicas of the decomposition, and calculate the mean value of estimates from the separate decompositions, which is what is reported in the tables. The number of observations reported comes from the logistic regressions which use expansion factors. We follow the same methodology for the decomposition between 2010 and 2020.

6 RESULTS

6.1 Full sample

The mean values for the characteristics of households with children aged 12 to 14 are shown in Table 1. Panel A subdivides the sample by whether the child works and/or attends school. In the year 2000, only 49% of children who worked also attended school, increasing to 54% in 2010 and 61% in 2020. Of the children who did not attend school, 35% worked in 2000, 27% in 2010 and 17% in 2020.

Author Manuscript

Table 1

Mean values for characteristics of the population aged 12 to 14.

Panel A. By whether the child works and/or attends school

	Child works			Child does not work			Child attends school			Child does not attend school		
Year	2000	2010	2020	2000	2010	2020	2000	2010	2020	2000	2010	2020
School attendance	0.49	0.54	0.61	0.91	0.94	0.92						
Child labour							0.05	0.03	0.03	0.35	0.27	0.17
Education of head	4.49	6.23	6.87	6.92	8.49	9.02	7.14	8.63	9.17	3.73	5.59	6.74
Log per capita income	6.42	6.85	7.03	6.79	7.09	7.27	6.82	7.1	7.29	6.29	6.76	7.01
Government help	0.2	0.41	0.39	0.14	0.36	0.32	0.13	0.36	0.32	0.2	0.38	0.30
Remittances	0.05	0.07	0.06	0.03	0.07	0.05	0.03	0.07	0.05	0.05	0.07	0.04
Social health insurance	0.38	0.64	0.82	0.54	0.72	0.81	0.55	0.73	0.81	0.34	0.6	0.77
Age	13.3	13.29	13.27	12.96	12.99	12.97	12.94	12.98	12.97	13.33	13.3	13.16
Household size	6.27	5.54	5.55	5.69	5.12	5.27	5.63	5.09	5.22	6.52	5.68	5.85
% children	48.47	44.57	44.86	45.26	42.92	41.94	45.21	42.95	41.91	47.86	43.64	43.57

Panel B. By urban or rural sector

	Urban			Rural		
Year	2000	2010	2020	2000	2010	2020
Child labour	0.06	0.04	0.03	0.11	0.06	0.06
School attendance	0.92	0.94	0.92	0.82	0.89	0.88
Education of head	8.05	9.59	9.86	4.65	6.39	7.34
Log per capita income	7.1	7.34	7.5	6.24	6.64	6.9
Government help	0.01	0.22	0.25	0.34	0.61	0.44
Remittances	0.03	0.06	0.05	0.05	0.07	0.05
Social health insurance	0.64	0.73	0.80	0.33	0.69	0.81
Age	12.99	13	12.99	12.98	13	12.98
Household size	5.39	4.89	5.18	6.28	5.55	5.45
% children	44.14	42.44	41.29	47.68	43.93	43.41

Author Manuscript

Compared to the homes of children who work, we observe that in homes of children who do not work both the education of the head of the household and income are higher. In the homes of working children, government help and remittances are higher, and these families are also larger (household size) and have a greater proportion of children. The same can be said about school attendance. Compared to children who do not attend school, children who do live in households where the head of the household is better educated, there is higher income and more access to social health insurance. Children who do not attend school live in larger households and with a larger proportion of children. Although in the 2000–2010 period, children who did not attend school lived in households with more government help and remittances, in the 2020 period these children live in households with less government help and remittances. We also observe (in unreported results) that in households where children work the head of household is more likely to be a woman, a migrant, single, not working, and to speak an indigenous language, and the same characteristics hold true in households where children do not attend school.

Panel B of Table 1 separates households by the size of locality. The factor that is most changed between 2000 and 2010 is government aid (*Government help*). In 2000 the Prospera programme was small in the urban sector and it had grown significantly among both rural and urban households by 2010. Government help, however, declined strongly in the rural sector between 2010 and 2020. In 2000 and 2010 the Prospera programme was active, but by 2020 it had been deactivated and was replaced with the Programa de Becas Bienestar. There are two main differences between these government programmes. First, households receiving the subsidy under the Prospera programme may be different from households receiving the subsidy under Programa de Becas Bienestar as the qualifying conditions differ. Second, even if the same household is admitted under both programmes, under Programa de Becas Bienestar it is not mandatory to send all children to school as was the case under the Prospera programme, provided one child attends.[7] *Remittances* also increased significantly between 2000 and 2010, but fell by 2020 in both sectors. Per capita income increased in both sectors, but especially in the rural sector. In the rural sector, the proportion of households with access to *Social health insurance* more than doubled between 2000 and 2010 and increased further by 2020. We also note a decline in the percentage of children in the household. All differences are significantly different from zero at the 1% level. Because some of the variables differed significantly between rural and urban households, we expect the factors responsible for the decrease in child labour and school attendance in the rural/urban sectors to also differ.[8]

[7] For a discussion of this second effect, conditional cash transfers (CCTs), and the difficulties of separating it from a larger income effect, see the discussion in chapter 4 of Banerjee and Duflo (2011).
[8] The mean values of the explanatory variables are the same for boys and girls.

Author Manuscript

The logit estimates[9] indicate that the higher the level of education of the head of the household, per capita income, government assistance, and social health insurance tend to decrease child labour, and to increase school attendance. The reduction in family size and in the percentage of children in households also contribute to reducing child labour and increasing school attendance. Remittances, which as discussed earlier could both increase or decrease child labour and school attendance, are found to increase the probability of a child working and decrease the probability of a child attending school.

Table 2 shows the results of the decomposition of the influence of each variable on the change in child labour and school attendance. We construct four subsamples according to whether the child is a boy or girl, and whether they live in the rural or urban sector. As an example, taking boys in the urban sector (column 1), the proportion of boys working was 8.3% in 2000 and 5.0% in 2010, a reduction of 3.3 percentage points. Of this fall in child labour, changes in the studied variables explain 1.9 percentage points, or 58% of the fall. The explained drop in child labour is 67% due to the increased education of the head of the household, 5% due to the improvement in income, 13% due to more government assistance, etc.[10] *Demographic variables* refers to demographic variables included depending on the specification: household size, percentage of children in the household, rural or urban sector, and age. The findings indicate that the higher level of education of the head of the household is the most important variable that explains both the reduction in child labour and the increase in school attendance between 2000 and 2010. This is followed by the increase in government assistance and greater access to social health insurance. These last two variables are particularly important in the case of boys and girls in the rural sector. Similarly, during the period 2010–2020, the education of the head of the household is also the most important variable that works towards improving child labour and school attendance.

6.2 Results by age and sex

We next partition the sample into subsamples according to age (12, 13, or 14) and sex in Table 3. A larger proportion of boys than girls worked in 2000, and we observe a stronger reduction in child labour in the case of boys than girls for 2000–2010. Between 2010 and 2020, we observe an increase in child labour for 12-year-old boys and 13-year-old girls. Increases in school attendance between 2000 and 2010 are similar for both sexes. The greatest improvements are shown in the case of 14-year-old boys and girls, perhaps because they are the

[9] The logit model results are available from the authors on request.
[10] The sum of the percentage values is 100%, including the negative values due to the variable state, and in some cases the variable remittances.

Author Manuscript

Table 2

Decomposition of the difference in child labour and school attendance between 2000 and 2020, by sex and size of locality

	Panel A. Child Labour					Panel B. School Attendance			
Changes 2000 to 2010									
	Boys-Urban	Boys-Rural	Girls-Urban	Girls-Rural		Boys-Urban	Boys-Rural	Girls-Urban	Girls-Rural
Proportion 2000	0.083	0.156	0.043	0.064		0.916	0.839	0.918	0.804
Proportion 2010	0.05	0.088	0.024	0.039		0.932	0.894	0.944	0.892
Difference	0.033	0.068	0.019	0.026		-0.015	-0.055	-0.026	-0.088
Explained	0.019	0.043	0.009	0.02		-0.028	-0.064	-0.029	-0.08
Education of head	0.0129	0.0183	0.0056	0.0059		-0.0168	-0.0272	-0.0166	-0.0277
	66.58%	42.68%	62.58%	29.37%		60.44%	42.21%	57.17%	34.47%
Log per capita income	0.0009	0.0008	0.0001[a]	-0.0019		-0.0039	-0.0035	-0.0034	-0.0028
	4.55%	1.85%	1.22%	-9.31%		13.95%	5.40%	11.80%	3.49%
Government help	0.0025	0.0069	0.0016	0.0058		-0.0031	-0.0144	-0.005	-0.0186
	13.09%	16.02%	17.45%	28.73%		11.33%	22.37%	17.28%	23.16%
Remittances	-0.0003	-0.0003	-0.0001	0.0000		0.0002	-0.0002	0.0000	-0.0004
	-1.37%	-0.67%	-1.25%	0.24%		-0.64%	0.25%	0.14%	0.44%
Social health insurance	0.0026	0.0095	0.0009	0.0069		-0.0031	-0.0122	-0.0025	-0.0219
	13.33%	22.18%	10.21%	34.37%		11.08%	18.87%	8.70%	27.20%
Demographic variables	0.0021	0.0067	0.0016	0.0031		-0.0025	-0.0065	-0.0032	-0.0099
	10.72%	15.64%	17.28%	15.50%		9.18%	10.16%	11.06%	12.37%
State	-0.0013	0.001	-0.0007	0.0002		0.0015	-0.0005	0.0018	0.0009
	-6.96%	2.30%	-7.48%	1.10%		-5.38%	0.72%	-6.18%	-1.14%

Author Manuscript

Observations	2,803,717	1,744,100	2,746,754	1,700,997		2,798,525	1,740,389	2,741,832	1,697,369

Changes 2010 to 2020

	Boys-Urban	Boys-Rural	Girls-Urban	Girls-Rural		Boys-Urban	Boys-Rural	Girls-Urban	Girls-Rural
Proportion 2010	0.050	0.088	0.024	0.039		0.932	0.894	0.944	0.892
Proportion 2020	0.044	0.093	0.021	0.035		0.909	0.871	0.922	0.886
Difference	0.006	-0.005	0.003	0.004		0.023	0.023	0.022	0.006
Explained	0.004	0.009	0.002	0.002		-0.004	-0.007	-0.003	-0.008
Education of head	0.0015	0.0081	0.0007	0.0024		-0.0025	-0.0128	-0.0019	-0.0117
	36.19%	90.70%	41.66%	116.02%		66.65%	195.91%	71.88%	139.02%
Log per capita income	0.0004	0.0012	0.0000	-0.0005		-0.0014	-0.0020	-0.0011	-0.0024
	9.73%	13.53%	0.29%	-22.98%		36.13%	30.25%	43.85%	28.67%
Government help	0.0002	-0.0032	0.0000	-0.0023		-0.0003	0.0098	-0.0003	0.0109
	4.02%	-35.14%	2.76%	-113.28%		8.52%	-149.07%	10.90%	-128.99%
Remittances	0.0002	0.0002	0.0000	0.0001		-0.0001	0.0003	0.0000	0.0004
	4.17%	2.66%	2.60%	3.38%		2.83%	-5.16%	-1.27%	-4.41%
Social health insurance	0.0004	0.0007	0.0003	0.0016		-0.0004	0.0004	-0.0008	-0.0039
	9.35%	7.55%	20.71%	77.06%		10.64%	-6.65%	31.20%	45.98%
Demographic variables	0.0011	0.0023	0.0003	0.0002		0.0013	-0.0021	0.0016	-0.0011
	25.81%	25.13%	19.00%	8.37%		-34.50%	31.42%	-59.65%	13.64%
State	0.0004	-0.0004	0.0002	0.0006		-0.0004	-0.0002	-0.0001	-0.0005
	10.74%	-4.45%	12.98%	31.42%		9.73%	3.31%	3.09%	6.08%

Author Manuscript

Observations	4,642,320	2,828,251	4,541,492	2,749,457		4,635,632	2,824,389	4,535,318	2,745,600

All coefficients are significant at the 1% level except where noted. [a] Coefficient significant at the 5% level.

Table 3

Decomposition of the difference in child labour and school attendance between 2000 and 2020, by age and sex

	Child Labour						School Attendance					
	Boys			Girls			Boys			Girls		
Age	12	13	14	12	13	14	12	13	14	12	13	14
Changes 2000 to 2010												
Proportion 2000	0.0648	0.1024	0.171	0.0283	0.0484	0.077	0.9417	0.894	0.8185	0.9334	0.8767	0.8091
Proportion 2010	0.0341	0.0598	0.0984	0.0251	0.0218	0.0405	0.9568	0.9203	0.8763	0.9531	0.9275	0.8922
Difference	0.0306	0.0426	0.0727	0.0032	0.0266	0.0365	-0.0151	-0.0263	-0.0579	-0.0197	-0.0508	-0.0831
Explained	0.0161	0.0286	0.0487	0.0074	0.0133	0.0201	-0.0251	-0.0437	-0.0675	-0.0273	-0.0501	-0.0708
Education of head	0.0081	0.0152	0.0237	0.0036	0.0061	0.0097	-0.0112	-0.0206	-0.0345	-0.0134	-0.0221	-0.0319
	50.7%	53.3%	48.7%	49.0%	45.6%	48.4%	44.5%	47.2%	51.2%	49.0%	44.0%	45.1%
Log per capita income	0.0008	0.0012	0.0019	-0.0015	0.0001 [a]	-0.0003	-0.0024	-0.0046	-0.0061	-0.001	-0.0052	-0.0074
	5.3%	4.2%	3.8%	-20.9%	0.8%	-1.4%	9.5%	10.5%	9.1%	3.8%	10.3%	10.5%
Government help	0.0011	0.0031	0.0056	0.0019	0.0031	0.0046	-0.0048	-0.0066	-0.0088	-0.0044	-0.0083	-0.0108
	6.7%	10.8%	11.5%	25.3%	23.1%	22.8%	19.1%	15.2%	13.0%	15.9%	16.5%	15.3%
Remittances	-0.0002	-0.0003	-0.0004	0.0001	-0.0001	-0.0001	0.0000 [a]	0.0000 [a]	0.0000 [a]	-0.0002	-0.0001	-0.0001
	-1.0%	-1.0%	-0.8%	0.7%	-0.6%	-0.6%	0.2%	-0.1%	0.0%	0.8%	0.2%	0.1%
Social health insurance	0.0037	0.0053	0.0088	0.0033	0.0019	0.0027	-0.0043	-0.0073	-0.0102	-0.0076	-0.0086	-0.0119
	23.2%	18.5%	18.2%	45.4%	14.0%	13.3%	17.0%	16.8%	15.0%	27.7%	17.2%	16.7%
Demographic variables	0.0025	0.0051	0.0096	0.0009	0.0025	0.0039	-0.003	-0.0057	-0.0093	-0.0033	-0.0074	-0.0106
	15.5%	18.0%	19.6%	12.8%	18.5%	19.4%	11.8%	13.1%	13.8%	12.2%	14.7%	14.9%
State	-0.0001[a]	-0.0011	-0.0005	-0.0009	-0.0002	-0.0004	0.0005	0.0012	0.0014	0.0026	0.0015	0.0019
	-0.3%	-3.7%	-1.0%	-12.2%	-1.5%	-1.9%	-2.1%	-2.7%	-2.1%	-9.5%	-2.9%	-2.7%

Author Manuscript

Observations	1,544,926	1,500,118	1,502,773	1,497,684	1,460,550	1,489,517	1,541,800	1,497,294	1,499,820	1,494,958	1,458,038	1,486,205
Changes 2010 to 2020												
Proportion 2010	0.0341	0.0598	0.0984	0.0251	0.0218	0.0405	0.9568	0.9203	0.8763	0.9531	0.9275	0.8922
Proportion 2020	0.0366	0.0589	0.0924	0.0171	0.0258	0.0355	0.9224	0.8985	0.8629	0.9296	0.9096	0.8860
Difference	-0.0025	0.0009	0.0060	0.0080	-0.0040	0.0050	0.0344	0.0218	0.0135	0.0235	0.0179	0.0062
Explained	0.0041	0.0062	0.0106	0.0020	0.0018	0.0032	-0.0020	-0.0066	-0.0116	-0.0033	-0.0060	-0.0121
Education of head	0.0021	0.0036	0.0068	0.0005	0.0014	0.0030	-0.0028	-0.0054	-0.0097	-0.0021	-0.0052	-0.0099
	50.5%	57.7%	64.2%	25.4%	76.8%	91.3%	141.7%	81.7%	83.3%	63.1%	85.6%	82.0%
Log per capita income	0.0005	0.0006	0.0013	-0.0004	0.0000	-0.0001	-0.0005	-0.0018	-0.0029	-0.0004	-0.0022	-0.0032
	12.7%	10.5%	12.3%	-19.1%	-1.4%	-3.5%	27.3%	27.6%	24.6%	11.6%	37.0%	26.9%
Government help	-0.0001	-0.0005	-0.0012	-0.0003	-0.0006	-0.0010	0.0017	0.0018	0.0029	0.0014	0.0027	0.0039
	-2.6%	-8.4%	-11.6%	-14.8%	-32.5%	-31.4%	-86.0%	-27.7%	-25.2%	-43.9%	-44.4%	-32.0%
Remittances	0.0001	0.0002	0.0003	0.0000	0.0001	0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001
	2.2%	3.5%	2.4%	0.4%	5.7%	4.0%	-5.5%	-0.4%	-0.4%	-4.2%	-2.3%	-0.7%
Social health insurance	0.0009	0.0014	0.0022	0.0017	0.0006	0.0010	-0.0008	-0.0019	-0.0029	-0.0028	-0.0026	-0.0048
	21.8%	22.9%	21.1%	86.5%	32.8%	32.4%	40.9%	28.4%	24.9%	86.3%	42.3%	39.4%
Demographic variables	0.0007	0.0007	0.0003	-0.0001	0.0003	0.0001	0.0006	0.0009	0.0013	0.0013	0.0011	0.0022
	17.2%	10.7%	2.4%	-5.6%	18.6%	4.0%	-28.0%	-14.2%	-11.0%	-39.0%	-19.0%	-18.0%
State	-0.0001	0.0002	0.0010	0.0005	0.0000	0.0001	-0.0002	-0.0003	-0.0005	-0.0009	-0.0001	-0.0003
	-1.8%	3.1%	9.2%	27.2%	0.1%	3.1%	9.6%	4.7%	3.9%	26.0%	0.9%	2.4%
Observations	2,560,249	2,453,340	2,456,982	2,467,320	2,383,459	2,440,170	2,556,310	2,450,167	2,453,544	2,463,804	2,380,564	2,436,550

All coefficients are statistically significant at the 1% level except where noted. [a] Coefficient not significant.

Author Manuscript

ones with a higher proportion of child labour and a lower proportion of school attendance compared to 12- or 13-year-olds. Between 2010 and 2020 we observe a fall in school attendance for both boys and girls of all ages.
Once again, we find the higher level of education of the head of the household is the most important cause of the fall in child labour and the increase in school attendance between 2000 and 2010, followed by improved access to social health insurance. Income per capita and remittances explain very little (if any) of the differences in child labour and school attendance. Family characteristics such as household size and the percentage of children are more important as children get older. Changes in government financial assistance also explain the changes in school attendance and child labour. A further explanation for differences in child labour is government assistance which played a more important role in the case of girls than boys. For the 2010–2020 period, the most important variable for changes in child labour is the education of the head of household. Government help is the most important factor in explaining the fall in school attendance, followed by the fall in households receiving remittances and the demographic variables (increase in household size).

6.3 Results by incidence of poverty of the state

In economic models, income is the most important factor influencing child labour, and empirical evidence shows low income to be strongly associated with more child labour and lower school attendance. However, the findings here (Table 2) indicate that among children in urban households the most important factor that led to a reduction in child labour and to an increase in school attendance was a higher educational level attained by the head of the household. Among rural children, access to social health insurance and government assistance also play an important role. We now partition the sample by the incidence of poverty of the state, to explore whether in states where there are higher concentrations of low-income residents we can find stronger income effects, and hence income as a more important factor influencing changes in child labour and school attendance in those states.
We classify states into five groups according to the incidence of poverty of the population. We take the minimum welfare lines according to the National Council for the Evaluation of Social Development Policy (CONEVAL) of Mexico to define poverty. The welfare lines are defined in Mexican pesos (MXN) and measure the value of the minimum “food basket” for one person. The value of such welfare lines in November 2017 was of MXN 1.88 per person per day for the rural sector and of MXN 2.64 for the urban sector. We use the poverty lines for 2000 and 2010 (CONEVAL, 2017) to calculate the percentage of the population living in poverty in each state in 2000 and 2010. For example, in Mexico City 5.8% and 6% of the population fell below the poverty line in 2000 and 2010 respectively; while in Chiapas 53.3% and 51% of the population fell below the poverty line for the same years. We then average the two years to define the poverty level of each state. Next, we place states into five groups

Author Manuscript

according to the percentage of the population living in poverty in the state, as shown in Table 4.[11]

Table 4

Grouping of States by Poverty Levels

Percentage of the population in poverty	*Group*	*States*
6%– 9%	*1*	*Baja California, Mexico City, Nuevo León*
10%–14%	*2*	*Aguascalientes, Baja California Sur, Chihuahua, Coahuila, Colima, Jalisco, Sonora, Tamaulipas*
16%–22%	*3*	*Durango, Guanajuato, México, Morelos, Nayarit, Querétaro, Quintana Roo, Sinaloa*
26%–34%	*4*	*Campeche, Hidalgo, Michoacán, Puebla, San Luis Potosí, Tabasco, Tlaxcala, Veracruz, Yucatán, Zacatecas*
44%–52%	*5*	*Chiapas, Guerrero, Oaxaca*

Group 1: 3 states, Group 2: 8 states, Group 3: 8 states, Group 4: 10 states, Group 5: 3 states.

The averages of the variables by the poverty level of the states are shown in Table 5, where we compare group 1 (states with the lowest percentage of the population living in poverty) and group 5 (states with the highest percentage of the population living in poverty). The differences in the averages are significantly different from zero at the 1% level for all variables and all groups. For all state-poverty groups we observe a fall in child labour between 2000 and 2010. The table shows strong changes in terms of school attendance, income, and access to social health insurance. There is also a strong increase in government aid and remittances among the low-poverty states. There is a drastic change between 2010 and 2020. We observe a fall in the number of children attending school among both high- and low-poverty states and an increase in child labour in high-poverty states. It is notable that among these high-poverty states government help fell from 58% to 51% for these households, while the share of household receiving remittances fell among both low- and high-poverty states. Household size increased across both groups.

Table 5

Mean values 2000, 2010 and 2020 by state-poverty groups

	Low Poverty	**High Poverty**

[11] In forming groups, we look for states that are similar in terms of the percentage of population living in poverty.

Author Manuscript

Group	1			5		
Year	**2000**	**2010**	**2020**	**2000**	**2010**	**2020**
Child labour	0.04	0.03	0.02	0.11	0.06	0.07
School attendance	0.94	0.94	0.92	0.84	0.90	0.87
Education of head	8.64	9.96	10.03	5.30	6.75	7.31
Log per capita income	7.30	7.47	7.61	6.17	6.54	6.69
Government help	0.01	0.21	0.29	0.31	0.58	0.51
Remittances	0.02	0.07	0.05	0.03	0.06	0.05
Social health insurance	0.67	0.63	0.68	0.31	0.26	0.28
Age	12.99	12.99	13.00	12.98	13.01	12.98
Household size	5.19	4.78	5.19	6.11	5.48	5.61
% children	43.08	41.81	40.52	47.60	43.98	44.14

Table 6 shows the decomposition results by state-poverty group. Education of the head of the household is the most important factor that explains both the decrease in child labour and the increase of school attendance from 2000 to 2010 for both high- and low-poverty states. As expected, the importance of this factor is lower in high-poverty states. For instance, the education of the head of the household explains 60% of the change in child labour and 68% of the change in school attendance in the low-poverty group of states (group 1), but only 35% of the changes in the high-poverty states (group 5). Among the high-poverty states, access to social health insurance is the second most important factor. Access to social health insurance increased significantly for this group, from 30% to 61%, during this period. Government assistance also plays an important role, particularly in terms of the increase in school attendance in high-poverty states. In the period 2010–2020, child labour falls in low-poverty states, with social health insurance explaining most of the decrease. Child labour increased in high-poverty states, with the increase explained mostly by the change in government help. Note that education of the head of the household still is the most important factor in relation to the decline of child labour. School attendance fell for both groups during 2010–2020. While among low-poverty states demographic changes mostly explain the fall in school attendance, among high-poverty states it was due mostly to changes in government assistance.

Author Manuscript

Table 6

Decomposition of the difference in child labour and school attendance between 2000 and 2010 and between 2010 and 2020 by state-poverty level

	Panel A. Child Labour					**Panel B. School Attendance**				
	2000–2010 Change			2010–2020 Change		2000–2010 Change			2010–2020 Change	
	Low Poverty	High Poverty		Low Poverty	High Poverty	Low Poverty	High Poverty		Low Poverty	High Poverty
Group	1	5		1	5	1	5		1	5
Proportion 2000	0.0415	0.1087	Proportion 2010	0.0251	0.0646	0.9409	0.8415	Proportion 2010	0.9427	0.8979
Proportion 2010	0.0251	0.0646	Proportion 2020	0.0217	0.0720	0.9427	0.8979	Proportion 2020	0.9243	0.8667
Difference	0.0164	0.0441	Difference	0.0034	-0.0074	-0.0018	-0.0564	Difference	0.0184	0.0311
Explained	0.0085	0.0310	Explained	0.0014	0.0053	-0.0176	-0.0631	Explained	-0.0020	-0.0054
Education of head	0.0051	0.0109		0.0002	0.0035	-0.0120	-0.0218		-0.0004	-0.0064
	60.10%	35.09%		18.1%	64.8%	68.14%	34.53%		22.2%	118.0%
Log per capita income	0.0000 [a]	0.0035		0.0001	0.0013	-0.0014	-0.0040		-0.0005	-0.0023
	0.14%	11.17%		6.8%	25.1%	7.71%	6.39%		27.1%	41.3%
Government help	0.0015	0.0053		0.0003	-0.0015	-0.0022	-0.0149		-0.0011	0.0064
	18.16%	17.22%		19.5%	-27.9%	12.65%	23.53%		52.7%	-117.4%
Remittances	-0.0005	-0.0002		0.0002	0.0000	0.0011	-0.0004		-0.0003	0.0001
	-6.16%	-0.49%		15.2%	0.6%	-6.10%	0.57%		13.0%	-1.7%
Social health insurance	0.0010	0.0088		0.0006	0.0019	-0.0016	-0.0161		-0.0013	-0.0034
	11.98%	28.33%		40.1%	34.6%	9.10%	25.46%		62.3%	62.9%
Demographic variables	0.0013	0.0027		0.0000	0.0002	-0.0015	-0.0060		0.0016	0.0002
	15.64%	8.71%		0.3%	2.9%	8.37%	9.50%		-77.2%	-3.2%
Observations	1,232,999	829,522		2,002,579	1,398,703	1,230,434	828,267		1,999,409	1,397,408

Author Manuscript

The variable "Demog" includes age, size of the household, percentage of children, and size of the locality. All coefficients are statistically significant at the 1% level except where noted.
[a] Coefficient not significant.

6.4 Results by type of access to social health insurance

The strong improvement in access to social health insurance between 2000 and 2010, especially within high-poverty states, was an important factor in the decrease in child labour and the increase in school attendance during this time, second only to the improvement of the education of the head of household. We subdivide households into those with access to health insurance that is provided through Seguro Social (the formal sector), Seguro Popular/INSABI (the informal sector), and households without access to health insurance provided by the state.

Table 7 shows that households with no access to social health insurance are predominantly in the high-poverty states, and the percentage falls from 69% in 2000 to 39% in 2010, and then to 23% in 2020. This decrease is due in large part to the expansion of programmes aimed at the informal sector, the effect of Seguro Popular can be observed in 2010 and that of INSABI in 2020. In the high-poverty states, 35% of households in the informal sector gain access to health care through Seguro Popular and 49% through INSABI, while there is a change in the population covered in the formal sector from 31% to 26% in 2010 and back to 28% in 2020. The latter change could be due to the international financial crisis of 2008–2009. The fall in the percentage of households with access to social health care in the formal sector (Seguro Social) in 2000–2010 occurs across all groups of states. Given the reduction of the formal sector in 2000–2010 one would expect an increase in child labour and a fall in school attendance, while the increase in 2010–2020 would suggest the opposite would happen between 2010 and 2020.

Table 8 shows the decomposition results when dividing social health insurance into the two groups: Seguro Social and Seguro Popular/INSABI. For 2000–2010, education of the head of the household is still the most important variable explaining changes in child labour and school attendance. Seguro Social (the formal sector) takes a negative sign, and the expansion in Seguro Popular is the second most important factor explaining changes in high-poverty states. This suggests the implementation of Seguro Popular, which gives access to social health insurance to workers in the informal sector and to their families, had an important effect on the fall in child labour and the increase in school attendance in Mexico between 2000 and 2010. Although access to Seguro Social fell between 2000 and 2010, there was an increase in 2010–2020. This increase in access to Seguro Social is the most important factor reducing child labour and increasing school attendance among low-poverty states during

Author Manuscript

2010–2020. Among high-poverty states, education of the head of household is still the most important variable in this period.

Author Manuscript

Table 7

Fraction of households with Seguro Social (formal sector), Seguro Popular/INSABI (informal sector), and No Insurance

	Low Poverty									High Poverty					
Group	**1**			**2**			**3**			**4**			**5**		
Year	**2000**	**2010**	**2020**	**2000**	**2010**	**2020**	**2000**	**2010**	**2020**	**2000**	**2010**	**2020**	**2000**	**2010**	**2020**
Seguro Social	0.67	0.63	0.68	0.66	0.60	0.67	0.54	0.47	0.53	0.40	0.36	0.40	0.31	0.26	0.28
Seguro Popular/INSABI	0	0.13	0.14	0	0.18	0.16	0	0.25	0.27	0	0.32	0.40	0	0.35	0.49
No insurance	0.33	0.24	0.18	0.34	0.22	0.16	0.46	0.28	0.20	0.60	0.32	0.20	0.69	0.39	0.23

Table 8

Decomposition of the difference in child labour and school attendance between 2000 and 2020, by type of access to social health insurance

	Panel A. Child Labour					**Panel B. School Attendance**				
	2000–2010 Change			2010–2020 Change		2000–2010 Change			2010–2020 Change	
	Low Poverty	High Poverty		Low Poverty	High Poverty	Low Poverty	High Poverty		Low Poverty	High Poverty
Group	1	5		1	5	1	5		1	5
Proportion 2000	0.0415	0.1087	Proportion 2010	0.0251	0.0646	0.9409	0.8415	Proportion 2010	0.9427	0.8979
Proportion 2010	0.0251	0.0646	Proportion 2020	0.0217	0.0720	0.9427	0.8979	Proportion 2020	0.9243	0.8667
Difference	0.0164	0.0441	Difference	0.0034	-0.0074	-0.0018	-0.0564	Difference	0.0184	0.0311
Explained	0.0083	0.0295	Explained	0.0014	0.0039	-0.0162	-0.0566	Explained	-0.0021	-0.0021
Education of head	0.0051	0.0106		0.0004	0.0032	-0.0116	-0.0204		-0.0004	-0.0070
	61.20%	35.97%		26.92%	82.44%	71.27%	36.09%		16.95%	340.00%
Log per capita income	0.0000 [a]	0.0034		0.0001 [b]	0.0012	-0.0013	-0.0036		-0.0005	-0.0019

Author Manuscript

	0.02%	11.36%	3.92%	30.36%	7.72%	6.45%	23.15%	93.58%
Government help	0.0016	0.0058	0.0003	-0.0018	-0.0026	-0.017	-0.0012	0.0075
	19.44%	19.62%	23.39%	-46.21%	16.23%	29.99%	58.48%	-360.57%
Remittances	-0.0005	-0.0001	0.0002	0.0000	0.001	-0.0004	-0.0003	0.0001
	-6.30%	-0.50%	14.98%	0.88%	-6.41%	0.68%	12.46%	-5.52%
Seguro Social	-0.0005	-0.0006	0.0006	0.0005	0.0012	0.0019	-0.0014	-0.0012
	-6.38%	-2.06%	42.45%	11.93%	-7.46%	-3.40%	64.67%	57.80%
Seguro Popular/INSABI	0.0013	0.0079	0.0000 [a]	0.0004	-0.0011	-0.0109	0.0000 [a]	0.0000 [a]
	15.17%	26.77%	0.13%	10.10%	6.50%	19.30%	-0.13%	0.81%
Demographic variables	0.0014	0.0026	-0.0002	0.0004	-0.002	-0.0062	0.0016	0.0005
	16.85%	8.83%	-11.79%	10.51%	12.16%	10.89%	-75.57%	-26.09%
Observations	1,232,999	829,522	2,002,579	1,398,703	1,230,434	828,267	1,999,409	1,397,408

"Demographic variables" includes age, size of the household, percentage of children, and size of the locality. All coefficients are statistically significant at the 1% level except where noted. [a] Coefficient not significant. [b] Coefficient significant at the 5% level.

Author Manuscript

7 ROBUSTNESS CHECKS

7.1 Relations between education and income

The number of years of education of the head of the household is the most important factor explaining the fall in child labour and the increase in school attendance in Mexico, however it is correlated with other explanatory variables like current per capita income, for example. In theoretical terms, Chevalier et al. (2013) relate it to permanent income, and Carneiro and Heckman (2002, 2003) would place it among the factors that favourably contribute to a child's education. In addition to influencing income, education influences the size of the household and the number of children and can be decisive in obtaining social health insurance and in obtaining government assistance. A potential concern is that education of the head of the household absorbs the information contained in the income (log per capita income) variable, and for this reason education of the head of the household is the most important factor explaining the changes in child labour and school attendance, while income plays a minor role. To evaluate this possibility, we remove education of the head of the household from the analysis and focus on the influence of the other factors in explaining changes in child labour and in school attendance between 2000 and 2020.

Specifications (1) and (4) in Table 9 include all explanatory factors, specifications (2) and (5) exclude the income variable, and specifications (3) and (6) exclude education of the head of the household.[12] The first two rows of Table 9 show the LR and the Pseudo R^2 of the logistic regressions. When income is excluded from the regression the values of the LR and of the Pseudo R^2 barely change compared to when it is not excluded, indicating that the information of the per capita income was already captured by the other explanatory variables. However, the LR and the Pseudo R^2 substantially fall when we exclude the variable referring to education, which indicates that not all the information in education is captured by the rest of the variables. This is true for both the 2000–2010 and the 2010–2020 periods. In reference to Fairlie's (2005) decomposition results, excluding education of the head of the household from the analysis, income explains 31% of the changes in child labour and 37% of the changes in school attendance in the 2000–2010 period (42% and 77% respectively for 2010–2020), which is significantly more than that shown in Table 2. Therefore, the information in current income was being captured by education of the head of the household. Under this specification social health insurance is as (or more) important as income in explaining the changes in child labour and school attendance. In addition, the importance of demographic variables (*Demographic variables)* such as household size and the number of children increases except in the case of child labour for 2010–2020. In summary, if we exclude education of the head of the household from the

[12] Columns (3) and (6) exclude observations with missing values for years of education of the head of household in the row Proportion 2000.

Author Manuscript

analysis, then income, social health insurance, and demographic variables explain the changes in child labour and school attendance.

Table 9.

Decomposition of the difference in child labour and school attendance between 2000 and 2020, when omitting the education and income variables

Panel A. Changes from 2000 to 2010

	Child Labour			School Attendance		
	(1)	(2)	(3)	(4)	(5)	(6)
Logistic regressions						
LR	351726.6	351614.2	286373.1	780123.9	771813.6	583744.5
Pseudo R^2	0.0825	0.0825	0.0643	0.1346	0.1332	0.0966
Decomposition						
Proportion 2000	0.0816	0.0816	0.0828	0.8798	0.8798	0.8777
Proportion 2010	0.0470	0.0470	0.0469	0.9209	0.9209	0.9209
Difference	0.0346	0.0346	0.0359	-0.0411	-0.0411	-0.0432
Explained	0.0219	0.0217	0.0166	-0.0466	-0.0446	-0.0346
Education of head	0.0113	0.0112		-0.0228	-0.0241	
	51.45%	51.71%		48.82%	53.89%	
Log per capita income	0.0005		0.0051	-0.0045		-0.0128
	2.10%		30.85%	9.73%		36.88%
Government help	0.0033	0.0032	0.0022	-0.0073	-0.0066	-0.0050
	15.01%	14.77%	13.02%	15.73%	14.77%	14.35%
Remittances	-0.0001	-0.0001	-0.0002	-0.0001	-0.0001	0.0000 [a]
	-0.68%	-0.69%	-1.39%	0.18%	0.17%	0.01%
Social health insurance	0.0045	-0.0001	0.0062	-0.0086	-0.0092	-0.0120
	20.57%	-0.69%	37.33%	18.54%	20.54%	34.62%
Demographic variables	0.0029	0.0045	0.0038	-0.0045	-0.0059	-0.0064
	13.38%	20.81%	22.82%	9.67%	13.21%	18.44%
State	-0.0004	0.0032	-0.0004	0.0013	0.0011	0.0015
	-1.83%	14.68%	-2.63%	-2.68%	-2.57%	-4.27%
Observations	8,995,568	8,995,568	9,279,547	8,978,115	8,978,115	9,261,002

Panel B. Changes from 2010 to 2020

	Child Labour			School Attendance		
	(1)	(2)	(3)	(4)	(5)	(6)
Logistic regressions						
LR	491905.4	491447.1	385133	953841.5	944628.7	677019.3
Pseudo R^2	0.0771	0.077	0.0586	0.1004	0.0995	0.0694
Decomposition						
Proportion 2010	0.0470	0.0470	0.0469	0.9209	0.9209	0.9209

Author Manuscript

Proportion 2020	0.0443	0.0443	0.0443	0.9018	0.9018	0.9018
Difference	0.0026	0.0026	0.0026	0.0192	0.0192	0.0192
Explained	0.0049	0.0048	0.0042	-0.0074	-0.0063	-0.0056
Education of head	0.0030	0.0031		-0.0060	-0.0060	
	61.32%	65.78%		81.27%	95.48%	
Log per capita income	0.0003		0.0018	-0.0019		-0.0043
	6.79%		42.34%	25.40%		76.80%
Government help	-0.0007	-0.0006	-0.0003	0.0025	0.0022	0.0015
	-13.70%	-13.41%	-6.99%	-33.41%	-35.20%	-26.54%
Remittances	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	2.57%	2.76%	3.32%	-1.35%	-1.46%	-1.01%
Social health insurance	0.0013	0.0001	0.0020	-0.0026	-0.0029	-0.0040
	26.59%	2.76%	48.06%	34.82%	45.57%	71.64%
Demographic variables	0.0004	0.0014	0.0001	0.0008	0.0005	0.0017
	8.34%	29.08%	2.15%	0.00%	-8.41%	-30.93%
State	0.0004	0.0006	0.0005	-0.0003	-0.0003	-0.0006
	8.09%	13.04%	11.12%	3.79%	4.02%	10.04%
Observations	14,761,520	14,761,520	15,054,155	14,740,939	14,740,939	15,032,375

All coefficients are statistically significant at the 1% level except where noted. [a] Coefficient not significant.

Table 10 repeats the decomposition, separating by the poverty level of the states while excluding the education of the head of the household from the analysis. The table shows the percentage of the change explained by each factor. In this case, among the states with a high incidence of poverty, expansion in social health insurance is the most important factor in explaining the decrease in child labour and the improvement in school attendance, followed by per capita income. We also observe that having a smaller household size and a lower proportion of children in the home (*Demographic variables)* was important to the fall in child labour and the increase in school attendance during the 2000–2010 period.

Table 10

Decomposition of the difference in child labour and school attendance between 2000 and 2020, by income level of the states. Percentage of the change explained by each factor

Author Manuscript

Group	Low Poverty 2000–2010	2010–2020	High Poverty 2000–2010	2010–2020
Child labour				
Log per capita income	15	51	28	55
Government help	28	26	14	-18
Remittances	-7	21	-1	1
Social health insurance	24	65	46	71
Demographic variables	40	-64	13	-9
Observations	1,269,471	2,040,968	862,053	1,431,652
School Attendance				
Log per capita income	25	105	21	95
Government help	25	81	21	-92
Remittances	-9	20	1	-2
Social health insurance	22	119	42	129
Demographic variables	38	-224	16	-29
Observations	1,266,809	2,037,701	860,656	1,430,215

8 CONCLUSION

Between 2000 and 2020 Mexico experienced a decrease in child labour and an increase in school attendance among children between 12 and 14 years of age. However, we find important differences in the 2000–2010 and 2010–2020 periods. We observe a decrease in child labour and increase in school attendance that is consistent among sex (girls and boys), age (12, 13, and 14-year-olds), locality (rural and urban sectors), and state-poverty level (from low-poverty states to high-poverty states) from 2000 to 2010. Mixed results are apparent in the 2010–2020 period, with the finding of increased child labour for boys in the rural area and decreases in school attendance for both boys and girls in urban and rural areas and all ages under consideration. We do not believe the decline in school attendance to be linked to the COVID-19 pandemic, as the census data was collected from March 2–27, 2020 while the temporary school shutdown started on March 23 and a month later school was resumed through television. Children were still registered and considered as attending school when the census was taken.

The main purpose of this article is to evaluate the factors that led to such changes in child labour and school attendance. We consider the following factors: (1) increased income; (2) an improvement in the education of family members, in particular the head of the household; (3) improved access to social health insurance; (4) increased government support; (5) increased income from remittances; and (6) demographic factors, such as smaller household and a

Author Manuscript

smaller proportion of children in the household. We describe theories to explain the effect of each variable on child labour and school attendance, but we have no way of knowing the exact mechanisms that take place for the causality of such variables. A limitation of our study is, therefore, that causality is not clear. Overall, the most relevant variable that explains decreases in child labour and increases in school attendance is the improved education of the household head. The years of education of the head of the household increased by 19% in urban households and by 37% in rural households in the sample between 2000 and 2010 and 3% and 15% respectively between 2010 and 2020. Education of the head of the household affects child labour and school attendance both directly and indirectly through its effects on per capita income, access to public health institutions, and the number of children in a household, and possibly the greater attention paid to each of them.

Of particular importance are the government programmes in place to address poverty. While, in the 2000–2010 period, these programmes contribute to the improvement of child labour/school attendance, our results do not support this for the 2010–2020 period. Mexico underwent some changes during the period, as in 2000 and 2010 the Prospera programme, which gave subsidies to poor families conditional on them sending children to school and meeting health requirements, was operational, but by 2020 it had been replaced with Programa de Becas Bienestar—which grants one subsidy per family and requires only one child to attend school. Our results suggest that these government policies are important in explaining changes in child labour and, to a greater extent, school attendance over time.

An important observation is that child labour increased in some subgroups of the population between 2010 and 2020, despite the 2016 change in labour laws that increased the legal working age from 13 to 15. Our study suggests that public policies aimed at increasing school attendance and at decreasing child labour should consider the improvement of education as a major goal. In addition, important consideration should be given to government policies aimed at reducing poverty because of their possible impact on child labour and school attendance over time.

CORRESPONDENCE

Magali Valero University of Michigan at Dearborn, Dearborn, MI, 4818, USA.
Email: mvalero@umich.edu

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available from INEGI: https://en.www.inegi.org.mx/programas/ccpv/2000/#Microdata

Author Manuscript

https://en.www.inegi.org.mx/programas/ccpv/2010/#Microdata
https://en.www.inegi.org.mx/programas/ccpv/2020/#Microdata

ACKNOWLEDGEMENTS

We thank Deborah Eade and an anonymous reviewer for their insightful comments which helped improve this manuscript.

REFERENCES

Acosta, P. (2011). School attendance, child labour, and remittances from international migration in El Salvador. *The Journal of Development Studies*, *47*(6), 913–936. https://doi.org/10.1080/00220388.2011.563298

Alcaraz, C., Chiquiar, D., & Salcedo, A. (2012). Remittances, schooling, and child labor in Mexico. *Journal of Development Economics*, *97*(1), 156–165. https://doi.org/10.1016/j.jdeveco.2010.11.004

Antman, F. M. (2012). Gender, educational attainment, and the impact of parental migration on children left behind. *Journal of Population Economics*, *25*(4), 1187–1214. https://doi.org/10.1007/s00148-012-0423-y

Banerjee, A., & Duflo, E. (2011). *Poor economics: A radical rethining of the way to fight global poverty.* Public Affairs.

Baland, J.-M., & Robinson, J. A. (2000). Is child labour inefficient? *Journal of Political Economy*, *108*(4), 663–679. https://doi.org/10.1086/316097

Basu, K., & Van, P. H. (1998). The economics of child labor. *American Economic Review*, *88*(3), 412–427. http://www.jstor.org/stable/116842

Becker, G. S. (1967). Human capital and the personal distribution of income: An analytical approach (W. S. Woytinksy Lecture). In G. S. Becker (Ed.), *Human capital: A theoretical and empirical analysis, with special reference to education* (pp. 94–117). University of Chicago Press.

Becker, G. S., Kominers, S. D., Murphy, K. M., & Spenkuch, J. L. (2015). A theory of intergenerational mobility. *Journal of Political Economy*, *126*(S1), 7–25. https://doi.org/10.1086/698759

Becker, G. S., & Murphy, K. M. (1988). The family and the state. *The Journal of Law and Economics*, *31*(1), 1–18. https://doi.org/10.1086/467147

Behrman, J. R., Sengupta, P., & Todd, P. (2005). Progressing through PROGRESA: An impact assessment of a school subsidy experiment in rural Mexico. *Economic Development and Cultural Change*, *54*(1), 237–275. https://doi.org/10.1086/431263

Author Manuscript

Blinder, A. S. (1973). Wage discrimination: Reduced form and structural estimates. *The Journal of Human Resources*, *8*(4), 436–455. https://doi.org/10.2307/144855

Cain, G. G. (1986). The economic analysis of labour market discrimination: A survey. *Handbook of labor economics (vol. 1)*. 693–785. Elsevier. https://doi.org/10.1016/S1573-4463(86)01016-7

Campaña, J. C., Gimenez-Nadal, J. I., & Molina, J. A. (2017). Increasing the human capital of children in Latin American countries: The role of parents' time in childcare. *The Journal of Development Studies*, *53*(6), 805–825. https://doi.org/10.1080/00220388.2016.1208179

Carneiro, P. M., & Heckman, J. J. (2002). The evidence on credit constraints in post-secondary schooling. *The Economic Journal*, *112*(482), 705–734. https://doi.org/10.1111/1468-0297.00075

Carneiro, P. M., & Heckman, J. J. (2003). Human capital policy. In J. Heckman & A. Krueger (Eds.), *Inequality in America.* MIT Press.

Chernikovsky, D., & Meesook, O. A. (1985). *School enrollment in Indonesia* (World Bank Staff Working Papers No. 746). https://documents1.worldbank.org/curated/en/569471468756334097/pdf/multi0page.pdf

Chevalier, A., Harmon, C., O'Sullivan, V., & Walker, I. (2013). The impact of parental income and education on the schooling of their children. *IZA Journal of Labor Economics*, *2*(1), 8. https://doi.org/10.1186/2193-8997-2-8

CONEVAL. (2017). *Líneas de Bienestar México 1992 (enero) a 2017 (noviembre). Evolución de las líneas de bienestar y de la canasta alimentaria.* http://www.coneval.org.mx/Medicion/Documents/Lineas_bienestar/Lineas_Bienestar.zip

Cox Edwards, A., & Ureta, M. (2003). International migration, remittances, and schooling: Evidence from El Salvador. *Journal of Development Economics*, *72*(2), 429–461. https://doi.org/10.1016/S0304-3878(03)00115-9

Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology*, *19*(2), 294–304. https://doi.org/10.1037/0893-3200.19.2.294

de Carvalho Filho, I. E. (2012). Household income as a determinant of child labor and school enrollment in Brazil: Evidence from a social security reform. *Economic Development and Cultural Change*, *60*(2), 399–435. https://doi.org/10.1086/662576

Author Manuscript

Dotti Sani, G. M., & Treas, J. (2016). Educational gradients in parents' child-care time across countries, 1965–2012. *Journal of Marriage and Family*, *78*(4), 1083–1096. https://doi.org/10.1111/jomf.12305

Edmonds, E. V. (2005). Does child labor decline with improving economic status? *Journal of Human Resources*, *40*(1), 77–99. https://doi.org/10.3368/jhr.xl.1.77

Edmonds, E. V. (2006). Child labor and schooling responses to anticipated income in South Africa. *Journal of Development Economics*, *81*(2), 386–414. https://doi.org/10.1016/j.jdeveco.2005.05.001

Edmonds, E.V. (2008). *Child labor*. *Handbook of development economics*. Elsevier.

Edmonds, E. V., & Schady, N. (2012). Poverty alleviation and child labor. *American Economic Journal: Economic Policy*, *4*(4), 100–124. https://doi.org/10.1257/pol.4.4.100

Fairlie, R. W. (2005). An extension of the Blinder-Oaxaca decomposition technique to logit and probit models. *Journal of Economic and Social Measurement, 30*(4), 305–316. https://doi.org/10.3233/jem-2005-0259

Fairlie, R. W. (2017). *Addressing path dependence and incorporating sample weights in the nonlinear Blinder-Oaxaca decomposition technique for logit, probit and other nonlinear models* (SIEPR Working Paper No. 17-013). Stanford Institute for Economic Policy Research. https://siepr.stanford.edu/publications/working-paper/addressing-path-dependence-and-incorporating-sample-weights-nonlinear

Fairlie, R. W., & Robb, A. M. (2007). Why are black-owned businesses less successful than white-owned businesses? The role of families, inheritances, and business human capital. *Journal of Labor Economics*, *25*(2), 289–323. https://doi.org/10.1086/510763

Grootaert, C., & Kanbur, R. (1995). Child labour: An economic perspective. *International Labour Review*, *134*(2), 187–203. https://heinonline.org/HOL/LandingPage?handle=hein.journals/intlr134&div=23&id=&page=

Guryan, J., Hurst, E., & Kearney, M. (2008). Parental education and parental time with children. *Journal of Economic Perspectives*, *22*(3), 23–46. https://doi.org/10.1257/jep.22.3.23

Hanson, G. H., & Woodruff, C. (2003). *Emigration and educational attainment in Mexico* [Unpublished manuscript]. http://www.childmigration.net/files/Hanson_2003.pdf

Hayfield, T., & Racine, J. S. (2008). Nonparametric econometrics: The np package. *Journal of Statistical Software*, *27*(5), 1–32. https://doi.org/10.18637/jss.v027.i05

Author Manuscript

Instituto Nacional de Estadística y Geografía. (2004). *XII Censo General de Población y Vivienda 2000*. https://www.inegi.org.mx/programas/ccpv/2000/

Instituto Nacional de Estadística y Geografía. (2012). Censo de Población y Vivienda 2010. http://www.beta.inegi.org.mx/proyectos/ccpv/2010/

Instituto Nacional de Estadística y Geografía. (2021). Censo de Población y Vivienda 2020. https://www.inegi.org.mx/programas/ccpv/2020/#Microdatos

Jann, B. (2006). *Fairlie: Stata module to generate nonlinear decomposition of binary outcome differentials.* Statistical Software Components S456727, Boston College Department of Economics. http://ideas.repec.org/c/boc/bocode/s456727.html

Jensen, R. (2010). The (perceived) returns to education and the demand for schooling. *The Quarterly Journal of Economics*, *125*(2), 515–548. https://doi.org/10.1162/qjec.2010.125.2.515

Kaufmann, K.M. (2014). Understanding the income gradient in college attendance in Mexico: The role of heterogeneity in expected returns. *Quantitative Economics*, *5*(3), 583–630. https://doi.org/10.3982/QE259

Levy, S. (2007). *Progress against poverty: Sustaining Mexico's Progresa-Oportunidades program*. Brookings Institution Press.

Levy, S. (2008). *Good intentions, bad outcomes: Social policy, informality, and economic growth in Mexico*. Brookings Institution Press.

Levy, S., & Székely, M. (2016). ¿ Más escolaridad, menos informalidad? Un análisis de cohortes para México y América Latina. *El Trimestre Económico*, *83*(332), 499–548. https://doi.org/10.20430/ete.v83i332.232

Oaxaca, R. (1973). Male-female wage differentials in urban labor markets. *International Economic Review*, *14*, 693–709. https://doi.org/10.2307/2525981

Patrinos, H. A., & Psacharopoulos, G. (1995). Educational performance and child labor in Paraguay. *International Journal of Educational Development, 15*(1), 47–60. https://doi.org/10.1016/0738-0593(94)E0001-5

Patrinos, H. A., & Psacharopoulos, G. (1997). Family size, schooling and child labor in Peru: An empirical analysis. *Journal of Population Economics*, *10*(4), 387–405. https://doi.org/10.1007/s001480050050

Psacharopoulos, G. (1997). Child labor versus educational attainment. Some evidence from Latin America. *Journal of Population Economics*, *10*(4), 377–386. https://doi.org/10.1007/s001480050049

Ravallion, M., & Wodon, Q. (2000). Does child labour displace schooling? Evidence on behavioural responses to an enrollment subsidy. *The*

Author Manuscript

Economic Journal, *110*(462), 158–175. https://doi.org/10.1111/1468-0297.00527

Schultz, T. P. (2004). School subsidies for the poor: Evaluating the Mexican Progresa poverty program. *Journal of Development Economics*, *74*(1), 199–250. https://doi.org/10.1016/j.jdeveco.2003.12.009

Skoufias, E., & Parker, S. W. (2001). Conditional cash transfers and their impact on child work and schooling: Evidence from the PROGRESA Program in Mexico. *Economía*, *2*(1), 45–96. https://doi.org/10.1353/eco.2001.0016

Spenkuch, J. L. (2015). Intergenerational mobility and income inequality. In *Inequality and Economic Policy: Essays in honor of Gary Becker* (pp. 65–90). Hoover Institution.

World Bank. (2016). *Migration and remittances factbook 2016*. https://openknowledge.worldbank.org/handle/10986/23743

Yang, D. (2008). International migration, remittances and household investment: Evidence from Philippine migrants' exchange rate shocks. *The Economic Journal*, *118*(528), 591–630. https://doi.org/10.1111/j.1468-0297.2008.02134.x

Author Manuscript