Social Investment in Latin America

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The main point we want to develop here is that pre-distribution and re-distribution need to be treated as complementary approaches, not alternatives. Social investment targeted at all sectors of the society reduces market inequality, but in order to be highly effective it needs to be accompanied by redistributive measures that reduce poverty and inequality in disposable income. To put it differently, effective investment in the human capital of the future generation requires improvement of the living conditions of the present generation. We want to show further that effective social investment is crucial not just for human welfare but also for economic growth in the new international economy.

We think these arguments are important both from a theoretical and a practical point of view. Theoretically, they allow us to build connections between well-established micro level relationships that link socio-economic background to school achievement and macro level relationships that link aggregate poverty and inequality to cognitive skills in the population. Practically, they hold lessons for the debate about conditional cash transfer programs (CCTs): They contradict the notion that the cash transfers are a waste of money if governments want to build the human capital of the next generation, but they also underline the importance of the quality of the schools as the key locus where human capital is being created. These arguments are particularly important in the Latin American context, because historically both approaches had been neglected, and the progress made in the past twenty years might well be arrested when economic growth slows down. Specifically, cash transfers to the poor might be vulnerable, unless it is very clear to policy-makers that they are an integral part of making investment in human capital effective and thus supporting economic growth in the longer run.

To take a problem for statistical analysis head on: There is clearly reciprocal causality between the level and distribution of human capital, measured by cognitive skills, and poverty and inequality. In fact, we explore this two-way causality by examining not only the impact of poverty and inequality on cognitive skills, but also the impact of investment in human capital on poverty and inequality. However, by using time lags and by demonstrating the connection between current levels of poverty and inequality and the skills of secondary school students, who cannot yet be held responsible for the income of their families, we are able to cut into the causal chain analytically.

The Conception of Social Investment as an Alternative to Redistribution

Some advocates of social investment have framed it as an alternative to traditional redistributive social policy, as a path to equality of opportunity that is preferable to misguided efforts to bring about equality of condition. In their view, traditional redistributive social policy creates work disincentives for recipients and is economically and politically not sustainable. It is unproductive expenditure that constitutes too big a burden on the budget and does not have a strong political support base because hard-working citizens do not want to subsidize inactivity. Social investment or investment in human capital in contrast is supposed to help people help themselves and to appeal to notions of fairness. And since better human capital increases productivity, these policies are supposed to pay for themselves. Therefore, they are both economically and politically sustainable.

Jenson (2010) traces the diffusion of the social investment perspective in Europe and Latin America and shows that it was a reaction not only against the failures of neoliberalism but also the perceived failures of the traditional post-WWII welfare state with its emphasis on protection from social risks that could lead to poverty. She cites a statement of OECD social ministers in 2005 that said "social policies must be pro-active, stressing investment in people's capabilities and the realization of their potential, not merely insuring against misfortune" (Jenson 2010: 63). She characterizes the Giddens (1998) and New Labour version of social investment as more supply-side oriented and more limited in interventions than the more comprehensive conceptions promoted by Esping-Andersen and colleagues (Esping-Andersen et al. 2002; Jenson 2010:73). What this supply-side conception overlooks is the question whether investment in human capital will be effective and produce the desired effects all by itself.

The Comprehensive Conception of Social Investment

The comprehensive conception of social investment is based on social scientific evidence that links class background to educational achievement. Poverty and social exclusion reduce the capacity of students to take advantage of educational opportunities offered. The disadvantage of young children from poor households at the point of entering formal education is well documented. Much research "has found a pervasive tendency for children born in socially disadvantaged families to have poorer health, education, and general welfare" (Fergusson, Horwood, and Boden 2008). Researchers have found social-emotional factors that account for the achievement gap of disadvantaged students, such as academic and school attachment, teacher support, peer values, and mental health (Becker and Luthar 2002). Socialization tends to continue to work against educational success, both through inadequate support for learning and peer pressure to reject compliance with expectations and self-discipline. Family-based factors have been found to be the most powerful in predicting achievement and delinquency, followed closely by influence from "best friends" (Duncan, Boisjoly, and Harris 2001). However, school and neighborhood composition matter as well; Van Ewijk and Sleegers performed a meta-regression analysis of 30 studies that found varying degrees of impact of peers' socio-economic status on students' test scores (2010).

Peer pressure for non-conformity with schools' expectations is particularly intense where prospects for entry into the labor market and decent careers are dim. High socio-economic inequality, high youth unemployment, and large informal sectors lower such expectations and foster youth subcultures that devalue education. Lack of a decent education in turn bars access to a decent job and reproduces poverty. Child labor is a response to poverty of families, and it significantly depresses educational achievement (e.g. Psacharopoulos 1997 for Bolivia and Venezuela) and thus contributes to the intergenerational reproduction of poverty.

These micro-level relationships manifest themselves at the macro-level in relationships between levels of poverty and inequality and the level and distribution of cognitive skills. The nature of the school system, tracked versus comprehensive and overwhelmingly

public versus strong private participation, can reduce or reinforce the impact of class inequality on educational inequality. Cross-national differences in inequalities in educational achievement have been explained with the level of inequality in the society, the level of modernization of the society, and school systems (Marks 2005). Where school systems are tracked, social selection is biased towards privileged groups and perpetuates or increases class inequality. The same argument can be made about school systems with strong reliance on private schooling.

We adopt the comprehensive conception of social investment and demonstrate that cross-national differences in levels of public investment in education in Latin America are related to differences in average years of education and average skill levels, but imperfectly so. Societal poverty and inequality condition the effectiveness of investment in education. This means that in practice, both types of intervention – reduction of poverty and inequality on the one hand and expansion and improvement of education on the other hand – are necessary for them to be economically and politically sustainable.

Evidence from Latin America

We begin by demonstrating that the levels of inequality and poverty in the society have a strong impact on the development of cognitive skills among the population by analyzing the determinants of average levels of cognitive skills both over the long run and in the shorter run. Since data on cognitive skills are scarce and only available in a cross-section for the 1990s, we supplement this analysis with an examination of the role of determinants of education completion, measured as average years of education in the adult population, for which we have a longer time series. Here we note the imperfect relationship between public education expenditure and average years of schooling, and between both of these variables and cognitive skills. The effects of educational expenditures and of years of schooling are mediated by other factors, prominent among them levels of poverty and inequality in the society.

Then we turn the tables and analyze the impact of social investment on inequality and poverty, controlling for other factors that have been shown to be predictors of these dependent variables. After presenting our own analysis, we discuss analyses done by Lopez-Calva and Lustig and others (2010) on micro-data, which show that increases in investment in education in the 1990s were associated with a declining skill premium and declining inequality in the 2000s.

We finally show that cognitive skills have a stronger impact on economic growth than capital investment.

Data

Our data all come from Evelyne Huber, John D. Stephens, Thomas Mustillo, and Jennifer Pribble, *Social Policy in Latin America and the Caribbean Dataset*, 1960-2006, University of North Carolina, 2008, (http://www.unc.edu/~jdsteph/common/data-common.html) and updates of that dataset which will be posted at that website late in

2014 or early 2015. The measurements and original sources of the data are documented there. Given the importance of data on education, it is worth commenting on them in somewhat more detail. Since the advent of new growth theory with its emphasis on human capital, the Barro-Lee (2011) measures of formal education have been used as measures of human capital in most quantitative studies of economic growth. The Barro-Lee dataset contains measures of education completion at seven different levels (no schooling, some primary, completed primary, some secondary, completed secondary, some tertiary, completed tertiary) and an estimate of average years of education based on the completion data of the population aged 15 years or older and the population aged 25 years or older for 140 countries at five year intervals from 1960 to 2010.[1]

The Barro Lee data measure the *stock* of human capital in the adult population and thus are clearly conceptually superior for studies of economic growth or income distribution than measures of *flows* of students through the educational system, such as primary or secondary school enrollment rates. Enrollment rates only tell us what proportion of the relevant age cohorts are in school not what the skill levels of the working age population are. The relationship between average level of education and its distribution needs clarification. One could argue that if one raises the level of education of the privileged only, average years of education will rise yet inequality will also rise. Conceptually, this is a valid argument but empirically it is not a problem because educational inequality and average years of education are very highly negatively correlated. Thomas, Wang, and Fan (2001) calculate educational Ginis for the 140 countries in the Barro-Lee dataset and find that average years of education explain 91% of the variation in educational inequality. Thus, we are treating average years of education as an indicator for educational completion among all sectors of the population.

The best comparable data on skills in the adult population come from the International Adult Literacy Survey (IALS) (OECD/HRDC 2000). The same tests for literacy and numeracy skills were administered to samples of the adult population in 24 countries. Thus, the IALS has produced the best measures of the stock and distribution of human capital in the working age population, but it unfortunately included only one Latin American country - Chile. Hanushek and Woessmann (2009) collected and standardized a large number of tests administered to secondary school students in Latin America in the mid-1990s and produced the only comparable measure for cognitive skills. It measures cognitive skills among the teenage school population and is available as a cross-section. This is the measure we are using here.

Analytic Techniques

For the cross-sections/ time-series data, we use Prais Winsten regressions (panel-corrected standard errors, first order autoregressive corrections, and imposition of a common rho for all cross-sections) because they take care of problems with these kinds of data, such as serial correlations, better than other estimation techniques. Where there are significant gaps in the data, Prais Winsten regressions cannot be used. There we use

[1] For the multivariate analysis, average years of education for the years between the five year intervals were interpolated.

OLS regressions with panel corrected standard errors. Panel corrected standard errors correct for correlations of errors *within* the units. They do not correct for unmeasured factors that might affect the dependent variable in all units at the same point in time. Global economic fluctuations, such as the debt crisis period in Latin America in the 1980s, could produce such contemporaneous effects. To evaluate the potential impact of such unmeasured period specific factors we estimated the models with indicator variables for the debt crisis and the recovery period; the baseline category corresponds to the period before 1982. For the analyses of the cross-sectional data, we begin by examining correlation matrices and scatter plots, and then we use simple OLS regressions.

Exploring Determinants of Cognitive Skills

We hypothesize that high degrees of inequality and high levels of poverty in a society depress the quality of human capital. We measure human capital by average test scores of secondary school students. The assumptions are that high poverty and inequality depress test scores at the bottom and low test scores at the bottom depress the overall average.[2] We control for the history of educational spending, measured by the average expenditure on education over that period.

The mechanisms that translate high degrees of inequality into low cognitive skills are low expectations and preparation among the lower classes and skewed allocation of expenditures by governments. The social distance between classes in highly unequal societies deters educational aspirations among the lower classes. High socio-economic inequality also directly translates into high inequality in the quality of education available to different social classes, beginning at the pre-school and primary level. Both of these factors, educational aspirations and quality of education, are sticky – they change only very slowly. This means that high inequality when parents grew up will have a depressing effect on the human capital of their offspring.

The mechanisms that translate past and present poverty into low educational achievement are similar. The quality of education available to the poor is lower than that available to the rest of the society, be it due to skewed allocation of public education expenditures or private expenditures working as a supplement or substitute for public funds. In addition, the opportunity costs of education are important for the poor; when kids are in school, they cannot be sent to hustle to help support the family.

In order to explore the lasting impact of high inequality on cognitive skills, we regress the test scores from the mid-1990s on the average of ginis available for the pre-1991 period, controlling for average education spending from the 1970s to the mid-1990s. We exclude Venezuela from the analysis because of its outlier status (see below). As Table 1 shows, high inequality before the 1990s has a negative impact on cognitive skills of secondary school students in the 1990s, controlling for educational expenditures. As Table 1 further shows, educational expenditures do have a positive impact on cognitive skills, once we control for early inequality.

[2] We know from the International Adult Literacy Survey (OECD 2001) that the variation of skill levels at the bottom is much larger than the variation at the top, so our assumption is justified.

The effect of education spending, then, is strongly conditioned by socio-economic conditions. In fact, the zero order correlation between average educational spending in roughly the quarter century before the tests are administered to the students and those students' cognitive skills is only .28. Our Figure 1, which plots test scores and average educational expenditures, shows dramatically how some countries get much better results than others from their educational expenditures and some do much worse than expected. The leaders are Uruguay and Costa Rica. Both of them have for a long time had among the lowest levels of inequality in Latin America. At the other end is Venezuela, with exceptionally low scores given its comparatively high level of education expenditure. Inequality in Venezuela has been moderate but poverty has been high (see below).

We get a similar picture when we examine the relationship between average years of education in the adult population and cognitive skills among secondary school students (Figure 2). The zero order correlation between average years of education and cognitive test scores is only .43. In some countries, the education provided by the schools and the absorption of this education by the students are apparently much better than in others, as their students acquire better cognitive skills in the same number of or in fewer years. Figure 2 plots average years of education and cognitive skills and shows that Costa Rica and Uruguay are again the greatest over-perfomers, and Venezuela, Bolivia, Honduras, Ecuador, and Panama considerable under-performers.

When we examine the impact of inequality in the 1990s on test scores from the same period, we find that the impact is significant and educational expenditure continues to matter (Table 2).

Early and contemporaneous poverty have even stronger effects on test scores than inequality. The zero order correlation between pre-1990s poverty and test scores is -.62, and between contemporeneous poverty and test scores it is -.79. In our regressions, we find significant negative relationships between both early and contemporaneous poverty and test scores, and we find a stronger relationship for contemporaneous than for early poverty and test scores. This makes sense, because poverty has varied tremendously over time in Latin American countries, much more so than inequality. Thus, parents who grew up in poverty may be lifted above the poverty line by changing economic conditions and social policies, in which case the opportunity costs of education for their children will be lower than they were for the parents. Table 3 shows that contemporaneous poverty has a very strong negative effect on test scores. It also shows that educational expenditures do not matter once we control for poverty.

Of course there is also reverse causality between cognitive skills and poverty. An individual with higher skills is more likely to get a higher paying job, and a labor force with higher cognitive skills is more productive and able to generate higher average earnings. However, the measure for cognitive skills here is of secondary school students, so the people whose skills are measured are not yet in the labor force and cannot be the cause for lower poverty in the society.

Figure 3 illustrates the relationship between contemporaneous poverty and test scores. The zero order correlation is a high -.79. Despite the close fit of the cases with the regression line we see still the better than predicted performance of Uruguay and Costa Rica, and the comparatively very poor performance of Venezuela.

Since we only have cross-sectional data for cognitive skills but want to pursue the exploration of determinants of human capital further, we turn to average years of education in the adult population as an indicator (albeit an imperfect one) for which we do have cross section/ time series data. We regress average years of education on poverty and average education spending and on a number of control variables that can theoretically be expected to be related to educational levels of the population: employment in industry, stock of foreign investment, female labor force participation, ethnic division, trade openness, and GDP per capita.

Table 4 shows that poverty has a highly significant and substantively strong negative effect on average years of education. Again, educational expenditure does not have an effect on average years of education, once these other variables are controlled for. Level of affluence of the society, as measured by GDP per capita, does not have an impact either, once level of industrialization and the other variables are controlled for. Higher levels of industrial employment and higher levels of integration into the world economy as measured by accumulated foreign investment and trade openness are associated with more years of schooling in the population, as is female labor force participation. Of course we acknowledge the reciprocal causality here: More industrialization and integration into the world economy require more schooling, and a more educated population is more attractive to foreign investors and makes an economy better able to industrialize and compete in international trade, and women are more likely to enter the labor force as they become more educated. The point we want to emphasize is that once we control for these mutually reinforcing relationships, poverty retains a strong negative effect on average years of schooling in the adult population. High levels of poverty work against mass education as poor people in more and less industrialized societies alike are less likely to keep their kids in school.

Exploring the Impact of Human Capital on Human Welfare

We now turn to exploring the impact of human capital on poverty and inequality. We begin with poverty and focus on the impact of policies, operationalized as different kinds of social expenditure, and on the impact of results of these policies, operationalized as average years of education in the adult population. Our measure of poverty is an absolute one; it measures the percentage of total households living below the poverty line as defined by ECLAC based on the cost of a basket of basic goods (*Statistical Yearbook of Latin America* and *Social Panorama of Latin America*, various years). This value includes households living in extreme poverty.

We would expect spending on health and education to improve human capital over the longer run and thus to have a dampening effect on poverty. Clearly, short-run fluctuations in health and education spending should not have any significant effects – a

one-year increase will not significantly improve education and health services. To capture the importance of long-run commitments to education and health services, we measure the average spending in the period up to the year of observation. If education expenditures are allocated correctly over the longer run, we would expect an increase in the average years of education in the adult population. Thus, entering average years of education in the same model should absorb the effect of well-allocated education spending and render spending insignificant.

Spending on social security and welfare should have a more immediate effect on poverty. Social security denotes mandatory public contributory programs, the bulk of which are pensions. Welfare denotes non-contributory cash transfers, which are overwhelmingly income or means-tested. Clearly, welfare expenditures are highly redistributive and directly aimed at poor people. Social security expenditures in Latin America are regressive in the sense that higher income groups get virtually all of it. However, they tend to be less unequal than market income distribution, and they are contributory, which means that the beneficiaries pay for it, unless the benefits are subsidized by general tax revenue. Moreover, the higher social security and welfare expenditures, the more likely it is that the coverage is larger, including lower income groups. Unfortunately, there are no data separating out social security from welfare spending for the period before the 1990s, so we use the combined measure from the IMF (*Government Finance Statistics*). We expect this measure to reduce poverty in the short run, so we use the country/ year observation, not an average over the previous period.

We controlled for a number of variables that we expect to impact poverty and present a reduced model in Table 5, with only the significant variables. Given that we use an absolute measure of poverty, it is not surprising that GDP per capita has a significant statistically negative effect on poverty. In contrast, stock of foreign investment, external debt, size of the informal sector, and ethnic diversity are all positively related to poverty. As we have argued previously, the length of the democratic record of a society influences poverty and inequality (Huber and Stephens 2012). It does so by way of allowing for the organization of groups in civil society and of political parties that represent the interests of the underprivileged. As these forces grow in strength, they are able to influence policy. We can capture part of this influence through our policy variables, but there are many policy instruments other than social expenditures that influence policy and inequality, such as minimum wage legislation and labor market regulation, that we do not catch. Therefore, we expect a statistically significant negative effect of cumulative years of democracy on poverty, and this is indeed what we find.

Only two of our three policy variables of interest have statistically negative significant effects; health spending was not significant.[3] Social security and welfare spending reduces poverty, as do average years of education in the adult population. Thus, investment in broad-based education clearly has a beneficial effect on human welfare by way of reducing poverty levels in a society, as does spending on social transfers. Extrapolating to the individual level makes this effect highly intuitive: Higher levels of

[3] In models without democracy, health spending is significant.

education enable individuals to perform better in the labor force, which reduces their probability of living in poverty.

Human capital also significantly shapes income inequality. We proceed as above – controlling for methodological and substantive variables and showing only the significant variables in Table 6. To begin with a variable that is significant for poverty but not for inequality – GDP per capita does not have an impact on inequality. Economic development only reduces inequality under the influence of appropriate public policies. Length of the democratic record does have a statistically significant negative effect on inequality, party through transfer spending and partly through other kinds of policies. Based on Lee's (2005) and our own work (Huber and Stephens 2012), we expect that social security and welfare expenditures will be more redistributive in democracies, and we do find the expected statistically negative significant effect of an interaction term between democracy and social security and welfare spending on income inequality. It is worth noting that with democracy set at zero, social security and welfare spending loses its significant effect and even has a positive sign. We do find the highly significant human capital effect: higher average years of education are negatively associated with income inequality, as expected. However, once average years of education are controlled for, education spending assumes a statistically positive and significant effect on income inequality. In other words, if higher levels of education spending do not translate into broad-based education and higher average human capital, as captured by the indicator of average years of education, it goes to privileged groups and thus aggravates income inequality.

The evidence for the importance of education in shaping income inequality is strong in the analyses of micro-data for Argentina, Brazil, Mexico, and Peru published in Lopez-Calva and Lustig (2010). These four countries experienced increasing inequality in the 1980s and early 1990s due to a combination of economic crisis and austerity, followed by structural adjustment according to the neoliberal Washington consensus. The combination of cuts in public expenditures, liberalization of trade and financial markets, privatization, and anti-labor policies resulted in deindustrialization, growth of the informal sector, weakening of organized labor, and skill-biased technological change. These changes caused an increase in the skill premium and a fall in labor and non-labor income for the poorer sectors.

These trends were arrested at different time points in different countries between the mid-1990s and early 2000s. As structural adjustment was completed, the process of skill-biased change was arrested or slowed down and the upward pressures on the skill premium weakened. Where governments promoted educational expansion in the 1990s, the greater supply of semi-skilled and skilled workers brought down the skill premium after the turn of the century. In all four countries, a declining skill premium contributed to declining income inequality. The same is true for Chile (Eberhard and Engel 2009).

Important additional factors contributing to the decline in inequality were cash transfers to the poor in all cases, and increases in the minimum wage in Argentina (Gasparini and Cruces 2010) and Brazil (Barros et al. 2010). Cash transfers made an important

contribution to declining poverty and inequality in Uruguay as well. In sum, the evidence from country studies supports the general argument that educational expansion is an important instrument for governments committed to reducing inequality, and that the most effective approaches combine educational expansion with improvement of the living conditions of the parents.

Human Capital and Economic Growth

For roughly the past 25 years endogenous growth theorists have argued that human capital has a strong effect on economic growth (Barro 1991; Aghion and Howitt 1998; Helpman 2004). As noted above, the improvement in data availability – moving from school enrollment rates to average years of education completed (Barro-Lee 2011) and ultimately cognitive skills (Hanushek and Woessmann 2008, 2012) – has strengthened the empirical results. Hanushek and Woessmann (2012: 275) showed that substituting a measure of skills for average years of education in a growth model controlling for initial level of GDP per capita (to control for the catch-up effect) raised the variation explained from 25% to 73%.

Elsewhere (Evans, Huber and Stephens 2014) we used their data to analyze the impact of cognitive skills on growth from 1960 to 2000 in a sample of 50 countries, controlling for initial level of GDP per capita, of income inequality and land inequality, and of fertility, and for investment share of GDP 1960-2000. Both cognitive skills and investment share were statistically significant, but cognitive skills were stronger. Here we are using Hanushek and Woessmann's data (2009) on cognitive skills for Latin America to analyze the impact of cognitive skills on average economic growth 1960-2000, controlling for initial level of GDP per capita and average investment share of real GDP in 1960-2000. As Table 7 shows, we obtain the same results: Both cognitive skills and capital investment are significant, but cognitive skills are stronger.

Given the data limitations, that is, the fact that we only have cross-sectional data for 14 countries for the 1990s, each regression alone is more suggestive than conclusive. However, it is the consistency of the results, for the worldwide sample and the Latin American sample, and the theoretical grounding in endogenous growth theory that strengthens confidence in these findings.

Conclusion

We started from the theoretical notion that, in order to be effective, investment in human capital requires investment in the material living conditions of people. Effective investment in human capital in turn will improve the material living conditions of people. It will do so by influencing he distribution of human capital and lowering inequality, and it will do so by promoting economic growth.

We have presented evidence from Latin America to support these theoretical expectations. High levels of inequality in the previous generation depress test scores of secondary school students, regardless of average educational expenditures over the whole

time period. High levels of poverty and inequality in the period when the cognitive tests are administered do the same, and high levels of contemporaneous poverty even render educational expenditures statistically insignificant as predictors of test scores. Average poverty in the society and average test scores of secondary school students are very closely related. We got the same results when we analyzed data for average years of education in the adult population over the long run; high levels of poverty depress school completion. Thus, relying on investment in education of the future generation as a substitute for investing in the living conditions of the underprivileged in the present generation is a very ineffective way of improving human welfare.

We have further presented evidence that anti-poverty policies and higher average levels of education are effective in lowering poverty, controlling for levels of affluence and industrialization of the society and a number of other variables. Social security and welfare expenditures and broadly allocated educational expenditures are essential ingredients of an integrated social investment approach to lowering poverty. The evidence for inequality is similar: The promotion of mass education, indicated by high average years of education, and democratically determined broadly allocated social security and welfare expenditures reduce income inequality in the society.

Elsewhere (Huber and Stephens 2012: 138-147) we have shown that length of the democratic experience is an important predictor of expenditures on education, health and social security and welfare. In addition, strength of democracy and the political presence of left parties are strong predictors of the allocation of such expenditures and thus of levels of poverty and inequality in the society. We suggest that it is precisely the simultaneous pursuit of investment in health and education and in anti-poverty policies by left parties that produces these results.

Finally, we have presented evidence that suggests that human capital is more important for economic growth than physical capital. This evidence puts into question the "grow first and distribute later" principle that has guided so much policy in Latin America. In contrast, "distribute now (in combination with investment in health and education) and grow more strongly" would be a more effective guiding principle. Of course, this is not a prescription for irresponsible deficit spending. In order to ensure sustainability, this principle needs to be pursued within the parameters of macroeconomic stability. Within these parameters, though, there is room for political action.

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Table 1. Determinants of Cognitive Test Scores mid-1990s

Gini index pre 1991	-10.450	**
Average spending on education 1970s-mid 1990s	42.156	*
Constant	804.291	***
R^2	.48	**
Observations	15	

Table 2. Determinants of Cognitive Test Scores mid-1990s

Gini index 1990-1997	-7.581	*
Average spending on education 1970s-mid 1990s	44.515	*
Constant	637.762	***
R^2	.28	
Observations	14	

Table 3. Determinants of Cognitive Test Scores mid 1990s

Poverty (1990-1997)	-3.399	**
Average spending on education 1970s to mid 1990s	-.918	
Constant	479.785	***
R^2	.57	**
Observations	15	

* significant at .05; **significant at .01, ***significant at .001

Table 4. Determinants of Average Years of Education (PCSE)

Employment in industry	.056	*	
Stock of FDI	.038	***	
Female labor force participation	.079	***	
Ethnic diversity	-.532	**	
Trade openness	.004	*	
GDP per capita	.000		
Average spending on education 1970s-1990s	-.196		
Poverty	-.029	***	
Constant	2.086	***	*
R^2	.64	**	
Observations	129		

* significant at .05; **significant at .01, ***significant at .001

Table 5. Determinants of Poverty (PCSE)

GDP per capita (1000)	-.687	**
Stock of FDI	.082	*
Informal sector employment	.485	***
Ethnic diversity	5.983	**
External debt	.052	***
Average years of education	-2.879	***
Social security and welfare spending	-1.306	***
Democracy	-.149	***
Constant	38.249	***
R^2	.85	**
Observations	112	

* significant at .05; **significant at .01, ***significant at .001

Table 6. Determinants of Inequality (Prais Winsten regressions)

Gross income	2.410	***
No adjustment for household size	-3.069	***
Youth population	-.404	***
FDI inward	.372	***
Industrial employment	-.452	***
Ethnic diversity	4.369	***
Democracy	-.192	***
Average years of education	-1.049	***
Social security and welfare spending	.160	
Democracy*social security spending	-.010	**
Education spending	1.726	***
Constant	79.491	***
Common ρ	.29	
R^2	.85	***
Observations	252	

* significant at .05; **significant at .01, ***significant at .001

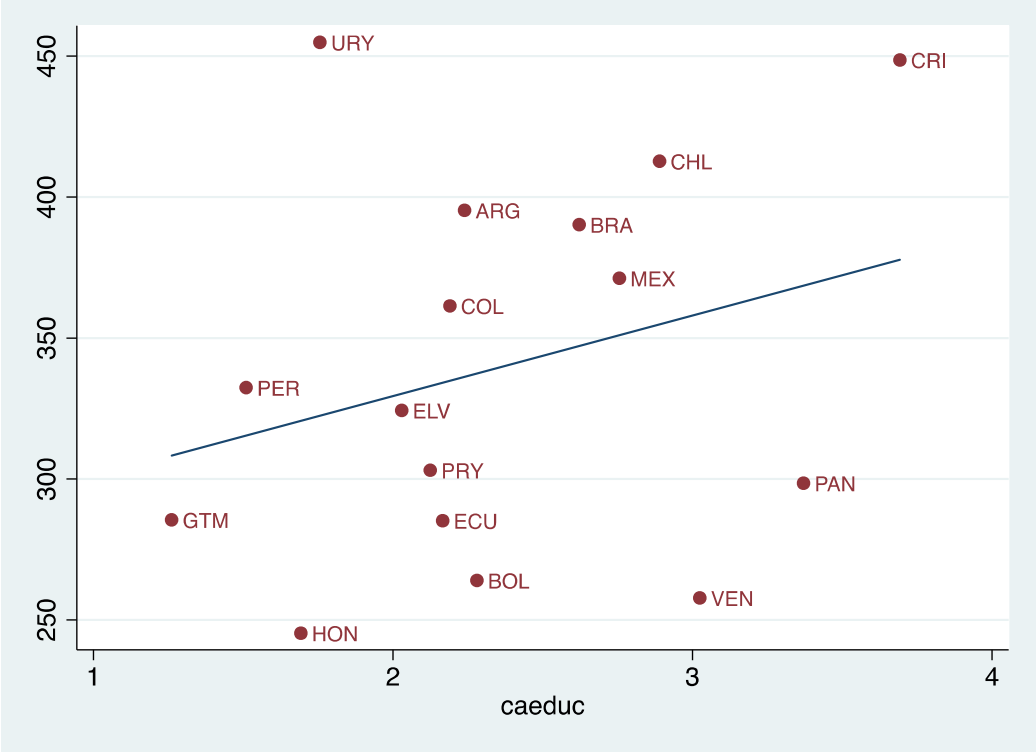
Table 7. Determinants of Economic Growth 1960-2000

GDP in 1960 (1000)	-.205	*
Cognitive scores	.009	**
Investment	.081	*
Constant	-2.163	
R^2	.42	*
Observations	14	

* significant at .05; **significant at .01, ***significant at .001

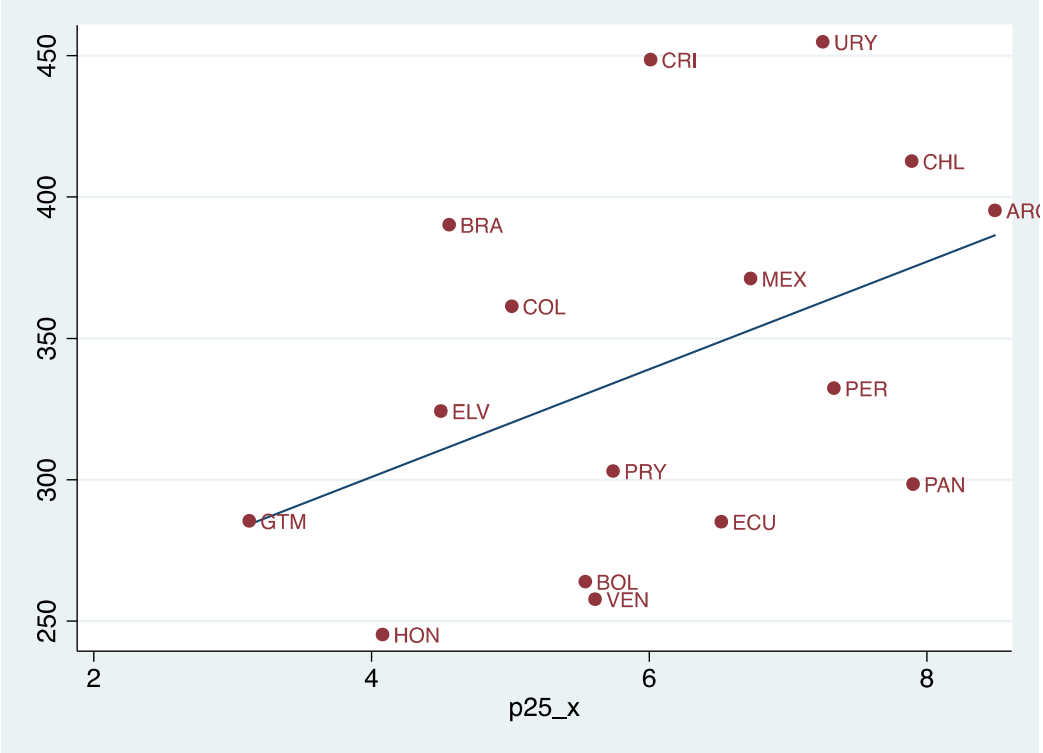
Need to add two cases

Figure 1 Mean cognitive test scores mid 1990s and average spending on education mid 1970s to mid 1990s



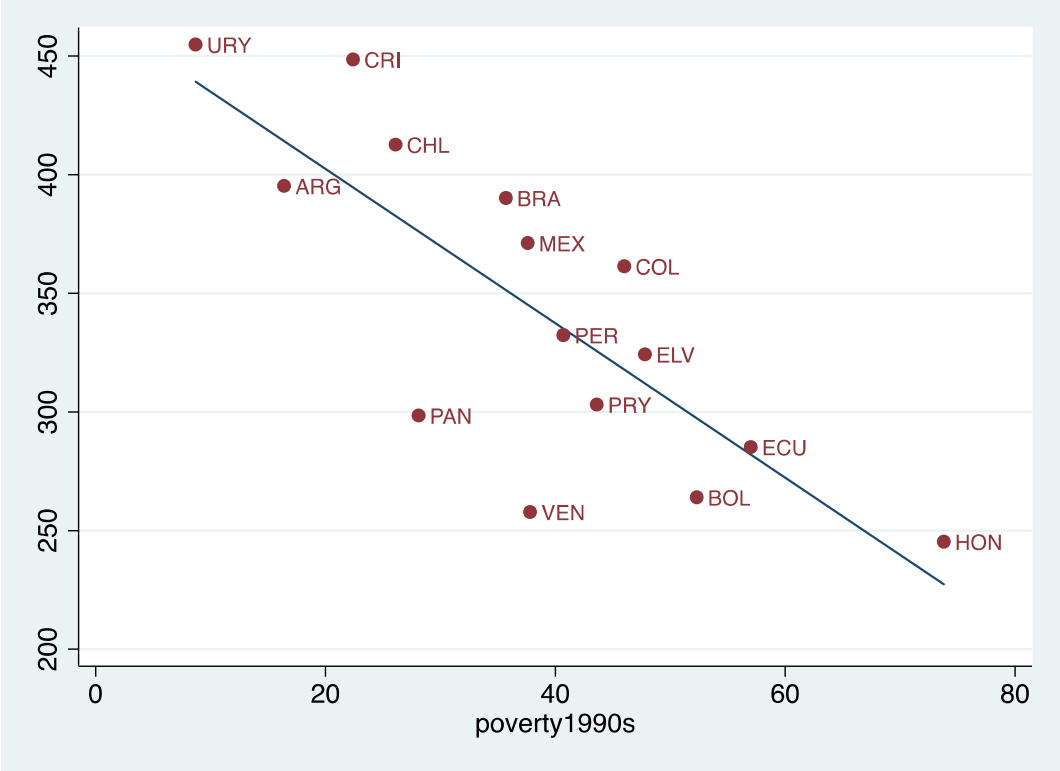
r=.28

Figure 2 Mean cognitive test scores mid 1990s and average years of education 1995



r=.43

Figure 3 Mean cognitive test scores mid 1990s and poverty levels 1990-1997



r=-.79