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Inequality and Mobility: Gatsby in the Americas*

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Abstract

We present evidence that the recent fall Latin America inequality has been associated with higher social mobility across countries and over time. This correlation refers to what Alan Krueger and his CEA staff labeled the Great Gatsby Curve, but this is one of the first papers to test the Gatsby correlation over time. Our search for Gatsby curve correlates starts with classic mobility models where high Mincer coefficients and skilled wage-premia enhance wealthier parents' ability to impart advantage to their children. We also refer to Gary Solon and others' updates of their model to emphasize the potential of social policy to assist low-income children. Using Andersen's education mobility measure for teens over a panel of sixteen Latin American economies we test the robustness and correlates of mobility and inequality. We find higher social expenditure, access to credit and particularly conditional cash transfers increase mobility as do falling skill-premia and lower returns to female education. More important, Latin American social policy designed to reduce poverty and inequality in the short run also increased education enrollments and therefore social mobility over the longer term. Hence we find falling inequality is associated with rising social mobility over twenty plus years and across sixteen Latin American countries, as the Great Gatsby curve suggests.

Keywords

Intergenerational Mobility, Education, Inequality, Conditional Cash Transfers, Skill Premium

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1. Introduction

This paper confirms a significant negative correlation between inequality and social mobility in Latin America across countries and over time. Plotting Miles Corak's mobility estimates against inequality measures, Alan Krueger [1] and his CEA staff label this correlation the Great Gatsby Curve (GGC). Indeed, Latin American countries with lower inequality tend to have higher intergenerational mobility as measured by the falling persistence between parent and child educational attainment in this case (see **Figure 1**). Perhaps more important, in LatAm countries where income inequality declined social mobility generally rose as shown in **Figure 2**. This second finding is important because while Corak, 2013 and others find the GGC correlation holds across OECD countries, and the evidence over time is decidedly mixed. In particular, Chetty *et al.*, [2] and Hilger [3] use two different measures of social mobility and both find no trend in US intergenerational mobility from 1980 to 2010 despite a sharp increase in inequality. As Torche [4] argues in her recent comprehensive survey of social mobility in Latin America, these findings create a "conundrum and a challenge" for the Gatsby Curve hypothesis. Even before Harvard's Equality of Opportunity Project findings, Jantti and Jenkins [5] questioned the cross country evidence for the GGC as well.

Hilger [3] however does find the Gatsby correlation between 1940 and 1980, a period of rising mobility and falling inequality driven in part by shifts in social and educational policy similar to those observed in post 2000 Latin America. Hilger's findings are important for this study because using US Census data he finds intergenerational education mobility (IEM) measures closely track more conventional intergenerational income mobility (IM) measures used by Chetty, Corak and others. IEM measures have the great advantage of utilizing standard household survey data to compare children's education with that of their parents. We use an IEM index developed Lykke Andersen [16] as computed by SEDLAC using over 200 Latin American household surveys (see Appendix A and her classic paper for more details).

If there is a robust relationship between inequality and mobility, then it should hold over time as well as across countries. A similar controversy arose in the early Phillips curve debate [6]. Differencing is also abasic specification test for levels regressions [7]. Conconi *et al.* [8] looked at changes in inequality and mobility as well and find the GGC pattern. This paper updates and generalizes their findings using panel estimates and conditioning on basic credit, trade and social policy variables.

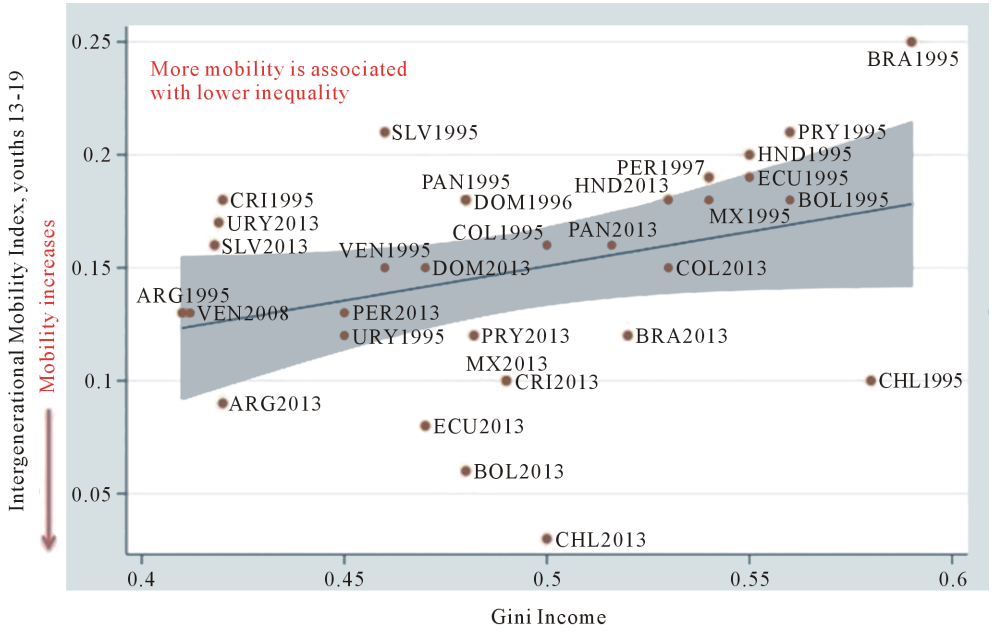
Our results suggest conditional cash transfers (CCT) programs and other social spending raised the education levels of the bottom 40%, reducing poverty and inequality even as they raised mobility as reflected by a greater dispersion in parents vs. children's education. These findings build on those of Conconi *et al.* [8] and complement those of Daude and Robano [9] who document similar patterns of mobility across Latin America using 2008 Latinobarómetro's surveys. Like Conconi *et al.*, [8] this paper relies SEDLAC (Socio-Economic Database for Latin America and the Caribbean) household survey data standardized by CEDLAS with support from the World Bank[1].

The next section of the paper discusses the different measures of intergenerational social mobility comparing the income based measures used in OECD countries with the education-household survey based estimates used here [10]. Section 3 reviews the excellent Latin American social mobility literature and recent reviews of the same. Section 4 presents the basic results, including the Latin American Gatsby curve and the curve expressed in changes over time (**Figure 1** and **Figure 2**). Finally, we discuss limitations of this analysis and skeptics legitimate questions regarding the quality vs. the quantity of education achievement in Latin American. These are certainly legitimate concerns as the region's PISA scores are among the lowest in the world. However, this is why the simultaneous fall in education and income inequality implied by Gatsby correlation is somewhat reassuring as it suggests education matters. And to extent that education is driving the fall in wage inequality, the fall in LatAm inequality should persist even after the commodity price boom ends (on this important question see Ali Brahim 2013 [11] and Székelyand Mendoza, 2015 [12]).

2. Intergenerational Mobility and Social Policy

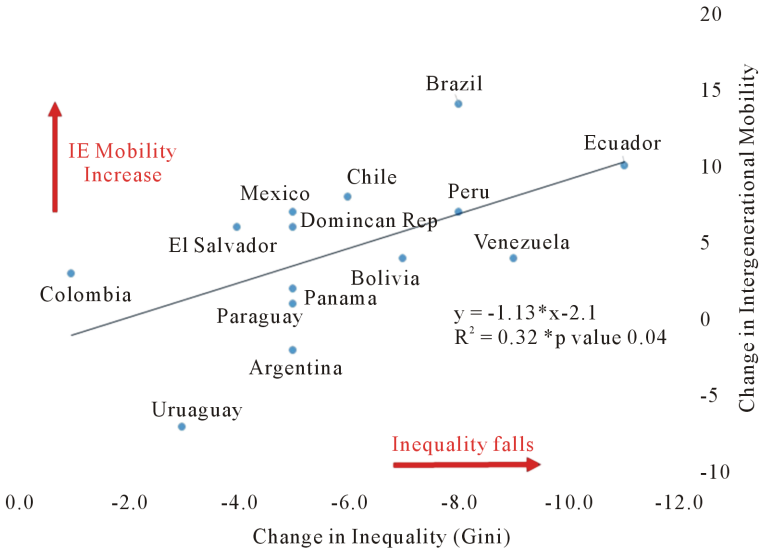
Most studies of income mobility in the OECD countries compare the income of children with that of their parents. Low social mobility manifests itself as a persistence of income rankings across generations, especially a

[1]Accessed in March 2015 at http://sedlac.econo.unlp.edu.ar/eng/ in concert with CEDLAS, "we advise that users reference the date that the database was consulted as statistics may change." The complete database used for this paper is available in this spreadsheet http://www.gdsnet.org/mobilitydata.xlsx.



Notes: Educational Mobility Index for youths (13 to 19). Source: SEDLAC (CEDLAS and The World Bank). For Peru and Dom Rep the first observed year is 1997 and 1996 respectively, the last observation for Argentina is 2008.

Figure 1. Great Gatsby Curve for Latin America 1995-2013.



Notes: Honduras and Costra Rica not included but they are included in **Table 2** panel estimates. Data source SEDLAC March 2015 update, see Appendix A.

Figure 2. Changes Americas Great Gatsby Curve circa 1995 to 2010.

lack of exit from the bottom quartile. Low incomes persist across generations in part because wealthy parents invest more in their children thereby passing advantages on to their children. Evidently the testing/tracking systems that used by many Scandinavian countries reduce the influence of parent's assets on career outcomes. In a series of influential papers Becker and Tomes focus on human capital as the main transmitter of advantage across generations. Imperfect credit markets make it difficult low-income parents to invest in their children's education so inequality and lack of mobility persist. Aiyagari *et al.* [13] suggest the problem goes beyond market failure because parents tend to invest in all their children not just those with the best test scores, why Gary Solon's [14] retooling of Becker and Tomes [38] highlights the role of progressive education spending, a factor

we find is key in Latin America (but see Becker *et al.* [15] who argue that progressive government education programs may actually reduce mobility, a proposition we test indirectly in a longer version of this paper)[2].

As Andersen [16] points out another advantage of using educational attainment across generations is that it manifests itself sooner. In rural Latin America in particular, children in their teens are already likely to have more education than their parents. Since many teens live with their parents, intra-household data can be used to predict intergenerational mobility. To track children's income over time one needs longitudinal income data or linked income tax returns as Chetty *et al.*, [2] use. Hilger [10] uses U.S. census data to compare both intergenerational income (IM) and intergenerational education measures. He finds IM and IEM measures track each other closely. He also compares children in their teens and twenties living with their parents (or not) and finding IEM estimates similar across age groups and home/not living at home groups are comparable.

If tertiary education mattered most the older twenties as opposed to the teen cohort would be our focus. However, greater access to secondary and completion of primary is dominant phenomenon in Latin America during this period so focusing on teen education gaps (as we do) makes sense. Either way, Hilger [10] finds IEM measures both age groups are similar[3]. Comparing agecohort education gaps in Brazil and Chile (**Figure 3** below, and Figure 4 in the online version of this paper) suggest this is also the case with the SEDLAC teen mobility measures, though not all LatAm countries display this degree of correlation. That our results do not hold for the older cohort IEM measure, make it very likely secondary not tertiary education is driving our results). However, focusing on the achievements of younger children also makes sense in light of recent research reviewed suggesting achievement gaps are often evident even among children 7 - 14 years old (see Currie & Rossin-Slater [17] and Duncan and Murnane [18]). This may also explain why CCT programs that target primary school age children may also affect longer term education achievement and hence IEM.

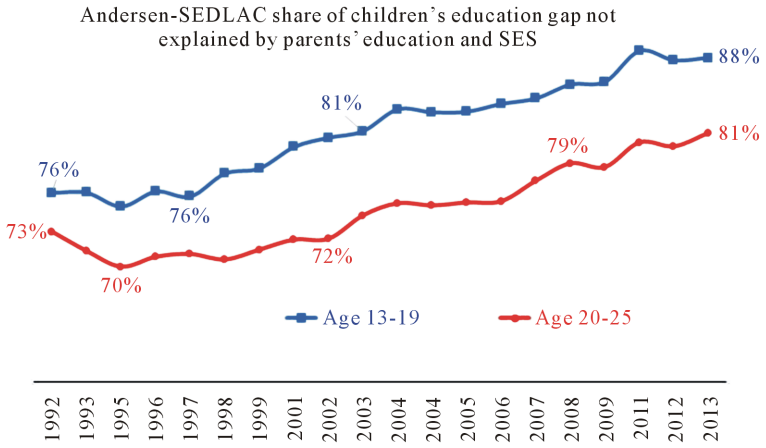
We find Great Gatsby correlation is associated with a shift in Latin American social policy. This shift toward more inclusive social policies has some parallels with a similar shift in the U.S. after WWII. Stiglitz [19] and Hilger [10] argue that the U.S. concerted effort to make education access more inclusive with via subsidies changes in admissions policies triggered by the GI Bill and the Civil Rights legislation. During this period Latin America was dominated by military regimes that did not place a high priority on opportunity and redistribution. However, with a return to democracy in the 1980s and in response to populist movements in the late 1990s Latin America did undertake more inclusive social policies, including some directed at overcoming racial and gender barriers to education (Ali Brahim *et al.* [20] and Birdsall *et al.* [21]). Perhaps the key signal of this shift in social policy was the spread of conditional cash transfer programs that reward parents for school attendance and visits to health clinics. Beginningin Mexico and Central America these programs expanded rapidly in Brazil after 2000. CCTs and related transfer programs such as Argentina's child allowance spread further after 2005 in part as aresponse to the rise of left populist regimes that started in 1998[4].

Brazil experienced one of the fastest increases in IEM starting in the late 1990s (**Figure 2** and **Figure 3**). Though about one third of Latin Americans live in Brazil, we treat it as single observation. Higher mobility in Brazil has racial dimension as well. As Telles [23] emphasizes, black activists were mobilized by a series of UN conferences during which Brazilian diplomats repeatedly claimed there was no racism in Brazil. Whatever it origins, deliberate moves toward more racial and gender inequality seem to have reduced poverty in enhanced mobility in Brazil. Our proxy for this shift is social policy is Bolsa Familia, one of a number of conditional cash transfer programs starting in the mid-1990s in Mexico and spreading to Brazil and the Southern Cone after 2000. De Janvry *et al.* [24] find these programs had direct effects on poverty and school attendance especially during crises, but they also signaled a shift in social priorities which Aiyagari *et al.* [13] suggest is important for guiding parent's investment in children even if credit markets were complete (which they are not in Latin America).

[2]In a 2015 working paper presented by his coauthors at a conference honoring Gary Becker posthumously, Becker *et al.* 2015 [15] argue that "*government interventions intended to ameliorate inequality may in fact lower intergenerational mobility, even when they do not directly favor the rich. Government programs that are complementary to parental inputs crowd-in* (*rather than crowd-out*) *out investments by parents. While such programs are generally more cost-effective than those that substitute for parental inputs, they exacerbate existing disparities in investments in children's human capital. As a consequence, even well-intentioned government programs can have the unintended consequence of lowering mobility across generations.*"

[3]Using US census data Hilger [10], finds "education is virtually the only determinant of income, so that the IEM tracks IM very closely" see Table 12. "One useful class of IM statistics I refer to as 'intergenerational educational mobility' (IEM) relies on estimation of the CEF of children's final schooling with respect to parental characteristics. I show that IEM statistics relate closely to IM statistics in a simple economic model, and I will often refer to them directly as IM statistics."

[4]Cecchini and Madariaga, 2011 [22] document the years and coverage for CCT programs. Of the countries in our sample, ironically only Venezuela does not have a CCT type cash transfer program.



Source: SEDLAC (CEDLAS and World Bank) Education Statistics Mobility_LAC.xls

Figure 3. Brazil intergenerational education mobility (IEM).

3. Inequality and Social Mobility in Latin America

There is a rich and active literature on social mobility in Latin American starting with Behrman *et al.* [25] as ably reviewed by Torch [4]. Lykky Andersen [16] develops the IEM measure SEDLAC now computes using hundreds of household surveys. She also provides a cross country scatter plot linking inequality to mobility (there is no pattern). Focusing on intergenerational education correlations across many countries, Hertz *et al.* [30] find seven Latin nations "had the highest parent-child schooling correlations" of the 42 in their survey[5].

Conconi *et al.* [8] cover much of the same ground as this paper, including computing a changes version of what we now know as the Gatsby curve using the same SEDLAC data IEM measures used here (they stop short of panel regressions however). Their work and similar estimates by others in this is ably reviewed in series of papers by Christain Daude [29] starting with his 2011 "Ascendance by Descendants" paper on potential drivers of increased mobility in Latin America. In a series of OECD publications, he and his colleagues acknowledge the education equalizingspreade of primary and secondary education in Latin America, but express reservations about school quality.

A common theme mobility and inequality literature is that the same set variables should be driving inequality and mobility. We refer readers to Daudeand Robano [9] and Ali Brahim *et al.* [20] which include summaries of Solon [14] benchmark income mobility model where intergenerational income correlations are driven by the skill premium and the return on education along with public and private investment in education The OECD's Latin American Outlook 2011 combines Hertz's [30] data within inequality data from SEDLAC and social mobility measures from Latinobarómetro (2008) argueing that "societies in Latin America that are less mobile tend also to exhibit high levels of inequality" (what we now call the Gatsby correlation). While acknowledging that correlation does not imply causality Duade [29] argues "the same factors that affect intergenerational mobility (private returns to education, progressivity of public investment in education, and other transmissible factors such as abilities, race and socialnetworks) also determine the cross-sectional distribution of income in the long run."

The factors reducing inequality in Latin America during this period are well documented, starting with Lustig and Lopez-Calva [31]. Lustig [32] for example argues about 30% - 40% of the decline Latin American inequality during this period can be attributed to social spending on transfers, 50% more or less to changes in hourly wages with the remainder explained by demographics and labor for participation rates for adults. This paper shows that a similar set of factors contributed to the increasing mobility, we discuss these results in the next section[6]. An exception is demographic shifts in labor force participation and dependency ratios, we tested these but found they were not significant in our sample or more likely their impacts were picked by the inequality measures included on the RHS of all our estimates, including the Gini coefficient, the Palma index and its main component: the share of the bottom 40%.

[5]On low mobility and high inequality see Ferreira *et al.*, [26], Daude [27] and Alvaredo and Gasparini [28].
[6]See also Birdsall *et al.*, [21] and Lustig *et al.* [33].

Still the common factors driving inequality and mobility, particularly education, make it difficult to determine causality. Our main objective is just to explore the two-way correlation of mobility and inequality, across countries and over time. We argue Latin America's shift to more progressive education spending and conditional cash transfer programs in the 1990s enhanced mobility and reduced inequality[7]. Focusing on asset or education based mobility makes sense because most Latin Americans still get by on less than $10/day PPP. As Becker and Tomes [38] emphasize their children's education is the first investment low income families are likely to make.

The driving force behind the IEM based Gatsby curve is the notion that access to education can reproduce or attenuate labor market inequality (as opposed to Piketty style wealth inequality via inheritance in mature capitalist economies). This [10] argues is why IM and IEM are highly correlated. His findings are support the argument education is the primary mechanism parents use to impart advantage to their children (though other parent interventions matter as well, as reviewed by Duncan and Murname [18]).

Poverty and inequality can persist across generations because poor families who cannot afford to send their children to school may have them work instead. To break this cycle of poverty many Latin American introduced cash transfer programs conditional on school attendance. Even less conditional programs including pensions can help children spend more time in school. These programs appear to have been effective, especially during crises [24]. In Brazil for example employment of children age 7 - 14 fell from 18% to 7% from 1992 to 2008, while school attendance rose from 85% to 97% for the same age group [34]. We find the coverage and innovation of these CCT programs is correlated with higher intergenerational mobility, as measured by school attendance. If family's can borrow to keep children in school, access to credit can also increase mobility [9].

4. Estimation Results

This section presents various estimates of an IEM Great Gatsby Curve and its correlates Latin America. **Table 1** Equation 1.1 and 1.2 estimate the bare bones GGC using fixed and random effects (FE and RE). The more efficient random effects regression 1.2 shows both within (over time) and between (cross country) effects of inequality on mobility (and RE passes the Hausmann test). Equation 1.3 uses an alternate inequality measure, the Palma index, a close cousin of the Gini, measured as the ratio of the share of the top 20% to the bottom 40%. Adding this contemporaneous inequality measure to Equation 1.3 raises the sample to 113 observations. What matters in this case is share of bottom 40% or "shared prosperity" which drives the increase in social mobility. Equation 1.5 shows access to private credit increases mobility, but only up to a 30% - 40% of GDP (Private credit in Brazil and Chile is over 50% of GDP so private credit plays a modest role, though it may help in Mexico can Colombia)[8].

Most important, the estimates reported as Equation 1.6 and 1.7 reveal a plausible interaction between social spending and the commodities boom that benefitted many Latin American countries during 2002 to 2012. The random effectseq. 1.6 estimates suggest improved terms of trade increase IEM, but the results reported in 1.7 suggest this was largely due to the increased social spending the boom financed: when we include both social spending the net barter terms of trade the latter variable becomes insignificant[9].

The Latin American Gatsby Curves reported in **Figure 1** and **Figure 2** and put the results of Conconi *et al.*, [8] Figure 4 on solid statistical footing. Moreover, **Figure 1** maps nicely into the **Table 1** IEM levels regressions. The random effects estimates in particular show both between and within variation, the GGC hold across countries and over time, albeit for a relatively small N and T. **Table 2** validates the first differences plotted **Figure 2** changes in mobility are regressed directly on changes in inequality, the relationship Conconi *et al.* [8] also focus. These over time results answer Felicia Torche's [4] "conundrum and challenge" discussed in the earlier, that is the is a disconcerting lack of the evidence regarding the Gatsby correlation over time in OECD countries [3]. Ali Brahim *et al.* [20] discuss several reasons the GG correlation appears in Latin America but not the United States social policy. Public spending and some good luck with commodity prices contributed "shared prosperity" in Latin America (but not in the US where the share of the bottom 40% is falling).

[7]See Andersen, 2001 [16] and Ali Brahim *et al.* 2015 [20].

[8]Galor and Zeira [35] emphasize the role of credit markets in allowing asset constrained families to invest in education. Equation 1.5 suggests access to private credit enhances mobility up to about 30% of GDP, thought Equation 1.6 suggests domestic credit to the private sector is correlated with the expansion of social programs designed to boost school attendance.

[9]Conditional cash transfers increase enrollment for low-income families, while falling skill-premia reduce the advantage of the better educated (Lopez Calva and Lustig [31]). Hassler *et al.* [36] find that with plausible production functions reducing "educational barrier to children of unskilled" reduces inequality and increases social mobility.

Table 1. Gatsby curve panel estimates, Sixteen Latin American countries survey values sampled over 3-year intervals 1990 to 2012[4].

Dependent Variable: (*robust standard errors*)	Intergenerational Education Mobility children age 13-19						
	1.1	1.2	1.3	1.4	1.5	1.6	1.7
log Gini Coefficient (t-1)	**0.28****	**0.24****		**0.13****	**−0.18***	**−0.21***	**0.17****
	(0.08)	(0.06)		(0.07)	(0.07)	(0.04)	(0.06)
log Palma (top 20/bottom 40%)			**0.07****				
			(0.017)				
log Private Credit/GDP					**0.23****		
					(0.06)		
log Private Credit/GDP squared[2]					**0.03****		
					(0.01)		
CCT Program (0,1) or coverage[3]			**0.03****	**0.2****	**0.02***	**0.04****	**0.03****
			(0.006)	(0.05)	(0.01)	(0.00)	(0.006)
Net Barter Terms of Trade						**0.04****	**0.02**
						(0.01)	(0.01)
log Social Spending share of GDP				**0.03****			**0.03****
				(0.01)			(0.008)
Constant	**5.5****	**5.4****	**4.5****	**4.9****	**3.9****	**5.1****	**4.9****
** or * significant at 5% or 10%	(0.30)	(0.25)	(0.017)	(0.26)	(0.10)	(0.17)	(0.23)
Number of Observations	94	94	113	80	101	94	80
Adjusted R^2	0.70	0.13	0.36	0.30	0.70	0.42	0.37
Random/Fixed Effects Estimate[1]	FE	RE	RE	RE	FE	RE	RE
RE Cross section variance share		0.51	0.63	0.68		0.66	0.76
Probvaluue Hausmann rejects RE		0.05	0.31	0.77		0.22	0.89

[1]FE (fixed effect) estimates include both country and period fixed effects and robust errors; [2]In Equation 1.5 private credit up to 30% - 35% of GDP increases IEM mobility beyond that credit does not; [3]Equation 1.4 share of population covered by CCTs, other eqs. use 0,1 CCT dummy, see Appendix A. [4]Gini coefficient is lagged one period, see Appendix A and **Table A1**.

Although first difference estimates are less efficient than fixed effects (information differencing discards) they also serve as a specification test of corresponding **Table 1** and **Table 3** regressions [7]. Note that when focusing on changes in very different inequality and mobility measures, scale and units could be an issue[10]. Both the Gini and the Palma measures survive the differencing test intact (Equations 2.1 and 2.2). Equations 2.3 and 2.4 add several variables identified in Gary Solon's well known update of the classic Becker and Tomes [38] IM model. In fact, almost all of the variables impact Solon's beta (the correlation between parent and child incomes across generations) [14]. A fall in the skill premium increases mobility as it undermines the ability of parents to impart advantage to their parents. Here the control for inequality is the education Gini: education inequality has fallen rapidly in most Latin American countries, as one would expect if mobility increased. Social programs that influence school attendance for poor families also play a role, while the Palma income shares reappear in equation 2.4. An additional twist is the role of Palma and shared prosperity income shares in equation. Increases in the

[10]Log normal changes are used for first difference because exponential growth implies $y_t = y_0 e^{gt}$ so for annual growth rates $g_t = \log(y_t) - \log(y_{t-1})$ this helps make variables with very different units comparable Andersen's IEM index [16], Gini coefficients and the Palma index for example. Alternatively $\log(y_t/y_{t-1}) = \log(1 + g)$ equals g for small changes in the IEM and the Gini as plotted in **Figure 2** and Conconi *et al.* 2008 [8]. See also Appendix **Table A1** and Kakwani, 1997 [37].

Table 2. Gatsby curve difference on difference Panel for 16 LatAm countries, 1988-2013, sampled three year intervals.

Dependent Variable: (*robust standard errors*)	Intergenerational Mobility age 13 - 19			
	2.1	2.2	2.3	2.4
Income Gini (log change)	**−0.12****			
	(0.047)			
Palma index[1] (log change)		**0.05****		
		(0.021)		
Education Gini (log change)			**−0.20****	**−0.20****
			(0.056)	(0.060)
Skill Premium (log change)			**−0.05****	**−0.04****
			(0.02)	(0.02)
Log Mincer coef Women t-1				**−0.02****
				(0.007)
CCT Programs 0,1 dummy change			**0.021****	**0.024****
			(0.008)	(0.008)
Share of bottom 40% (log change)				**0.11****
				(0.041)
Share of middle 40% (log change)				**−0.31****
				(0.100)
Constant	**0.008****	**0.01****	**−0.002**	**0.016****
	(0.003)	(0.003)	(0.004)	(0.007)
Number of Observations	93	92	90	85
Adjusted R^2	0.03	0.05	0.22	0.31

[1]The Palma index is the share of the top 20% divided by the bottom 40% share.

share of the bottom 40% increase IEM as expected, but why do increases in the share of the middle 40% decrease social mobility? A little puzzling, but perhaps a reminder that mobility can be downward or upward. If as Luis Lopez Calva and colleagues suggest, moving into the $10/day middle class reduces downward mobility, this result makes senses: expanding the middle class reduces downward mobility while increasing the share of the bottom 40% increases upward mobility (see Birdsall *et al.*, [21] or Ferreira *et al.* [26] for more on LatAm's nascent middle class).

Finally, the dynamic panel estimates reported in **Table 3** exploit the relationship between exogenous terms of trade shocks[11] and social spending identified in the last two equations of **Table 1**, while also allowing for slower response of mobility to inequality changes over time. Since the coefficient on the lagged dependent variable is small (especially in in 3.6) the coefficients reported in the previous tables are more or less the whole story (long term and short elasticities are very similar).

Using the terms of trade as an exogenous instrument, we find similar results for the role of social spending and CCTs in increasing mobility over time. These dynamic panel estimates also allow us to perform the Arellano-Bond serial correlation test. Apart from Equation 3.1 does not appear to a problem with this data. Again, the Solon, 2004 [14] model variables remain significant, though only the female return to education matter (the role

[11]Both Ali Brahim and Mcleod, 2013 [11] and Székely and Mendoza (2015) [12] among others find terms of trade changes affected the skill premia in Latin American and hence wage inequality.

Table 3. Gatsby curve dynamic panel estimates[1] for 16 Latin American countries, 1988-2013, sampled three year intervals.

Dependent Variable: (Std errors in parentheses)	IEM Mobility children age 13 - 19					
	3.1	3.2	3.3	3.4	3.5	3.6
Log Gini Coefficient	**−0.42**		**0.13****			
	(0.03)		(0.03)			
Log Palma		**0.05****			**−0.05****	
		(0.02)			(0.018)	
Log Education Gini				**0.18****		**0.16****
				(0.01)		(0.03)
Log Female Mincer Coef (t-1)						**0.05****
						(0.02)
Log Skill Premium[2]						**0.02****
						(0.02)
CCT Program dummy (0,1)		**0.03****	**0.18****		**0.025****	
		(0.01)	(0.02)		(0.01)	
Log Social Spending/GDP (t-1)				**0.05****		
				(0.02)		
Lagged depended IEM (t-1)	**0.35****	**0.26****	**0.20****	**0.29****	**0.26****	**0.10**
	(0.05)	(0.12)	(0.67)	(0.11)	(0.11)	(1.10)
Number of Observations	67	70	68	64	70	61
Prob value of GMM J-Statistic	0.40	0.38	0.67	0.84	0.38	0.40
AB AR(1) test, Prob value[3]	0.06	0.32	0.50	0.21	0.32	0.61

[1]Dynamic panel AB n step, white period instrument weight, cross section difference instruments include social spending, CCT and net barter terms of trade, see Appendix A; [2]This is the the ratio wages earned by those with 13+ to those with <9 ys of education; as reported by CEDLAS-SEDLAC, see Appendix A; [3]Arellano-Bond serial correlation test, prob value to reject AR(1) serial correlation.

of gender is discussed further in a related paper presented by Ali Brahim *et al.* at Stanford April 24th 2015 [20]). Note that N and T are small in this panel, and the differencing required for dynamic panel instruments reducesthe number of observations even further. This panel is presently too small to test a full structural model of social mobility and inequality in Latin America, though if SEDLAC/CEDLAS [39] continue their excellent work standardizing survey data, this may be possible in the near future.

5. Discussion and Open Questions

The major difference between our findings and those for high-income OECD countries is the relative consistency of the Gatsby correlation over time and across countries. The evidence presented here suggests that social mobility can be increased by targeted progressive education spending and policies to increase school attendance, as emphasized in Solon's [14] retool of Becker and Tomes [38] classic model. Similarly, our results seem to confirm Hassler *et al.*'s [36] speculation that "public subsidies to education and educational quality produce… a negative correlation between inequality and mobility" across countries. The two models complement each other nicely. When returns to education and skill fall, wealthy parents are less able to impart advantages to their children as Becker and Tomes [38] emphasize. Children in low-income families gain from CCT policies which increase school enrollment and reduce child labor. One group breaks out of a classic child labor poverty trap, while the upper middle class finds it harder to maintain their advantage, so inequality falls and social mobility rises. Family background remains a key determinant of children's status in Latin America, but less so than in the

pre-1995 period.

Skeptics acknowledge the role of CCTs and broader secondary enrollmentasa key driver of the increased intergenerational mobility (IEM). However, they question the quality of poor children's education. In a series of papers Daude [29] and others argue that parents' socioeconomic background still greatly influences the quality if not the quantity (years) of schooling mainly because only wealthier families can afford private schools. Evidence of this is that, though rising, Latin American PISA scores remain the lowest in the world[12]. However, that education based social mobilityrose during a period of and falling inequality and poverty suggests better access to schooling has benefited low-income families. That said there remains considerable scope for improving the quality of education in Latin America. How to accomplish this in an era of slower growth and lower commodity prices is a great challenge for all of those who fear a return to the high inequality and low social mobility of the pre 1990s era.

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Appendix A: Data Description and Sources

Table A1 provides a summary of all the data used for regressions reported in **Tables 1-3**. To standardize units we use natural logs or log changes (see footnote 10). Natural logs are more likely to be distributed normally and coefficients can be interpreted as elasticities (see footnote 10 and Kakwani, 1997 [37]). This makes it easier to determine the relative impact of each variable on intergenerational education mobility (IEM).

1) Intergenerational Education Mobility measure: As developed by Andersen [16] and applied by CEDLAS-SEDLAC [39], the IEM is the share of children's schooling gap explained by family background, including parent's education. The schooling gap is years of education that a child would have completed had he entered school at normal age, advancing one grade each year compared to the actual years of education reported for that child. In other words, the schooling gap measures years of missing education. The IEM computed by CEDLAS-SEDLAC is one minus the proportion of the variance of the school gap that is explained by family background. In an economy with very low mobility, family background would be very important and thus the index would benear zero. The IEM used measures the importance of family background in determining the education of teenagers age 13 - 19 living at home. Andersen [16] argues "*The schooling gap is a very simple indicator of future opportunities, but it is well suited for our purpose and has several advantages compared to measures based on earnings or years of education* [...] *years of missing education is a relatively simple measure that is easily comparable across countries and population groups, it is rarely misreported, and it can be used for teenagers who are still of school age*."

2) Inequality measures: The income Gini coefficient is published is computed by SEDLAC, which also provide the income shares used to compute the Palma index which is the share of the top 10% or top 20% divided by the share of the bottom 40%.

3) Returns to education and skill premia: The secondary education Mincer coefficient for women is taken from SEDLAC's wages and hours spreadsheet under the employment statistics category capturing the impact of secondary education on income across households. The skill premium is the ratio of hourly wages of workers

Table A1. Summary statistics for Variables used in **Tables 1-3** regressions.

Variable	Mean	StdDev	Min	Max	N	Source
Education Mobility (IEM)	84	4.3	75	96	121	SEDLAC (CEDLAS and World Bank)
Gini Income	0.51	0.05	0.39	0.62	112	SEDLAC (CEDLAS and World Bank)
Gini Education	0.34	0.08	0.19	0.52	111	SEDLAC (CEDLAS and World Bank)
Skill-premium	3.32	1.01	1.97	6.8	112	Calculated from SEDLAC/CEDLAS
Palma(10/40)	5.4	9.7	1.88	56.9	113	Calculated from SEDLAC/CEDLAS
Palma(20/40)	5.0	1.3	2.85	10.2	113	Calculated from SEDLAC/CEDLAS
Top40%	11.7	2.0	6.350	16.3	113	Calculated from SEDLAC/CEDLAS
Top20%	55.6	4.5	46.38	64.6	113	SEDLAC (CEDLAS and World Bank)
Top10%	40.1	5.5	30.16	56.9	113	SEDLAC (CEDLAS and World Bank)
Net Enrollments Secondary	60.5	17.6	16.61	86.1	118	SEDLAC (CEDLAS and World Bank)
Net Enrollments Secondary, Female	62.9	81.	18.59	88.7	107	SEDLAC (CEDLAS and World Bank)
Mincercoefficient3	0.45	0.19	0.05	1.03	106	SEDLAC (CEDLAS and World Bank)
GDP per capita	8012	3248	2670	16,681	156	$PPP 2005 from IMF-WEO.
Conditional cash transfers 0,1	0.55	0.5	0	1	96	See Policy Variable discussion above.
CCT Coverage share	7.7	13	0.05	51	53	See Policy Variables in Appendix A
Social expenditure	12.1	5.9	2.9	28	111	ECLAC/CEPALSTAT
Population, total	16.4	1.2	14.7	19.1	160	WDI Data-The World Bank

with 13+ years of education divided by the wage of workers with less than 9 years of education, both wage rates are in local currency units as reported by SEDLAC in its wages and hours spreadsheet (Hourly wages: hourly wage in main activity in nominal LCU by gender, age, education and area).

4) Policy related variables: Domestic Private credit as a % of GDP is from the WDI online. Two measures of conditional cash transfers were prepared with the excellent research assistance of Rafaela Barrera and Sean Higgins. One is a 0,1 variable for years in CCTs are in effect among 14 LatAm countries. The 2nd CCT measure shows the coverage of CCTs in 2000, 2005 and 2010 based on Figure IV.2 on page 103 of Cecchini, S. and A. Madariaga [22].

All of the data used in this estimation is available in this spreadsheet. The comparable household surveys are those published and periodically updated by SEDLAC (Socio-Economic Database for Latin America and the Caribbean) published by CEDLAS and The World Bank. SEDLAC takes individual household surveys and makes their data comparable between countries and over time. Though almost annual for a few countries (Brazil and Argentina) household surveys for most countries are intermittent. To minimize missing values we "sample" three-year intervals taking the most recent available, then middle or 1st year in each interval. World Bank and CEPAL data area averages over the same 3 year interval (e.g., private credit or public spending). The IEM index or Social Mobility index (SMI) and is one minus the share of variation explained by family background, so as social mobility rises as the index approaches one. For additional details see Andersen [16] or Conconi *et al.* [8] or Daude's [29] summary of both papers. Our three year intervals start with 1986-88 and end with 2013-15, though not all intervals are available for all countries. This sampling approach is used by Barro [40] and others to make use of actual survey data. IEM and Gini indices come directly from the inequality_LAC and mobility_ LAC spreadsheets in the inequality and education section of the SEDLACweb page (currently http://sedlac.econo.unlp.edu.ar/eng/statistics.php).