Educative Effects of Bolsa Familia: Brazil in Latin American Context[1]

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This paper analyzes the relationship between educational outcomes in access and socioeconomic levels of the population from Brazil, focusing on conditional cash transfer (CCT) programs (Bolsa Escola/Bolsa Familia) and the comparison between Brazil and the rest of Latin America in terms of improvements in educational outcomes. To do this, we analyze, for the 2000–2014 period, different indicators of educational outcomes at the aggregate level and/or income levels and poverty. These analyses are realized on the basis of microdata by country and year, homogeneously processed according to the criteria of the SEDLAC base. We conclude that the positive effect of that program is a robust conclusion, both in terms of impact studies and the evolution of aggregate data. It is also observed that Brazil must intensify efforts in basic education so as not to be left behind in the context of Latin America. Finally, the lack of progress in the tertiary/university sector calls for some thought on whether it is not necessary to modify the conditionalities of the program.

Keywords: Brazil, Bolsa Familia, Bolsa Escola, education, poverty.

Edukacyjne efekty programu Bolsa Familia – Brazylia na tle Ameryki Łacińskiej

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W artykule przeanalizowano związek pomiędzy efektami edukacyjnymi w odniesieniu do dostępu i poziomu społeczno-gospodarczego ludności Brazylii z naciskiem na programy warunkowego transferu środków pieniężnych (Bolsa Escola/Bolsa Familia) oraz porównanie Brazylii z pozostałą częścią Ameryki Łacińskiej pod względem poprawy rezultatów w kształceniu. W tym celu autorzy przeanalizowali różne wskaźniki efektów edukacyjnych na poziomie zagregowanym i/lub na poziomie dochodów oraz wskaźniki ubóstwa w latach 2000–2014. Analizy te zrealizowano na podstawie mikrodanych według państw i lat, które w sposób jednolity przetworzono zgodnie z kryteriami bazy SEDLAC. Autorzy stwierdzają, że wniosek o pozytywnym efekcie programu jest zasadny w świetle zarówno badań wpływu, jak i ewolucji zagregowanych danych. Zauważają oni również, że Brazylia musi zintensyfikować działania w zakresie kształcenia podstawowego, aby nie pozostawać w tyle w porównaniu z pozostałą częścią Ameryki Łacińskiej. Ponadto brak postępów w sektorze kształcenia na poziomie wyższym wymaga zastanowienia się, czy nie jest konieczna zmiana warunków programu.

Słowa kluczowe: Brazylia, Bolsa Familia, Bolsa Escola, edukacja, ubóstwo.

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1. Introduction

The CCT programs have been extended in an explosive way over the last 10–15 years to cover the whole Latin America because of the great expectation about their success in changing the evolution of development. Actually, most countries apply this type of programs with a double objective: first, to reduce current poverty and increase households' income and second, to change the long-run dynamic through stimulating the human capital accumulation process.

This concern about the relationship between education levels and development also has its counterpart in different proposals for multilateral organizations, the United Nations and views of the economic theory. For instance, the UN launched the Human Development Index[2] following Anand and Sen (1994). Also, UNESCO launched "Education for All"[3] in 2000, at the same time when the Millennium Goals[4] were announced by the United Nations for the period 2000–2014[5]. In the development theory, there are different approaches: the classic view (Schultz, 1971; Schultz 1974), the vision of endogenous growth theory (Romer, 1986; Lucas, 1988) and the impact assessment of public policy (Duflo, 2001).

In Latin America, two iconic CCT programs are Oportunidades (Mexico), the first to be implemented, and Bolsa Escola/Familia (Brazil), the biggest. To study the last one is interesting because of its wide population coverage of 56 million people (nearly 28% of the population) with only 0.5% of public expenditure in terms of GDP.

In the case of education, the conditional transfer affects scholarship decisions in two ways. The first one reduces the opportunity cost to send a child to school because households earn more income, they can buy food and clothes but also pencils and books. The second effect emerges when the program calls on parents to send children to school if they wish to receive extra income.

For Latin America, facing the context of changes and reforms, it is essential to invest in strengthening the capacity of individuals to adapt more easily to changing environments in order to achieve the levels of development of the most advanced regions (Heckman, 2003; Schultz, 1975). This link, in economic terms, arises from the effects of educational levels on labor productivity and wages (Psacharopoulos and Patrinos, 2004), but this vision is incomplete because there is also an effect associated with better health choices and the circularity of better educated parents having children with better health and better learning process (Grossman, 2000). In this context, it is interesting to note that Latin America, a region with needs for development, spends almost 7% of its product on education, while other more developed regions allocate smaller amounts. However, in dynamic terms, this shows relative sluggishness of Latin America: in the last five years, the other regions have increased public expenditure on education well above those of Latin America.

Region	Period				2010–2014 vs 2009–2000	
	1990–1999	2000–2009	2010–2014	1990–2014	Abs	%
Latin America and Caribe	5.25	6.49	6.89	6.24	0.40	6.23
North America	4.33	4.51	5.77	4.72	1.26	27.94
Central Europe	2.91	3.62	4.35	3.49	0.73	20.10
Europe	4.18	4.05	4.65	4.24	0.60	14.81
Easter Asia and Pacific	4.01	4.98	6.84	5.36	1.86	37.35
Southern Asia	1.91	1.15	4.19	2.78	3.03	263.65

Tab. 1. Public expenditure on education, as % GDP. Source: prepared on the basis of WDI.

As Hanushek (2013) notes, to consider educational achievements in terms of access is not enough for economic growth. However, the mere fact of improved access builds a basis for the development of a skilled population, expanding economic visions to include socio-political ones (McMahon, 1999).

In this context, if you want to know whether the CCT program works, the answer is: just run an impact evaluation of the program and you will know if it is working. The problem with the Bolsa Familia Program (BFP) is the recognized limitation to find randomized counterfactual data. Following Glewwe and Kassouf (2012), "… there is relatively little research on it… the research to date suffers from estimation problems, data that cover only a small part of Brazil, and … analysis of the earliest version of the program". As de Brauw, Gilligan, Hoddinott, and Roy (2015) argue, "Depending on the year chosen, the data set and the impact evaluation method, the existing literature is clearly inconclusive on whether BFP has had an impact on schooling outcomes". So, all the studies try to use other registry or regional data and only one case uses standard microdata useful for impact evaluation. Because the program started in 2001, we try to evaluate these studies using aggregate microdata. In this case, we use other countries as a counterfactual trying to analyze if Brazil has an exceptional behavior.

In this context, this paper tries to evaluate the educational achievements of the region with special emphasis on the relationship between income levels and educational outcomes and in particular educational gaps related to income differentials. To do this, in the following section we analyze the Latin American experience about conditional cash transfer programs focusing on Brazil's experience. Then, we evaluate the evolution of Brazil's education outcomes, relative to other Latin American countries, using the

aggregated data from the SEDLAC base[6], whose main property is the homogeneity in treatment of variables between countries.

2. Conditional Cash Transfers and Education

Since the beginning of this millennium, there has been a wave of CCT programs in Latin America, stimulated by the remarkable results of the Oportunidades (Mexico). As we can see in Table 2, this program has a significant effect on school attendance at all levels and ages. A similar situation can be seen for large or more developed countries (Argentina or Colombia), for small or less developed countries (Nicaragua or Chile). But as Glewwe and Kassouf (2012) argue, the lack of "randomization" of the program implies that "analyses of the impact of Bolsa Escola ... on education in Brazil are rare". This situation and the relevance by itself of the case of Brazil, its size and its poverty, motivated us to first make a short presentation of the BFP and then to review the main impact evaluations about the effects of this program on school decisions by Brazilian households.

Author (Year)	Country	Program	Ages	PP increase in Attendance
Skoufias and Parker (2001)	Mexico	Oportunidades	16–17	3–5
Duryea and Morrison (2004)	Costa Rica	Supermonos	13–16	3–5
Schultz (2004)	Mexico	Oportunidades	Grade 0–5	1.9
Schultz (2004)	Mexico	Oportunidades	Grade 6	8.7
Schultz (2004)	Mexico	Oportunidades	Grade 7–9	0.6
Glewwe y Olintto (2004)	Honduras	Prg. de Asig. Familiar	6–13	3.3
Cardozo and Sousa (2004)	Brazil	Bolsa Escola	10–17	3
Maluccio and Flores (2005)	Nicaragua	Red de Protec. Social	7–13	12.8
Galasso(2006)	Chile	Chile Solidario	6–15	7.5
Attanasio et al (2006)	Colombia	Familias en Acción	14–17	5–7
Attanasio et al (2006)	Colombia	Familias en Acción	8–13	2.1
Parker et al (2006)	Mexico	Oportunidades	12–17	9–14
Levy and Ohlls(2007)	Jamaica	PATH	13–17	3–4
Schady y Araujo (2008)	Ecuador	Bono desarrollo humano	6–17	3.3
Macours and Vakis (2008)	Nicaragua	Atención a Crisis	7–15	6.6
de Brauw et al (2014)	Brazil	Bolsa Familia	15–17	8
Edo et al (2017)	Argentina	Asig.Universal por Hijo	6–11	0.4
Edo et al (2017)	Argentina	Asig.Universal por Hijo	12–14	0.8
Edo et al (2017)	Argentina	Asig.Universal por Hijo	15–17	3.9

Tab. 2. Impact of CCTs on school enrollment and attendance in Latin America. Source: authors, based on Reynolds (2015), Fiszbein et al. (2009), Edo, Marchionni, and Garganta (2015).

2.1. What is BFP: A Short Review[7]

The first stage of the program was in 1995 in Brazilia and Campiñas. In 2001, Fernando Enrique Cardozo created a national program under the name of Bolsa Escola, which was renamed by Lula's administration in 2003[8] as Bolsa Familia. It is a program of conditional transfers to vulnerable households with a double objective: one, to protect them from current shocks to their incomes; the other is to change the fundamentals for the long term to avoid intergenerational transmission.

The basic transfer scheme is:
- A conditional[9] variable payment per child aged 0 to 15 years, for up to three children in poor households;
- An unconditional transfer to the extremely poor.

The election of potential and effective beneficiaries, Cadastro Unico (CU), is made by municipalities according to their own standards (see: Glewwe and Kassouf, 2012; Gazola Hellmann, 2015 or de Brauw et al., 2015). For this reason, heterogeneity emerges between them (Lindert et al., 2007), which results in the problem of horizontal inequity because there are quotas imposed by municipalities (de Brauw et al., 2015). In this way, the CU acts as a participation condition as mentioned, for example, by de Brauw et al. (2015).

There is a debate about this identification methodology (see: Soares et al., 2010 or Lindert et al., 2007). Soares et al. (2010) found that all focalization indicators, in comparative terms, show that the selection process is better than other CCT[10]. Note that in this process, schools are not involved and do not receive any benefits for enrolling children who are potential beneficiaries or report non-real assistance so that households cannot lose income transfer because they do not comply with conditionality. This is why it is not surprising that few cases have been discharged from the CU (Lindert et al., 2007) until recently. The Federal Government has abolished different tax bases and public programs, canceling 469 thousand beneficiaries and blocking 667 thousand[11].

In Figure 1, we show the relationship between cash transfer and the poverty or extreme poverty threshold. To compute poverty lines, the BFP uses the minimum wage at the program start time (R$ 200.00) (Gazola Hellmann, 2015): a quarter for extreme poverty and a half for poverty. In practice, the government adjusts these values in a discretionary way, taking as a reference the changes in inflation and not in the minimum wage. So, these poverty lines act as absolute lines in the sense that they cover minimum requirements to survive but do not evolve with the country development (Cotta and Paiva, 2010).

However, as we can see in Figure 1, if we evaluate the benefits to poverty line ratio, we can discover that the income transfer by the program represents half of income for poor households and implies duplicate income

for extremely poor households. Also, the mere presence of one child results in a great increase in this ratio. The second fact is that these ratios have remained stable over time as analyzed in Cotta and Paiva (2010).
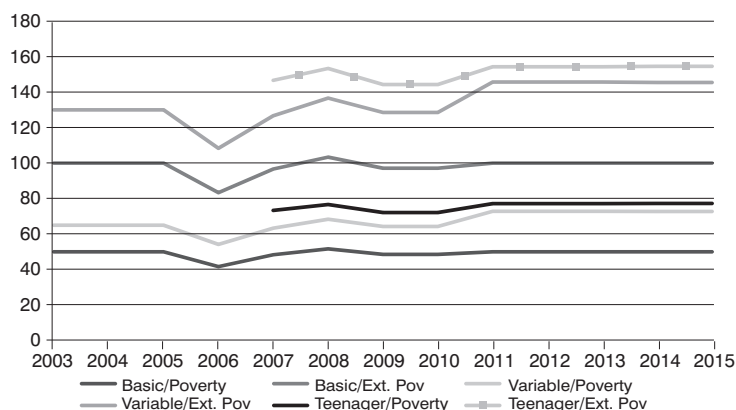

Fig. 1. Evolution of the benefits to poverty lines ratio.

Finally, in aggregate terms, the program shows a high rate of coverage with very low demand for public resources. Figure 2 shows that beneficiaries and the budget have evolved since the program started in 2003 to cover more than 56 million people with only 0.5% of the GDP.
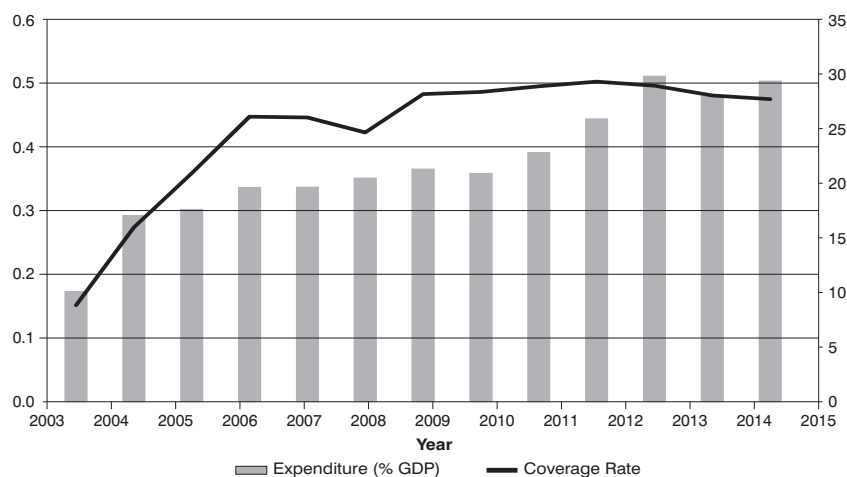

Fig. 2. Size evolution: budget and beneficiaries.

2.2. The Evaluations of the BFP

The expected effects of the BFP, as a usual CCT program, include a reduction in inequality and income poverty, an increase in consumption and improved education and health outcomes. Soares et al. (2010) evaluated it in all that dimension and found its relative performance in relation to other Latin American cases. In this section, we will review the impact evaluation only for education outcomes.

- Bourguignon and Ferreira (2003) offer the first impact evaluation of the BFP. Using the ex-ante methodology, they found that the effects are positive: it reduces the percentage of poor children who do not attend school by more than 50%, mainly due to the conditionality rather than income.
- Cardozo and Souza (2004) use Brazilian census data and propensity score matching to estimate the effect of the BFP on school attendance, among other outcomes, which is 3% for children aged 10–17.
- de Avaliação e Gestão da Informação (2007) use microdata[12] and found that for poor children between 7 and 14 years old, the program increased the probability of attendance by 3.6%. In the Northwest Region, this probability increases to 7.1%. For extreme poverty, the effects are significant only for all girls in 6.5% and in the South Region in 6.5% and in 12.3% for girls in that region. For the drop out outcome, in this case, for poor people, the program reduces its probability by 1.6% with a similar effect for males, 1.2%. The spatial analysis of this indicator shows that for all the population the effect is significant only in North/C. West (1.2%) and for boys in the North East (2.1%). Among extremely poor children, the effect is greater: 2.1% for all population and 1.8% for boys. Also only in the North East Region, the effect is significant, 3.2%, but strangely is negative for boys, 0.6%, and positive for girls, 4.1%. In the case of progression, curse passed, it is worse for the beneficiaries of the BFP than for non-beneficiaries. This is true for socioeconomic groups, the poor and extremely poor, all the country (3.9% and 3.4%, respectively), boys and the North/N. West Region. The effects in that region are very intense, doubling the usual values. The same happens for poor girls, and for poor girls who live in the North/N. West Region.
- Glewwe and Kassouf (2012) use data from school census data for population. For children at grades 1-4 the BFP increases enrollment in 5.5% for girls. These effects are greater for older children: at grades 5-8 the effects is 6.5%. For children in grades 1–4, the BFP reduces the drop out ratio by 0.5% and by 0.4% for girls in grades 5–8. Finally, for grade promotion the effects are greater for lower grades: 0.9% for grades 1–4, increasing by 0.3%. for grades 5–8.
- Riberio and Cacciamali (2012), using data from PNAD 2006 and PSM techniques, evaluate attendance and progression. They found that there is no difference conditional on socioeconomic status or household educa-

tion status. These results are true for all the national or regional levels and ages.

- de Brauw et al. (2015) evaluate the effect for all people, male and female, and the region on enrollment, progression, grade promotion and drop out. In general, the BFP does not have any effect on education outcomes[13], except for some subgroups: girls between 15 and 17 years old for progression and drop out, girls in rural regions for all ages in enrollment, progression and drop out. Among males, the only significant effect[14] is repetition and drop out for teenagers[15].
- Reynolds (2015) analyzes the expansion of the program from 15 to 17 years old, using the case in which an eligible child aged 15 leaves the program one year later because they are not eligible but next year they are newly eligible (at 17). Using a triple difference analysis, they found a 15 percentage point increase in school attendance for continuously treated, poor, urban boys while for rural boys the effect is not significant. For all girls, the effect is null.
- **Summarizing**, when we try to find a common conclusion, we obtain this image: for all population, the effect of the BFP is small, even zero for some studies, but positive for enrollment and a little bigger for progression. In this way, we can expect that the rate of enrollment tends to be maintained while the years of schooling tend to increase. This tendency tends to be felt among 17-year-olds, especially in rural areas, because of better results in progression. Also, a common result is that the effect of the program is due mainly to the conditional requirement more than to income.
- Finally, we must remark that this evaluation mainly concerns access but not quality indicators which show a dynamic improvement accompanied by low current performance (see Knobel, 2014 or OECD, 2014 for more details).

3. Aggregate Evidence for Brazil in the Latina American Context

As an initial view, Table 3 presents the indicators of educational outcomes and socioeconomic status considered here. The first two columns show the simple average of the region in each case for the years 2000 and 2014. The last four columns identify those countries with the main changes.

We can see that the basic indicators of achievement, literacy and primary education maintain a slightly increasing trend in a context where their universality is almost a given. Behavior of greater magnitude is presented for net enrollment rates in secondary and tertiary education. The first one manages to pass from the coverage of 1 in 2 boys at schooling age to 3 in 4, approximately. At the tertiary level, this improvement implies passing from 14.5% of coverage to 23.1%, which represents an increase of almost 60%. As a result of this process of increase in the coverage,

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	2000	2014	Changes		Best performance		Recession	
			Abs	%	Abs	%	Abs	%
Literacy	93.5	95.8	2.3	2.5	Nicaragua	Nicaragua	Uruguay	Chile
Education Years	7.0	8.2	1.2	16.4	Paraguay	Paraguay	–	–
Primaria NER	94.1	97.4	3.3	3.5	El Salvador	El Salvador	Argentina	Argentina
Secundary NER	55.2	72.7	17.5	31.7	C. Rica	C. Rica	–	–
Tertiary NER	14.5	23.1	8.6	59.0	Bolivia	Bolivia	Guatemala	Guatemala
Poverty	42.7	25.6	–17.1	–40.0	Ecuador	Chile	Guatemala	Guatemala
Income Inequality	0.507	0.458	–0.049	–9.7	Ecuador	Ecuador	Costa Rica	Costa Rica

NER: net enrollment rate. It is computed on the basis of theoretical attendance.
Fuente: SEDLAC (CEDLAS y Banco Mundial)

Tab. 3. Synthesis of educational outcomes in Latin America, 2000–2014. Source: prepared on the basis of SEDLAC (CEDLAS and World Bank) 2000 2014.

the education years are rising and already exceed 8 years, implying that in the period they increased by 16.4%.

These educational improvements were led by less developed countries in the region such as Nicaragua in literacy, Paraguay in years of education, or El Salvador, Costa Rica and Bolivia in primary NER, secondary NER and tertiary NER, respectively. This happens in the context where the countries with the best historical achievements, such as Argentina and Uruguay, show some sluggishness in their progress. This process took place in the context in which the region improved social conditions. The poverty rate declined significantly: in 2000 at least 4 in 10 people were poor while in 2014 this proportion dropped to 1 in 4, a decrease of 40%. This improvement also happened in income inequality, although to a lesser extent: Gini index of income fell by 9.7%. We can note the absence of Brazil within the best (or worst) performances.

One relevant discussion is about the convergence between countries. In Table 4, we compute correlation coefficients to evaluate if those countries with the worst situation in the year 2000 are those that are characterized by the greatest improvements. Because all coefficients are negative, we can conclude, preliminarily, that the answer is yes.

	Changes	
	Abs	**%**
Literacy	–0.806	–0.826
Education Years	–0.504	–0.648
Primaria NER	–0.951	–0.960
Secundary NER	–0.445	–0.807
Tertiary NER	0.132	–0.106

NER: net enrollment rate. It is computed on the basis of theoretical attendance.

Tab. 4. Correlation coefficients for Latin America. Source: prepared on the basis of SEDLAC (CEDLAS and World Bank).

In what follows, we expose the evolution for each education outcome in graphical terms. Tables with the figures can be obtained on request to the authors or from Crosta and Conti (2017).

Figure 3 shows that full *literacy* has not been yet achieved in the region. This situation would not be bad if it were not because 2 in 10 people were not literate in some countries in 2014. When evaluating the individual situation of the countries, Nicaragua's performance stands out in the context of generalized improvement, with the exception of Chile. Despite this, Figure 3 clearly states the existence of at least four groups of countries. One of advanced achievements comprised Argentina, Uruguay and Panama,

which achieve levels of at least 98% of the coverage. Another intermediate achievement was made by Bolivia, Paraguay, Mexico, Chile, among others, which reach a range between 96% and 98%. The third group of major changes: Nicaragua, Brazil, among others, achieve substantial improvements in their literate populations and finally, Guatemala, as a country that has improved this condition but still requires substantial efforts to reach the regional average.
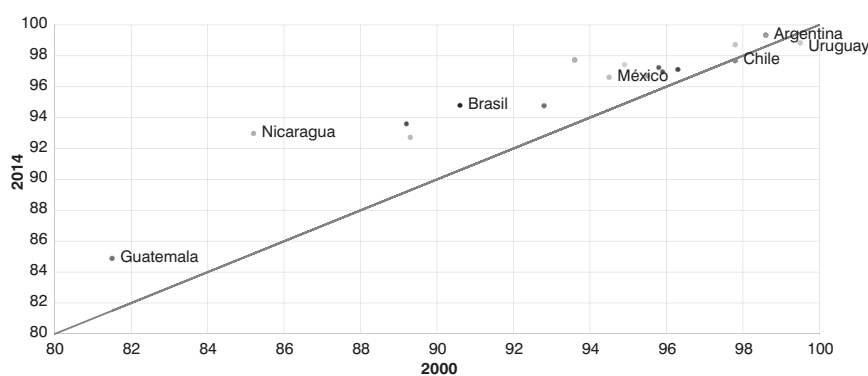

Fig. 3. Advances in literacy in Latin America, 2000–2014.

	Initial situation		Changes		Socioeconomic baseline	
	Poverty	**Dist. Y**	**Poverty**	**Dist. Y**	**Poverty**	**Dist. Y**
Literacy	–0,500	–0,094	0,464	–0,020	0,523	–0,001
Education Years	–0,187	0,034	0,048	0,150	0,059	0,025
Primaria NER	–0,523	–0,090	0,558	0,014	0,465	0,099
Secundary NER	–0,373	–0,069	0,279	0,200	0,212	–0,115
Tertiary NER	–0,464	–0,118	–0,455	0,336	0,270	–0,222

NER: net enrollment rate. It is computed on the basis of theoretical attendance.

Tab. 5. Relation of the educational dimensions with poverty and distribution in Latin America. Source: prepared on the basis of SEDLAC (CEDLAS and World Bank).

In the previous section, we conclude that the effect of the CCT program is through conditionalities more than socioeconomic status. In Table 5, three exercises were performed: one, the first two columns, aims to assess what is the relationship between the initial situation in both dimensions (educational and socioeconomic); the following discusses the relationship between percentage changes in both; and finally, the last considers the change in educational outcomes relative to baseline. From them, we can infer that:

- as regards lower levels of poverty and inequality, better outcomes are achieved, although the correlation seems to be more intense with poverty;
- changes in poverty are associated with changes in the same direction in the educational outcome, whereas with relation to the distribution, though they are reverse, they do not seem to be substantial;
- countries with higher poverty levels at the beginning of the period have improved most in this dimension, the last two columns.

In Figure 4, we expose the remarkable evolution of education years in the region: bringing the regional average of 7 (2000) to 8.2 (2014). In this case, the evolution of Paraguay is highlighted and also the convergence in achievements in this educational dimension (although less than in literacy). In this figure, we can see the existence of at least three groups of countries. The first group of advanced achievement: Panama, Paraguay, Bolivia, Chile, Ecuador and Argentina. The second group of major changes: Paraguay, Brazil, Nicaragua and Honduras, among others, which achieve substantial improvements. Finally, we can see countries that, despite having achieved big changes (even they are in group 2 since they have seen major relative increases), still do not manage to be near the levels of the rest of Latin America: Guatemala, Brazil and Honduras, among others.
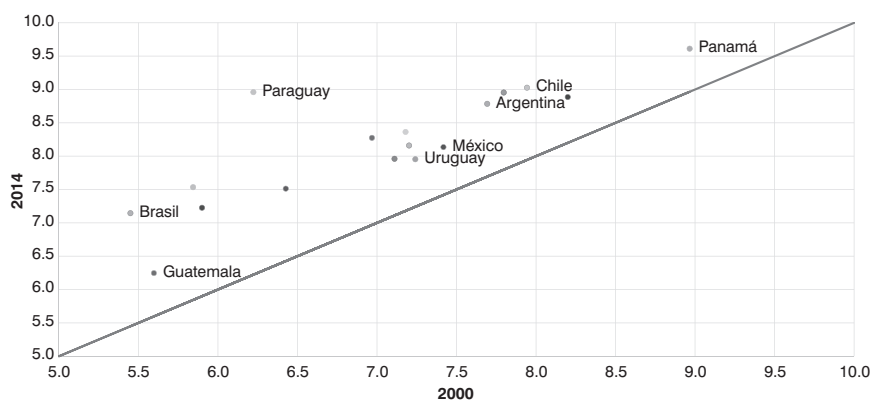

Fig. 4. Advances in education years in Latin America, 2000–2014.

From the previous analysis, we can conclude on an improvement in educational achievement throughout the region with special emphasis on the least developed countries. In this context, it is interesting to know at which level of the education system these improvements have been produced.

At the *primary level*, Figure 5, values are very close to 100% in the majority of Latin America, with Uruguay as the peak value (99.6%). Except

Argentina, which presented a decline of 0.2, and Panama, which remained stable, all other countries have raised their performance. The evolution of El Salvador and Guatemala with a relative improvement of 11%, by 9.4 and 9.1 percentage points respectively, is highlighted. In the case of Brazil, good performance stands out, with values near Uruguay, the peak of the region.

Regarding the *secondary level*, we can see, Figure 6, a marked improvement in all countries of the region. Taking into account this last fact, and
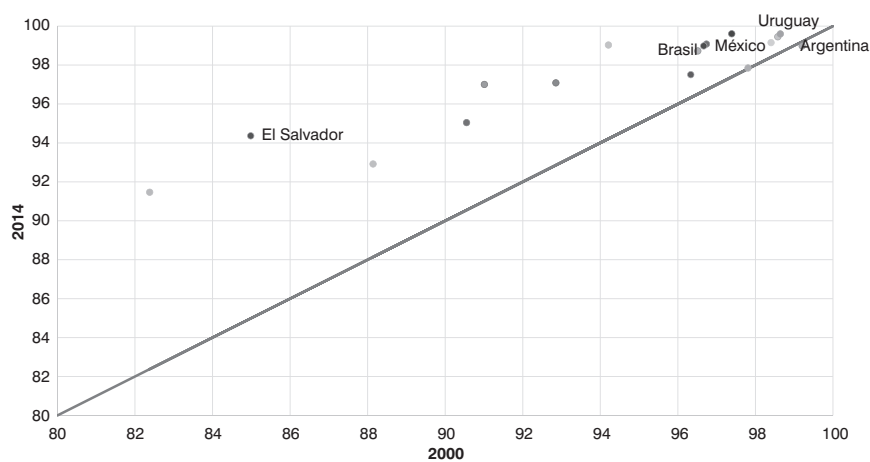

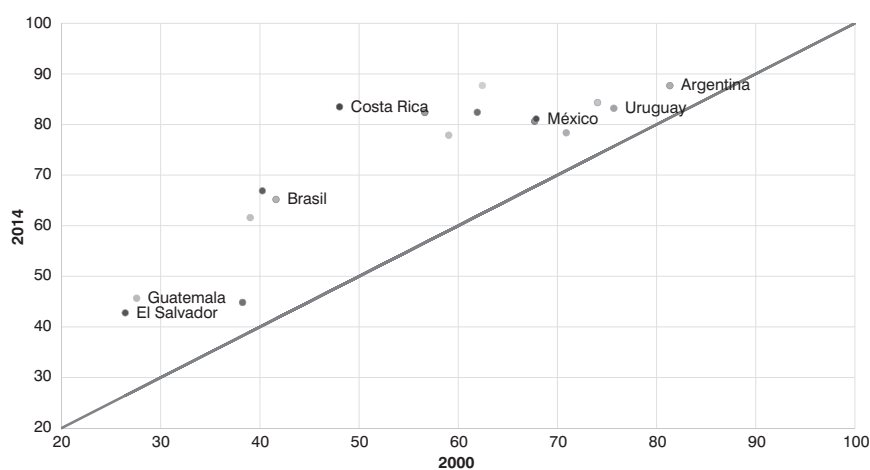*Fig. 5. Advances in primary schooling in Latin America, 2000–2014.*

Fig. 6. Advances in secondary schooling in Latin America, 2000–2014.

considering that the greatest achievements happened in countries with lower starting points, which is reflected by a high and negative absolute value in the correlation coefficient shown in Table 4, it can be considered that convergence of the achievements of secondary schooling exists. Chile achieve high coverage levels, exceeding approximately 84%. Another group of intermediate achievements: Uruguay and Costa Rica, among othDespite this, Figure 6 clearly exhibits the existence of at least three groups of countries. A group of advanced achievements: Argentina, Peru and ers, exceed 80% and are very close to the first ones. Finally, a group of countries that, despite having improved their performance (even at very high relative values), are well below the regional average, like El Salvador, Honduras and Guatemala, among others. Brazil had a low value in 2000, 41.6%, but its performance was really good, reaching 65.2% of secondary schooling for 2014, a level closer to the regional average.

Regarding the *tertiary level*, we can see in Figure 7 that the coverage is below 40% and, except Guatemala, all countries in the region have experienced an increase in the levels of tertiary education. We can find at least four groups of countries: the first one, of advanced achievement: Chile, Peru and Bolivia with the coverage of almost 40%. Another group of intermediate achievements including Mexico with the rate of 25% and Argentina with high initial performance but with a slightly significant change of around 30%. Finally, a group of countries that are still far below the regional average of 25%, including Guatemala, Honduras, Ecuador and El Salvador. In tertiary education, Brazil has values below the regional average in both years, 2000 and 2014, with 10.9 % and 19.2 %, respectively.
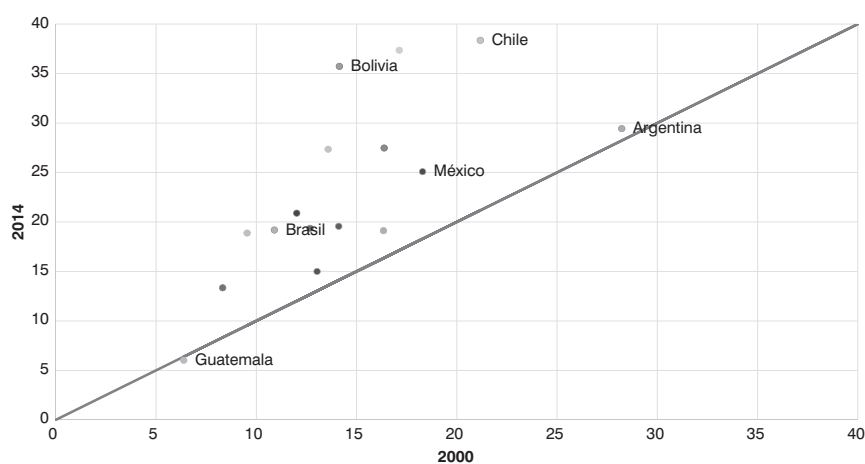

Fig. 7. Advances in tertiary education in Latin America, 2000–2014.

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	Iliteracy		Education years			Primary NER		Secundary NER		Tertiary NER	
	RQ	**Q1 increased more than the average**	**RQ**	**Q1 increased more than the average**	**Gini**	**RQ**	**Q1 increased more than the average**	**RQ**	**Q1 increased more than the average**	**RQ**	**Q1 increased more than the average**
Argentina	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bolivia	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Brazil	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Chile	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Colombia	DO NOT	DO NOT	DO NOT	DO NOT	YES	YES	YES	YES	YES	YES	YES
Costa Rica	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Dominican Rep.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Ecuador	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
El Salvador	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	DO NOT
Guatemala	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Honduras	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Mexico	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Nicaragua	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Panama	DO NOT	DO NOT	DO NOT	DO NOT	YES	DO NOT	DO NOT	YES	YES	YES	YES
Paraguay	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Peru	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Uruguay	DO NOT	DO NOT	DO NOT	DO NOT	YES	YES	YES	YES	YES	YES	YES

NER: Net Enrollment Rate. It is computed on the basis of theoretical assistance.

Tab. 6. Changes in the distribution of educational outcomes in Latin America, 2000–2014. Source: SEDLAC (CEDLAS and World Bank).

4. Education and Income

Given the fact that countries with lower socioeconomic levels are those that have better educational achievements in the period under study, it is interesting to consider how these achievements are distributed among them. That is, what is the distribution by income quintiles. Table 6 presents a synthetic analysis of the distributive results of changes in educational outcomes evaluating the change in the ratio of extreme quintiles (Q1/Q5) and if the coverage of Q1 increases more than the population average.

Regarding literacy, only in three countries (Colombia, Panama and Uruguay) the distributional indicators do not change favorably. While the overall evolution is a smooth convergence of low-income quintiles towards higher in some countries like Chile, Ecuador or Uruguay, there is some movement towards a general decline, even as seen in Table 3.

In relation to education years, as in the previous case, those three countries are the only ones that have no improvements in the equity of educational outcomes, as stressed by the Gini index on this variable that improves in all countries in a general context of increasing education years.

Finally, schooling at all three levels shows substantial improvements in the poorest groups in all countries. Only at the primary level in Panama and in the specific situation in El Salvador, where there is a general trend towards improvement in the distribution, that seems distributed among all groups in Q5.

Table 7 presents the contribution of public education to assistance by level. It is possible to conclude that in public education, in all the cases, major access is seen at the primary and secondary levels rather than in tertiary education, and the percentages fall with quintiles. At the primary level, throughout the region, the simple average contribution of the public sector is 83.7%. This value hides the fact that the poorest people depend centrally on the public sector. For Q1, the value is 96.4%, while for Q5 (higher income) it is 48.6%, reflecting that more often they adopt the private provision alternative.

Regarding the secondary level, the qualitative results and levels are not very different except for a slight tendency to lower public sector participation in the total and among lower-income individuals in contraposition to a slight increase among higher-income individuals.

Finally, it is in tertiary education that the region presents the greatest challenges of overall coverage because the public sector has less presence, 51.8%. It should be stressed that although it seems that the distribution is more homogeneous, indeed it reflects the large number of low-income individuals who are unable to access this level, 68.1%, compared to greater continuity among those in a better socioeconomic condition, 42.7%. In this case, the behavior of Brazil is similar to the rest of the Latin American countries.

		Population	Q1	Q5	RQ	Q1/ Pop	Q5/ Pop
Argentina	PNER	70,0	90,3	29,7	3,0	129,0	42,5
	SNER	76,0	89,6	39,7	2,3	117,9	52,2
	TNER	78,5	86,8	70,1	1,2	110,5	89,2
Bolivia	PNER	90,9	98,3	74,0	1,3	108,2	81,4
	SNER	90,0	97,4	71,4	1,4	108,3	79,4
	TNER	77,7	85,2	67,7	1,3	109,7	87,1
Brazil	PNER	82,6	95,0	38,1	2,5	115,0	46,2
	SNER	87,8	97,4	55,0	1,8	110,9	62,7
	TNER	25,1	41,3	23,0	1,8	164,4	91,8
Chile	PNER	92,0	98,8	62,6	1,6	107,4	68,1
	SNER	93,5	98,9	70,3	1,4	105,8	75,2
	TNER	32,5	39,6	33,1	1,2	122,0	102,0
Colombia	PNER	81,0	96,9	36,1	2,7	119,6	44,6
	SNER	84,2	96,3	49,8	1,9	114,4	59,1
	TNER	51,7	63,4	36,3	1,7	122,7	70,2
Costa Rica	PNER	88,9	98,1	48,6	2,0	110,4	54,7
	SNER	91,1	98,5	61,7	1,6	108,1	67,7
	TNER	49,7	75,1	38,7	1,9	151,1	77,9
Dominican Rep.	PNER	77,8	91,1	48,9	1,9	117,1	62,8
	SNER	79,8	90,9	55,0	1,7	114,0	69,0
	TNER	42,6	65,6	30,6	2,1	154,0	71,9
Ecuador	PNER	80,7	91,5	44,1	2,1	113,3	54,7
	SNER	78,2	89,2	47,1	1,9	114,0	60,3
	TNER	64,2	84,2	45,6	1,8	131,1	71,1

		Population	Q1	Q5	RQ	Q1/ Pop	Q5/ Pop
El Salvador	PNER	74,7	97,6	48,7	2,0	130,7	65,1
	SNER	78,9	95,5	48,7	2,0	121,1	61,8
	TNER	32,9	62,0	25,6	2,4	188,5	77,9
Guatemala	PNER	91,2	98,9	60,7	1,6	108,5	66,5
	SNER	57,7	79,7	34,4	2,3	138,2	59,7
	TNER	41,6	85,6	36,6	2,3	205,8	88,1
Honduras	PNER	92,4	97,9	68,8	1,4	118,6	83,3
	SNER	76,8	89,0	56,5	1,6	115,8	73,6
	TNER	65,7	76,5	60,6	1,3	116,5	92,2
Mexico	PNER	90,8	98,5	59,0	1,7	108,5	65,0
	SNER	89,1	96,2	66,5	1,4	108,0	74,6
	TNER	69,6	76,4	57,1	1,3	109,8	82,1
Nicaragua	PNER	86,9	96,8	61,9	1,6	111,4	71,3
	SNER	82,9	92,4	63,7	1,5	111,4	76,8
	TNER	39,6	61,7	33,5	1,8	155,7	84,6
Paraguay	PNER	79,5	96,6	35,1	2,7	121,5	44,2
	SNER	77,7	93,6	37,0	2,5	120,4	47,6
	TNER	29,7	22,3	26,8	0,8	75,1	90,2
Peru	PNER	79,0	98,0	36,8	2,7	124,0	46,6
	SNER	79,7	96,6	36,0	2,7	121,2	45,2
	TNER	43,8	70,5	25,7	2,7	161,0	58,7
Uruguay	PNER	80,2	97,7	25,0	3,9	121,8	31,2
	SNER	84,7	98,9	38,8	2,5	116,8	45,8
	TNER	84,6	93,9	72,3	1,3	111,0	85,5

Notes: For the case of Chile it takes 2013 and for the case of Honduras it takes 2001. NER: Net Enrollment Rate. It is computed on the basis of theoretical assistance. PNER: Primary NER; SNER: Secondary NER and TNER: Tertiary NER. RQ: Ratio of extreme quintiles. It is defined as Q5/Q1.

Tab. 7. Public sector contribution to assistance in Latin America, 2014, by levels. Source: SEDLAC (CEDLAS and World Bank).

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5. Conclusions

In this paper, we try to evaluate the effects of Bolsa Familia Program on indicators of educational achievements in Brazil. For this, we first review previous studies about its impact and conclude that the program affects positively the behavior of its target population. In particular, the program improves the results for girls, rural people and children over 16 years old.

But as we can show using aggregate indicators, these effects are not translated to the next level, tertiary/university. So, this paper contributes to the previous literature, Rocha (2011), about the call to improve or change public policy to increase outcomes at this level. The point is relevant because at this education level, the opportunity cost must probably increase, so income transfer may prove to be relevant.

In this context, the question is if we can reform this program in a way that reinforces the efforts by PRONATEC (Ibarrarán et al., 2017) in such way that increases the stimulus for a better insertion in the labor market. But also to encourage such individuals to pursue others non-technical careers (Ibarrarán et al., 2017).

Finally, further research must be done about whether the achievements of the program are the maximum possible ones given the efforts and conditions of the community.

Endnotes

[1] This paper is part of the activities in the research projects 11/E137 "Distributional Changes in Latin America. Evidence and Determinants" and 11/E158 "Challenges for the Management of the Institutions of Higher Education of Economics in Argentina" accredited by the National University of La Plata.

[2] http://hdr.undp.org/es/content/el-ndice-de-desarrollo-humano-idh.

[3] http://www.unesco.org/new/es/our-priorities/education-for-all/.

[4] http://www.un.org/es/millenniumgoals/.

[5] Sustainable Development Goals are an upgrade for the period 2015–2030, http://www.un.org/sustainabledevelopment/sustainable-development-goals/.

[6] Socio-Economic Database for Latin America and the Caribbean (CEDLAS and World Bank).

[7] Glewwe and Kassouf (2012) and Rocha (2011) show a full description of how this program was built and also its relation with the rise of PT as a national party.

[8] Rocha (2011) analyzes this process in detail.

[9] Conditionalities include: health visits for pregnant women and all children aged 0–5 years and all children aged 6–17 attending school.

[10] For details see Table 1 and Table 2 of Soares et al. (2010).

[11] See http://agenciabrasil.ebc.com.br/geral/noticia/2016-11/governo-cancela-469-mil-e-bloqueia-667-mil-beneficios-do-bolsa-familia.

[12] See http://geesc.cedeplar.ufmg.br/en/pesquisas/avaliacao-do-impacto-do-programa-bolsa-familia/.

[13] At 1%.

[14] At 5%.

[15] At 10%.

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