Governance, human development and economic growth in Latin America

Luis René Cáceres*

Introduction

The relationship between economic and social variables is a topic that persistently receives attention in Economics literature. In the context of developed countries, extensive reviews of the US literature on the association between poverty and variables such as economic growth, unemployment and household characteristics are presented by Romer and Romer, Gundersen and Ziliak and Partridge and Rickman, while the relationships between these variables for the case of Canada is analyzed by Chokie and Partridge. With respect to Latin America, Cáceres analyzed the association between unemployment, wages and poverty in the region during the period 1997-2007; Gasparini and Gutiérrez studied the relationship between economic development, human development, macroeconomics and institutions. For Luca, otro angelito.

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growth, inequality and poverty for several Latin American countries; while Ros\textsuperscript{8} has analyzed the determining role of the demographic transition in reducing poverty in a sample of countries.

The importance of institutions on the determination of poverty has been analyzed by Cáceres\textsuperscript{9}, who found a negative association between an index of voice and accountability and the poverty rate for a sample of Latin American countries using 2007 data. Similar results have been found by Gupta, Davoodi and Alonso-Terme\textsuperscript{10} for a sample of developing and developed countries, finding negative impacts from corruption to poverty and inequality. The determining role of institutions on economic growth has been documented by several authors, recently by Chong and Calderón\textsuperscript{11}, Easterly\textsuperscript{12}, Easterly, Ritzen and Woolcock\textsuperscript{13}, and there is a growing literature that analyzes the effects that specific variables, such as human capital and income distribution\textsuperscript{14}, and the legal system\textsuperscript{15},

\begin{thebibliography}{99}
\item Cáceres, Luis, “Derecho al trabajo: pobreza y mercado laboral”...
\end{thebibliography}
have on institutions. Other approaches have analyzed the determination of poverty by the effects originated in various sets of non-income variables, while Krishnakumar and Ballon have used the concepts of the capability framework to development to characterize the concept of human development using latent variable methods. More recent research has analyzed the interactions among governance, economic growth, institutional capacity building and civil society, and their role on economic development.

Another strand of research has focused on the human development index, HDI. The HDI is a composite of three variables: GDP per capita, average national education attainment, and expected life span at birth. Much analysis has been directed towards the identification of the socio-economic variables that determine the value and trajectory of the Index, so as to identify the policies and social programs that should receive highest priority by the national authorities.

In this context, reference has to be made to Ranis, Stewart and Ramírez’s study that analyzed the socio-economic paths of a sample

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of African countries for the 1960-1995 period, using as surrogates of the HDI the life expectancy at birth and the infant mortality rate. These authors found that the variables that explained the behaviors of these proxies were, firstly, the primary school enrollment rate of girls, which was a necessary condition for improvements in social development. As well, they identified the combinations of policies that had led to improvements in the Index: fast economic growth accompanied by income redistribution policies; moderate economic growth with a high ratio of social expenditures to GDP; and moderate slow growth provided there is good income redistribution and social expenditures are targeted to the poorest stratum. In a subsequent paper, Ranis and Stewart22 analyzed the association between human development and economic growth for the case of a sample of Latin American countries and found that the link from human development to growth is stronger than the one from economic growth to human development, which highlights the important role of human development as a motor of economic growth.

Although there is a wealth of empirical studies based on regression analysis on the associations between social, economic, and governance variables, there is still a need to integrate these variables into a unifying model that sheds light on the strength and direction of the relationships between them, and thus provide insights to the formulation of social development policies.

The model

In order to analyze the association between social, economic and governance variables, this paper estimates a Var model using panel data from ten Latin American countries23. The panel series were constructed using annual national data for the 2000-2008 period for each country, thus yielding a series of 90 points for each panel.

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23 The countries are: Argentina, Uruguay, Brazil, Chile, Peru, Ecuador, Colombia, Venezuela, Panama and Mexico. The smaller countries were not included in order to maintain homogeneity.
The variables included in the Vars are the human development index (HDI), with values taken from several issues of UNDP’s Human Development Report; annual economic growth rate (Growth) from ECLAC; governance indexes (Govern) taken from the World Bank, and the unemployment rate (Unempl) from ECLAC. All variables were tested for the existence of unit roots and it was found that all were integrated of order zero. The order of the variables in the Var is Govern, HDI, Growth, Unempl, and each variable enters with a lag of two years. The first estimated Var included the measure of political stability (Polistab) as the governance variable. The results are presented in the following paragraphs.

Results

Table 1 shows the variance decomposition matrix after a five year period, resulting from the estimated Var. This matrix shows the contributions exerted by each variable to the variance of all other variables, and thus they represent the relative contribution of a given variable in the determination of the variance of the others. It is seen that the variance of Polistab is mainly affected by its large autonomous component (90.4417) although it receives a relatively large effect from the HDI (7.5039), while the effects it receives from Growth and Unempl are very small (0.0751 and 1.9793 respectively).

The variance of the HDI receives a large contribution from Polistab (29.5993), which is much larger than the contributions from Growth (5.5572) and Unempl (0.0273), while its autonomous component is rather small (64.8162). It seems then that there are strong reciprocal relationships between HDI and Polistab, and that the latter is the determining variable on the HDI. In effect, reference is made to Cáceres’ study which showed that governance variables, and political stability in particular, are the determining factors on the

26 ECLAC, Preliminary balance of Latin American economies...
27 Cáceres, Luis, “Determinants of the Human Development Index of the Sub-Saharan African countries”...
HDI of a sample of Sub-Saharan African countries, and to Rajkumar and Swaroop\textsuperscript{28} who showed the important role of governance in the determination of infant and children mortality for a sample of developing countries\textsuperscript{29}. The relative small contribution from growth to HDI may be explained by the fact that the income measure that is used to compute the HDI includes other variables besides GDP growth, such as government transfers and remittances.

The autonomous component of the variance of Growth is large (87.0851), while the contribution from HDI and Polistab are appreciable (6.5399 and 5.1404 respectively), but the effect from Unempl is very small. It can be seen that the reciprocal components between Growth and HDI are of the same order of magnitude, with the effect from HDI being larger. It has been found by Berg, Ostry and Zettelmeyer\textsuperscript{30} that increases in infant mortality, a variable that is one of the determinants of life expectancy, a component of the HDI, leads to shorter periods of economic growth. As well, Johnson, Ostry and Subramanian\textsuperscript{31} have reported evidence that economic growth becomes sustained when countries improve their institutions in the period when growth starts.

Unemployment is the variable whose variance is most dependent on the other variables, particularly from Growth (21.2574), which reflects the workings of Okun’s law; it also receives large effects from Polistab and HDI (13.7959 and 12.9468 respectively). Note that the sum of the contributions from these two variables (26.7427), contributes a quarter of the variance of the unemployment rate, which is larger than the contribution from economic growth. This shows that the objective of reducing unemployment based exclusively on economic growth


should be avoided, given that human and institutional development play significant roles in this endeavor.

It can be seen that political stability is the source of the largest effects on the other variables. There is evidence for a group of developing countries that the start of a recessive period is triggered by the deterioration of governance variables, particularly political stability. Moreover, Rodrik has shown that institutional weaknesses associated with social fragmentation, lead to growth collapses and stagnation. This indicates that development strategies should include the objective of strengthening institutions, especially political stability.

**Table 1. Variance decomposition matrix after five years**

<table>
<thead>
<tr>
<th>Effects received by:</th>
<th>Effects exerted by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polistab</td>
<td>HDI</td>
</tr>
<tr>
<td>90.4417</td>
<td>7.5039</td>
</tr>
<tr>
<td>HDI</td>
<td>29.5993</td>
</tr>
<tr>
<td>64.8162</td>
<td></td>
</tr>
<tr>
<td>5.5572</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>5.1404</td>
</tr>
<tr>
<td>6.5399</td>
<td></td>
</tr>
<tr>
<td>87.0851</td>
<td></td>
</tr>
<tr>
<td>1.2346</td>
<td></td>
</tr>
<tr>
<td>Unempl</td>
<td>13.7959</td>
</tr>
<tr>
<td>12.9468</td>
<td></td>
</tr>
<tr>
<td>21.2572</td>
<td></td>
</tr>
<tr>
<td>52.0001</td>
<td></td>
</tr>
</tbody>
</table>

**Effects from other governance variables**

Other Vars were estimated using other governance variables in place of Polistab. These variables are the indexes of government effectiveness (Goveffect), voice and accountability (Voice) and control of corruption (Controlcorr). A summary of the variance decomposition effects from the estimated Vars are presented on Table 2, which show the effects from each of these governance variables on the variances of HDI, Growth and Unempl.

There is a striking difference between the magnitude of the effects from Polistab on these variables and those exerted by the other

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34 It should be kept in mind that the results shown on Table 2 come from the estimation of different Vars.
governance indicators. After Polistab, the larger effects on the variance of the HDI come from Voice (17.8651) followed by Goveffect (14.6613) and ControlCorr (12.3849).

Apart from the relatively large effect from Polistab on Growth, the effects from the other three governance variables are very small. This is congruent with results presented by Alesina, Ozler, Roubini, and Swagel\(^\text{35}\) with significant effects from political stability to growth, and with the results from Mauro\(^\text{36}\), Tanzi and Davoodi\(^\text{37}\) and Gupta, Davoodi and Alonso-Terme\(^\text{38}\), which showed negative effects of corruption on economic growth.

The effects received by Unempl from the three new governance variables are of the same size but lower than half the values of the effects received from Polistab, with the larger effect exerted by Controcorr.

These results indicate that Polistab is a fundamental variable in the determination of Growth and Unemployment, and particularly the HDI. The other governance variables exert smaller effects.

**Table 2. Summary of Var results that include various governance variables. Effects received by HDI, Growth and unemployment after five years**

<table>
<thead>
<tr>
<th>Effects received by:</th>
<th>Percentage of variance explained by:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Polistab</td>
</tr>
<tr>
<td>HDI</td>
<td>29.5993</td>
</tr>
<tr>
<td>Growth</td>
<td>5.1404</td>
</tr>
<tr>
<td>Unempl</td>
<td>13.7959</td>
</tr>
</tbody>
</table>

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38 Gupta, S., H. Davoodi and R. Alonso-Terme, “Does corruption affect income inequality and poverty?”...
Table 3 shows the effects from HDI, Growth and Unempl on the variance of the different governance variables, obtained from the variance decomposition matrices resulting from the estimated Vars. It can be seen that the only variable that appreciably affects governance is the HDI, particularly its effect on Voice (10.3418). In effect, it should be noted that there are strong reciprocal contributions between the HDI and Voice, which denotes the empowering role of human development on citizens’ demands for participation and transparency. But note that in all cases the effects from governance to HDI are stronger that those from HDI to governance.

**Table 3. Summary of Var results that include various governance variables. Effects received by Polistab, Goveffect and Controlcorr after five years**

<table>
<thead>
<tr>
<th>Effects received by:</th>
<th>Percentage of variance explained by:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HDI</td>
</tr>
<tr>
<td>Polistab</td>
<td>7.5039</td>
</tr>
<tr>
<td>Goveffect</td>
<td>7.7827</td>
</tr>
<tr>
<td>Voice</td>
<td>10.3418</td>
</tr>
<tr>
<td>Controlcorr</td>
<td>3.4516</td>
</tr>
</tbody>
</table>

**Impulse response functions**

While the elements of the variance decomposition matrix represent the relative importance of each variable in the determination of the variance of other variables, the impulse response functions indicate the direction of the path followed by a variable in response to a shock from other variable. The five year accumulated impulse response functions corresponding to the original Var (Polistab, HDI, Growth and Unempl) are shown next.

Graph 1 shows the accumulated response of the HDI to a one standard deviation shock to the index of political stability. It can be seen that the HDI increases instantaneously and continues to increase throughout the period, to reach the accumulated value of 0.035 at the end of the period. This indicates that political stability leads to persistent increases in human development.
Moreover, Growth increases rapidly after a shock to political stability, reaching the maximum accumulated value of 1.3 per cent, but its value starts to decrease after three years (Graph 2). It should be indicated that Chong and Calderón\textsuperscript{39} found that the causality effects from governance to economic growth are felt in the long term.

\textbf{Graph 2. Accumulated response of Growth to shock to Polistab}

\textsuperscript{39} Chong, A. and C. Calderón, “Causality and feedback between institutional measures and economic growth”...
Graph 3 shows the response of Growth to a shock to the HDI. It can be seen that this response is larger than the response to Polistab. Moreover, the standard deviation of Polistab is 0.8608, a large value in relation to the small governance increments obtained by the countries of the region in the last two decades, whereas the standard deviation of HDI is 0.031. This would indicate that economic growth in the region would be more responsive to improvements in human development.

**Graph 3. Accumulated response of GROWTH to shock to HDI**

The behavior of the unemployment rate shows a rapid decrease of 1 per cent in response to a shock to Polistab, after which continues to decrease, reaching a stable value after three years and an accumulated value of -2.4 at the end of the period (Graph 4). Thus, improved governance acts according to its own “Okun Law”. It should be indicated that although the negative effect from Growth to Unempl (Graph 5) is more pronounced than the accumulated effect from Polistab to Unempl (-3.6 versus -2.4), political stability has stabilization effects on unemployment that can be valuable in times of economic crisis.
Graph 6 shows the response of Polistab to a shock to the HDI. Its response is positive, continuing to increase throughout the period, and after five years the accumulated value is 0.400. This value is equivalent to the difference between the Polistab indexes corresponding to Costa Rica (0.56) and El Salvador (0.09). This shows again that governance can be improved by strengthening human development.
The response of Polistab to a shock to Growth is shown on Graph 7. The accumulated response is small throughout the period, which is congruent with the small effect from Polistab to the variance of Growth.
A similar small response is shown by Polistab to a shock to Unempl (Graph 8). It can be seen that governance responds more appreciably to human development than to economic growth and unemployment.

**Graph 8. Accumulated response of Polistab to shock to Unempl**

**Policy implications**

One of the main results found thus far is the strong reciprocal linkages between the governance indicators and the human development index. The question that emerges is related to the identification of the policy instruments that would strengthen these variables. To shed light on this question, a set of ordinary least squares equations were estimated, expressing, first, two governance indicators, Controlcorr and Goveffect, as function of the HDI, social expenditures as percentage of GDP (Socialexpen), and a measure of the inequality in income distribution, represented by the ratio of the fraction of national income received by the richest quintil to the share received by the poorest quintil (Q5Q1). The ordinary least squares estimations were performed with 2004 data corresponding to 18 Latin American countries\(^{40}\), taken from ECLAC\(^{41}\). The results are shown on Table 4.

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40 The countries are those indicated in footnote number 23 plus Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Bolivia, Paraguay and Dominican Republic.

In equations (1) and (2), the endogenous variables are Controlcorr and Goveffect respectively. It can be seen that the coefficients of the HDI are significant, results that corroborate the ones shown on Tables 1 and 2, in the sense that increasing human development strengthens institutions. In equation (1) the coefficient of Socialexpen is not significant, while in equation (2) it is significant at the twelve per cent level. These two variables explain respectively 43 and 62 percent of the variance of the governance variables. These two equations suggest that inasmuch as human development enhances human capabilities, it empowers citizens to seek tangible stakes in national affairs, to increase their demands for transparency in public matters and for the expansion of social services, aspects which contribute to strengthening national institutions.

In equations (3) and (4) both coefficients of Socialexpen are significant determinants of the HDI. Moreover, in both equations the coefficients of the income distribution variable (Q5Q1) are significant and show the expected negative signs, while the coefficient of Goveffect is positive and significant (equation (3)) but that of Controlcorrup (equation (4)) has the expected positive sign, but is significant only at the twenty percent level. The role of Goveffect in improving human development can be explained in terms of its role in strengthening the effective delivery of social services associated with human development. It has been shown by Rajkumar and Swaroop\textsuperscript{42} that institutional capacity is a determinant of health outcomes, while Skipper\textsuperscript{43} has shown the role of institutions in increasing secondary education enrolments in a sample of Latin American countries; as well there is evidence of the beneficial effects of institutions on economic growth\textsuperscript{44}, which would affect the HDI, given that income is another of its determinants.

\textsuperscript{42} Rajkumar, A.and V. Swaroop, “Public spending and outcomes: does governance matter?”...
\textsuperscript{44} Easterly, W., J. Ritzen, and Michael Woolcock, “Social cohesion, institutions, and growth”...
A point to stress is that social expenditures do affect the HDI but have no direct effect on the institutional variables, as shown by equations (1) and (2) of Table 4. Thus, the policy implication may be to increase expenditures so as to reach higher human development levels, which would lead to institutional strengthening, as shown on equations 1 and 2, which in turn would lead to more dynamic economic growth and to reductions in unemployment.

As can be seen in equation (5), human development decreases inequality, which corroborates results showing that inequality is determined by low levels of human capital. Reference should be made to López-Calva and Lustig45 who found declining trends in inequality in the Latin American countries, which they explained by the advancements in human capital that have taken place in the region in recent years. This would imply that the higher levels of human development obtained by means of increased social expenditures would contribute to decrease inequality and, given the literature that has shown negative effects from inequality to institutions46, this would constitute another channel by which social spending would lead to better institutions.

However, as can be seen in equations (5) and (6) social expenditures may increase inequality. From equation (5) the marginal effect on Q5Q1 of a unit increase in Socialexpen is:

\[ 4.6515 - 0.2996(\text{Socialexp}) \]


Table 4. Determinants of governance variables, HDI and inequality

<table>
<thead>
<tr>
<th>Independent variables:</th>
<th>Dependent variables:</th>
<th>Equation number:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>Controlcorr</td>
<td></td>
<td>4.6618</td>
<td>-4.9720</td>
<td>0.7968</td>
<td>0.7760</td>
<td>68.3960</td>
</tr>
<tr>
<td></td>
<td>Goveffec</td>
<td></td>
<td>-4.6618</td>
<td>-4.9720</td>
<td>-100.3923</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controlcorr</td>
<td></td>
<td>0.0394</td>
<td>0.0204</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Q5Q1</td>
<td></td>
<td>-0.0032</td>
<td>-0.0034</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Socialexpen</td>
<td></td>
<td>0.026</td>
<td>0.0383</td>
<td>0.0063</td>
<td>4.6515</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Socialexpen)**2</td>
<td></td>
<td>-0.1498</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R squared</td>
<td>0.43</td>
<td></td>
<td>0.62</td>
<td>0.75</td>
<td>0.70</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>DW</td>
<td>1.95</td>
<td></td>
<td>1.99</td>
<td>0.77</td>
<td>0.98</td>
<td>1.94</td>
<td></td>
</tr>
</tbody>
</table>

It can be shown that only when social expenditures are larger than 15 per cent (4.6515/0.2996) will they have an inequality reduction effect. At values lower than this figure increasing social expenditures may in effect increase inequality, which would offset the expected increases in the HDI, and would nullify the expected increases in governance. This result implies the possibility that some countries may experience a social expenditure trap: public expenditures increase inequality, which weakens institutions and decrease the effects of social expenditures on human development, further increasing inequality, and so on.

This result may be a reflection of the urban bias of public expenditures; there is evidence of the regressive outcomes resulting from fiscal policy in several countries of the region47. Thus, reaching rapid

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advancements in human development and governance demands directing more attention to the distributive side of public finances, as well as focusing special attention to the most disadvantaged groups. The distributive effects of public expenditures may be enhanced by increasing the expenditures targeted to those areas that are associated with improving an individual’s earnings and labor market performance, which, as recent research has shown, are determined in part by early childhood nutrition and antenatal care, as well as early childhood education. Smith has shown that those children who experienced low weight at birth have worse short run mortality rates and lower adult earnings. As well, Case, Fertig and Paxson have reported that low weight at birth and poor health during childhood are early indicators of low occupational status when adults. Moreover, Currie presented evidence that parents’ socioeconomic status affects children’s health, which in turn determines future educational attainment and labor outcomes, thus given rise to an intergenerational transmission of economic status.

On the other hand, Vegas and Santibañez have shown the significant impacts from early childhood education programs in several Latin American countries, which consist of increasing education attainment and higher wages when children that had participated in those programs reach adulthood. Thus, it can be expected that more attention to low income children in matters of early childhood protection and antenatal care, would improve their subsequent labor market participation, which would contribute towards reducing inequality.

In this context, particular importance resides in capitalizing and taking advantage of the complementarities in the achievements of the Millennium Development Goals, particularly the linkage between maternal education and infant mortality, and between maternal education and child nutrition status, so as to create synergy and multiplicative effects in the pursuit of human development.

**Human development and economic instability**

Reference has to be made to Kaminsky and Pereira’s study that explained Latin American countries’ propensity to macroeconomic crisis in terms of their low levels of human development. Moreover, Bernal, Cárdenas, Núñez and Sánchez have reported evidence with respect to Colombia, that manifestations of economic instability, such as inflation and overvalued exchange rate, and specially unemployment, give rise to reductions in school enrolment rates and to increases in inequality.

It can be argued that these manifestation will in turn further undermine human development, which will deepen economic instability, creating thus a vicious circle of low levels of social development, economic instability and lower human development.

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53 Lay and Robilliard have concluded that: “mothers’ schooling lifts important demand-side constraints impeding the use of health services. Children of mothers with primary education are much more likely to receive vaccines, a crucial determinant of child survival. In addition, better educated mothers tend to have longer birth intervals, which again increase the chances of child survival”. Lay, J and A. Robilliard, “The complementarity of MDG achievements: the case of child mortality in Sub-Saharan Africa”. World Bank Working Paper No. 5062. World Bank, Washington DC, 2009.

54 An analysis of the determinants of chronic malnutrition in several Latin American countries is presented by Paraje, who obtained the result that maternal level of education is associated with lower incidence of children’s malnutrition. Paraje, G., “Desnutrición crónica infantil y desigualdad socioeconómica en América Latina y el Caribe”; in: Revista de la CEPAL, No. 99. ECLAC, Santiago de Chile, 2009.


As well, the increases in inequality weaken institutions\textsuperscript{57} and thus decrease investment and economic growth\textsuperscript{58}, which will further exacerbate instability and undermine human development. These processes create a vicious circle, shown on Graph 9, of low level of human development, macroeconomic instability, unemployment, inflation, and resulting low education attainment and increased inequality, which will lead to more instability and lower level of human development, and so on. The low rates of economic growth are not conducive to increases in fiscal revenues, thus constraining new investments in human capital, and so the vicious circle becomes persistent. Conversely, increasing human development levels may reduce the economy’s propensity to experience crisis, macroeconomic and other, given the evidence that education levels are positively associated with national savings so that rising education attainment would have favorable implications on the external accounts.

\textbf{Graph 9. Vicious circle resulting from low level of human development}

\textsuperscript{57} Chong, A. and C. Calderón, “Institutional quality and income distribution”...
Repercussions from human development through time

It should be indicated that Latin American countries’ data permit inferring that a given country’s level of human development in a given point in time reflects past human capital investments. Thus, current gaps in the attention of children’s development are manifested in subsequent decades in terms of low human development indexes, which undermine the national economy’s capacity to grow. To highlight the repercussions through time of human capital investments, Graph 10 shows, for a sample of 18 Latin American countries, the negative association between the 1970 values of the under five mortality rate (per 1000 live births), and the corresponding 2007 human development indexes.\footnote{The under five mortality rate shown on Graph 10 was taken from UNDP, Human Development Report 2004, New York, 2004. The 2007 IDH values were taken from UNDP, Human Development Report 2008, New York, 2009.}

Graph 10. Children mortality in 1970 and 2007 HDI values
This graph illustrates that low current investments in children exact a cost, or impose a penalty to society in the future, in terms of subsequent low values of human development, which in turn would result in low rates of economic growth and weak institutions. It should be indicated that the costs involved in improving health care to children are very low relative to the resulting net benefits, as has been indicated by Unicef\textsuperscript{60}, such that a global investment of $60 million per year for vitamin A and zinc supplementation would result in a benefit of $1 billion. Thus, there are high social opportunity costs to society in undersupplying the early nutrition and education services and antenatal care required by children.

Given that human development endows citizens with capabilities to demand good government, it can be expected that there exist associations between past levels of social development and the current values of governance indicators. Graph 11 shows the associations between the literacy rates prevailing in 1900 corresponding to ten Latin American countries, obtained from Engerman and Sokoloff\textsuperscript{61}, and the respective 2006 index of voice and accountability\textsuperscript{62}.

This graph suggests that the levels of national governance in a given point in time reflect past investments, past priorities and past commitments in the development of human capital; and they confirm that governance can be strengthened by appropriate investments in human capital.

Moreover, Graph 12 shows a clear negative association between the 1900 literacy rates and the corresponding country national 2006 poverty rate. It can be argued that high past investments in human capital endowed individuals with skills that were instrumental in their overcoming poverty, which in turn empowered them to demand

\textsuperscript{60} UNICEF, \textit{Tracking progress on child and maternal nutrition}. New York, 2009.


\textsuperscript{62} The countries are: Argentina, Uruguay, Paraguay, Brazil, Chile, Peru, Honduras, Costa Rica, Guatemala and Mexico
Graph 11. Literacy rate in 1900 and 2006 index of voice and accountability

Graph 12. Literacy rates in 1900 and 2006 poverty rate
expanding social services.\textsuperscript{63} In effect, there is evidence that higher education levels prevailing in a community are associated with more diligent government response towards the attention of citizens’ needs in the respective locality.\textsuperscript{64} This can have an accumulative response, whereby existing high human capital levels result in citizens demanding increasing public sector investments in health and education, which lead to subsequent higher demands for social services and to increasing responsiveness on part of the public sector, thus generating an intergenerational transmission of prosperity. This process is enhanced by the fact that the education levels of children tend to surpass the levels achieved by their parents.\textsuperscript{65} Hence it follows the convenience that the region be subject to a “shock treatment” in matter of human development so as to jump start a virtuous circle.

The manifestations of past investments in education are reflected on the real sector as well. Graph 13 shows a clear positive association between 1900 literacy rates and the corresponding 2006 national values of per capita export of goods and services. This Graph suggests

\textsuperscript{63} Explaining the differences in social development between two Indian states, Uttar Pradesh and Kerala, the former being much more backward than the latter, the World Bank (2003) indicates that: “The early promotion of primary education and female literacy in Kerala was very important for social achievements later on... Gender equity and the agency of women appear to play a major role in Kerala’s success... A more literate and better informed public in Kerala was active in politics and public affairs in a way that did not appear to have happened in Uttar Pradesh. Informed citizen action and political activism in Kerala was building partly on ore mass literacy... seem to have been crucial in organizing poor people”.

\textsuperscript{64} Besley and Burgess present evidence for the case of India on the relationship between newspaper circulation at the state level and the response of state governments to natural disasters: “a given fall in food production yields more public action in situations where newspaper circulation is higher. Similarly, a given level of crop damage due to floods yields more calamity relief expenditures when newspaper circulation is higher”. Besley, T. and R. Burgues, “The political economy of government responsiveness: theory and evidence from India”, in: Quarterly Journal of Economics, 2002.

that the accumulative effects from past investment in human capital redound in subsequent developments in terms of capacity to export.

Special relevance resides in Graph 14 which shows the negative relationship between the 2006-2007 values of the Gini coefficient, taken from López-Calva and Lustig\textsuperscript{66}, and the 1900 literacy rates. It seems that the endowment of assets that result from human capital investment empower and equip citizens to participate in the distributive and political processes with better chances of success. Lower inequality in turn is conducive to better quality institutions\textsuperscript{67},

\begin{figure}
\centering
\includegraphics[width=\textwidth]{graph13.png}
\caption{Graph 13. Literacy rate in 1900 and exports of goods and services per capita in 2006}
\end{figure}

\textsuperscript{66} López-Calva, L. and N. Lustig, “The recent decline of inequality in Latin America: Argentina, Brazil, Mexico and Peru”\textellipsis

\textsuperscript{67} Chong, A. and C. Calderón, “Institutional quality and income distribution”\textellipsis; Chong, A. and M. Gradstein, “Inequality and institutions”\textellipsis; Easterly, W., “Inequality does cause underdevelopment: insights from a new instrument”\textellipsis
more political stability\textsuperscript{68}, more dynamic economic growth\textsuperscript{69}, and to more effective social investments\textsuperscript{70}.

\begin{center}
\textbf{Graph 14. Literacy rates in 1900 and 2006 values of the Gini coefficient}
\end{center}

These graphs show that the economic history of the region can be explained in part by the trajectory of investments in human development, an area where historical gaps have been persistent and which have determined the region’s relative poor participation in the international economy\textsuperscript{71}. In view of the overwhelming evidence that

\begin{itemize}
  \item \textsuperscript{68} Easterly, W., “The middle class consensus and economic development”…
  \item \textsuperscript{69} Chong, A. and C. Calderón, “Causality and feedback between institutional measures and economic growth”…; Easterly, W., “Inequality does cause underdevelopment: insights from a new instrument”…
  \item \textsuperscript{70} Easterly, W., “Inequality does cause underdevelopment: insights from a new instrument”…
  \item \textsuperscript{71} Londono, Szekely and Spillimbergo concluded: “El magro aumento de capital y educación por trabajador logrado por los países latinoamericanos en los ochenta y noventa, representa en realidad, al compararlo con el resto del mundo, un enorme
human development is the main motor of economic development, that it precedes the economic take off into sustained growth, that sustains good quality institutions, and that human development start at the early age of children, then it is of special importance to undertake efforts to alleviate historical gaps, placing human development as the pillar of micro and macroeconomics, and as the determinant of the fate of the economy.

atrás relativo... el progreso futuro en materia distributiva y de intercambio comercial dependerá, sobretodo, de la incorporación del progreso tecnológico que permita una aceleración sustancial de la acumulación de capital físico y humano. El haber marchado tan lento en tal dirección en las últimas décadas, ha sido muy costoso para la región en términos de equidad y de intercambio con el resto del mundo. En el nuevo siglo, no solo corresponde acelerar la acumulación de capitales, sino hacerlo más rápido que el resto del mundo”. Londono, J. L., M. Szekely and A. Spillimbergo, “Comercio, recursos y desigualdad en América Latina”. Banco Interamericano de Desarrollo, Oficina del Economista Jefe, Washington DC, 1997, p. 25.