Uruguay
Equality of Opportunity
Achievements and challenges
October 2010

Poverty Reduction and Economic Management Sector Unit
Latin America and the Caribbean Region
**CURRENCY EQUIVALENTS**
National Currency is the Uruguayan Peso

**FISCAL YEAR**
January 1 – December 31

**MAIN ABBREVIATIONS AND ACRONYMS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ANEP</td>
<td>Administración Nacional de Educación Pública</td>
</tr>
<tr>
<td>BPS</td>
<td>Banco de Previsión Social</td>
</tr>
<tr>
<td>CCT</td>
<td>Conditional Cash Transfer</td>
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<tr>
<td>CEDLAS</td>
<td>Centro de Estudios Distributivos Laborales y Sociales</td>
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<tr>
<td>CPVH</td>
<td>Censo de Población, Viviendas y Hogares</td>
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<tr>
<td>DHS</td>
<td>Demographic and Health Survey</td>
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<tr>
<td>ECH</td>
<td>Encuesta Continua de Hogares (Continuous Household Survey)</td>
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<tr>
<td>ENHA</td>
<td>Encuesta Nacional de Hogares Ampliada</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GNI</td>
<td>Gross National Income</td>
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<td>HOI</td>
<td>Human Opportunity Index</td>
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<tr>
<td>INE</td>
<td>Instituto Nacional de Estadísticas (National Statistical Institute)</td>
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<tr>
<td>LAC</td>
<td>Latin America and the Caribbean</td>
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<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<tr>
<td>PIAI</td>
<td>Programa de Integración de Asentamientos Irregulares</td>
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<tr>
<td>PISA</td>
<td>Program for International Student Assessment</td>
</tr>
<tr>
<td>SEDESOL</td>
<td>Secretaría de Desarrollo Social</td>
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<tr>
<td>SEDLAC</td>
<td>Socio-Economic Database for Latin America and the Caribbean</td>
</tr>
<tr>
<td>UNLP</td>
<td>Universidad Nacional de la Plata</td>
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<tr>
<td>WDI</td>
<td>World Development Indicators</td>
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# TABLE OF CONTENTS

EXECUTIVE SUMMARY .................................................................................................................. 1
Policy Considerations......................................................................................................................... 3
Structure of the Report ....................................................................................................................... 5
Abstract ............................................................................................................................................. 6
1.1 Poverty, Inequality, and Equality of Opportunity in Uruguay ...................................................... 6
1.2 Measuring Equality of Opportunity ............................................................................................. 8
Abstract ............................................................................................................................................. 13
2.1 Introduction .................................................................................................................................. 13
2.2 Education..................................................................................................................................... 15
  2.2.1 HOI: School Attendance ........................................................................................................ 15
  2.2.2 HOI: Completion of ninth grade on time .............................................................................. 16
  2.2.3 Benchmarking education indicators for Uruguay using the WDI .......................................... 17
  2.2.4 HOI: Children speaking and writing a second language ...................................................... 19
  2.2.5 Repetition rates .................................................................................................................. 21
  2.2.6 School dropout ................................................................................................................... 23
  2.2.7 Relative importance of circumstances in explaining equality of opportunity .................... 24
2.3. Health ....................................................................................................................................... 24
  2.3.1 HOI: Access to preventive dental services and health services ........................................... 25
  2.3.2 Benchmarking health indicators for Uruguay using the WDI ................................................ 25
  2.3.3 Relative importance of circumstances in explaining equality of opportunity .................... 27
2.4. Housing and Infrastructure ....................................................................................................... 27
  2.4.1 HOI: Access to sanitation under stricter definition ............................................................. 28
  2.4.2 HOI of Access to dwellings constructed in non-flood risk areas and regularized lots .......... 28
  2.4.3 Benchmarking infrastructure indicators for Uruguay using the WDI .................................. 30
  2.4.4 Relative importance of circumstances in explaining equality of opportunity .................... 31
2.5 Information and Communications Technology ........................................................................... 31
  2.5.1 HOI: Access to a computer or the internet in the household ................................................ 32
  2.5.2 HOI: Access to cell phones or landlines in the household ................................................... 34
  2.5.3 Benchmarking communication technology indicators for Uruguay using the WDI ............ 35
  2.5.4 Relative importance of circumstances in explaining equality of opportunity .................... 37
2.6 HOI - Changes Over Time ......................................................................................................... 37
2.7 Conclusions ............................................................................................................................... 39
Chapter 3: Opportunities for All? The Distribution of Opportunities Across the Country .......................... 40
Abstract ............................................................................................................................................. 40
3.1 Geographic Variation in the HOI ............................................................................................... 40
  3.1.1 HOI: Completing sixth grade on time .................................................................................. 40
  3.1.2 HOI: School attendance ..................................................................................................... 42
  3.1.3 HOI: Access to electricity ................................................................................................... 43
  3.1.4 HOI: Access to water ........................................................................................................ 44
  3.1.5 HOI: Access to sanitation .................................................................................................. 45
  3.1.6 HOI: Access to a toilet in the home .................................................................................... 47
  3.1.6 HOI: Access to public sanitation ....................................................................................... 47
  3.1.7 HOI: Access to health services .......................................................................................... 48
List of Figures

Figure 1.1: Poverty and Inequality in Uruguay.................................................................6
Figure 1.2: Benchmarking Uruguay and the World: Repetition Rates and Secondary School.................................7
Figure 1.3: Percentage of the Poor by Age........................................................................7
Figure 2.1: School Attendance ........................................................................................16
Figure 2.2: Grade Completion .........................................................................................17
Figure 2.3: Persistence to 5th grade, Uruguay in context..................................................18
Figure 2.4: Benchmarking the Persistence to 5th Grade, all countries..........................18
Figure 2.5: Benchmarking progression to secondary school, all countries..................19
Figure 2.6: HOI of speaking and writing English............................................................19
Figure 2.7: Coverage and D-index .................................................................................19
Figure 2.8: Repetition in primary and secondary school, children 6-17 years old– Uruguay 2006.................................21
Figure 2.9: Repetition rates in primary and secondary....................................................22
Figure 2.10: Children 6 to 17 years old that repeat one or more grades in primary school by income decile...........22
Figure 2.11: Percentage of children in each age group not attending school..................23
Figure 2.12: School dropout - Grades 7-10 public schools...........................................23
Figure 2.13: HOI in access to health services.................................................................25
Figure 2.14: HOI Benchmarking health indicator for Uruguay........................................26
Figure 2.15: HOI of access to infrastructure.....................................................................28
Figure 2.16: HOI of access to well-constructed housing..................................................29
Figure 2.17: Distribution of the population in irregular areas, by age groups – Montevideo..............................................30
Figure 2.18: Infrastructure and housing indicators, Benchmarking Uruguay performance........................................30

Chapter 4: Education Policy and the Human Opportunity Framework ..................................55
4.1 The Quantity and Quality of Education and Equality of Opportunity..........................55
  4.1.1 Pre-school attendance .........................................................................................56
  4.1.2 Policies to improve grade retention.................................................................57
  4.1.3 Monitoring the quality of education: an HOI for learning ..................................57
4.2 Initiatives to improve educational attainment and learning...........................................62
  4.2.1 Comparing targeting and conditionality of Asignaciones Familiares to other programs ........................................62
  4.2.2 Access to Technology and Learning .................................................................64
  4.2.2.1 Computers at home .....................................................................................64
  4.2.2.2 Internet at home .........................................................................................65

Chapter 5. Conclusions and Policy Considerations .............................................................67

Annex 1: Data constraints in Uruguay’s encuesta continua de hogares.................................70
  Methodological changes in Uruguay’s Household Surveys...........................................70
  Background...............................................................................................................70
  Continuity of modules .............................................................................................71
  Absence of modules..................................................................................................71

Annex 2: HOI and the inequality penalty.............................................................................72

References ......................................................................................................................75
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EXECUTIVE SUMMARY

Uruguay has achieved high levels of equality of opportunity in terms of access to core basic services such as school enrollment, water, electricity and sanitation. In other areas, such as completion of sixth and ninth grade on time, there exists a significant gap to universal access. Without accelerated progress on these dimensions, Uruguay risks falling behind other countries in the region, as well as trailing further behind the developed countries. Even though the country has shown progress on health and access to technology, it will take some time before all groups of children benefit from access to high quality health services and full access to information and communications technology. At the sub-national level, further attention is necessary for some departments like Tacuarembó that face worrying gaps in universal access to sanitation. In Uruguay, where consensus already exists over the principle of equality of opportunity, the Human Opportunity Index can help identify areas and instruments where progress needs to and can be accelerated.

The objective of this report is to assess progress in providing opportunities to access basic goods and services for all Uruguayan children aged 0-16 with the Human Opportunity Index (HOI). The HOI is an equality of opportunity sensitive coverage rate. The principle of equality of opportunity states that access to goods or services should not be based on circumstances for which individuals cannot be held accountable. The HOI “discounts” the coverage rate if the corresponding good or service is allocated according to any systematic pattern related to circumstances for which the person cannot be accountable. In Uruguay, these circumstance groups for children are gender, ethnicity, household per capita income, parental education, number of siblings, and area of residence of the child. The HOI focuses on several basic opportunities for children in both education and housing: sixth grade on time, primary school attendance, access to electricity, water, and basic sanitation. Overall, this framework can be used as a means for monitoring, evaluating, and accelerating progress in children’s access to basic goods and services (regardless of their initial circumstances) that will help them achieve their full potential. This is relevant because despite a significant reduction since 2005, poverty in Uruguay continues to be higher for youth and children, and the country continues to face several challenges regarding the opportunities of its younger generations.

According to the 2010 Human Opportunity Report for Latin America and the Caribbean (Molina et al., 2010), Uruguay ranks relatively high in the region in ensuring childrens’ access to basic goods and services, however a challenge remains in the universalization of completion of sixth grade on time. Uruguay ranks second after Chile in the 2010 projections of the Human Opportunity Index for LAC, which takes into account the five basic opportunities mentioned above (Figure 1). Uruguay provides near universal access to water, electricity, sanitation and school attendance while falling behind the region’s leaders in completion of sixth grade on time. The latter implies that there remains a significant gap between the current level of the HOI for completion of sixth grade on time and the goal of universal access.
Given Uruguay’s level of development, a second challenge is to accelerate progress towards more demanding opportunities to access goods and services, in particular in the context of the XXI century. The dimensions discussed in this report go beyond the five basic opportunities covered in the 2010 Regional Report and draw on the policy priorities of this more developed middle income LAC country. They include universal access to completing ninth grade on-time (linked to Uruguay’s law on compulsory education through ninth grade), universal access to sanitation defined as access to the public sewage network (a stricter definition of sanitation that is more in line with developed country standards), and universal access to computers and the internet at home for children through age 16, among others. The results show that as of 2008 Uruguay is quite far from universal access on these more challenging opportunities. In addition, the most important circumstances in explaining inequality of opportunity in the more challenging opportunities tend to be parent’s education and household per capita income, suggesting some constraints to intergenerational mobility. Gender and ethnicity do not play much of a role, and the circumstance for area only matters for access to sanitation and to dwellings in rural non flood-risk areas.

The third challenge for Uruguay comes at the sub-national level: some departments have large gaps in universal access to even the most basic opportunities. Although levels of the HOI are generally high, certain departments present notable exceptions in both education and housing. Figure 2 disaggregates by department the HOI for sixth grade on time (the opportunity on which the country fares worst by comparison to other LAC countries). The figure highlights with a vertical line the national aggregate HOI values for the highest and lowest ranked Southern Cone country on this indicator, as well as Uruguay’s own national aggregate. The HOI by department ranges from 61 to 89 percent, highlighting large differences across the country. Only 61 percent of the opportunities needed for universality of access to completing sixth grade on time are available and equitably allocated in San José, implying further attention is especially
necessary for such departments. In addition, although in this case no departments place lower than the lowest-ranked Southern Cone country, only eight of the departments surpass the average sixth grade on time HOI value for Chile. The HOI in this analysis can be a helpful tool to monitor, target, and evaluate progress towards universal access for the country as a whole and departments in particular.

**Figure 2: HOI for sixth grade on time by department, 2008**

<table>
<thead>
<tr>
<th>Department</th>
<th>HOI Level</th>
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<tbody>
<tr>
<td>Tacuarembó</td>
<td>87</td>
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<tr>
<td>Soriano</td>
<td>86</td>
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<tr>
<td>Durazno</td>
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<td>Colonia</td>
<td>85</td>
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<td>Treinta y Tres</td>
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<td>Lavalleja</td>
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<tr>
<td>Río Negro</td>
<td>82</td>
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<tr>
<td>Cerro Largo</td>
<td>82</td>
</tr>
<tr>
<td>Rocha</td>
<td>81</td>
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<tr>
<td>Florida</td>
<td>81</td>
</tr>
<tr>
<td>Maldonado</td>
<td>78</td>
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<tr>
<td>Rivera</td>
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<tr>
<td>Canelones</td>
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<td>Salto</td>
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<tr>
<td>Montevideo</td>
<td>75</td>
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<tr>
<td>Flores</td>
<td>73</td>
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<tr>
<td>Artigas</td>
<td>68</td>
</tr>
<tr>
<td>Paysandú</td>
<td>61</td>
</tr>
<tr>
<td>San José</td>
<td>71</td>
</tr>
</tbody>
</table>

In general, current social policy in Uruguay, guided by the National Equity Plan, is in sync with these challenges, progressive from the perspective of household per capita income and consistent with the aim of expanding access to basic opportunities for all children. The recently implemented anti-poverty transfer program (*Asignaciones Familiares*), early childhood development program, and Plan Ceibal are primarily focused on opportunities for children. Nonetheless, as highlighted below there is still room for improvement to accelerate opportunities to access basic goods and services for all children. As a policy tool, the HOI can serve to build consensus across political parties since the focus is on equalizing children’s opportunities, rather than on equalizing adults’ outcomes, which can be affected by talent or effort. In the case of Uruguay, where consensus already seems to exist over the issue of equality of opportunities, the HOI can help identify areas where progress needs to be accelerated. To this end, several policies could be considered.

1. **National targets and monitoring framework**

The HOI framework can be utilized to monitor progress towards expanding opportunities to access basic goods and services for all children. By providing information on Uruguay’s current position, including in comparison with other countries as well as an internal comparison...
across departments, the HOI framework can provide inputs to help set out the country’s policy objectives and national targets. As has been seen, the framework can also be utilized to **monitor progress towards more challenging opportunities or to monitor the evolution of existing opportunity gaps.**

Since data is required for monitoring, the HOI framework thus also serves as a means to **highlight data restrictions.** Several constraints stand out in the Uruguayan case:

- Consistency of coverage: national surveys only exist since 2006, hence only urban comparisons can be made over long-periods of time.
- Continuity of modules: some modules only exist for one year (such as the special 2006 module on school repetition and drop out and the ability to speak and write English), making some comparisons impossible from 2006 to 2008.
- Data on key health outcomes and access to services: the national household survey (ECH) lacks routine questions on health and no Demographic and Health Survey exists.

2. **Targeting programs or expenditures**

The HOI can provide a means to **focus the targeting of programs or expenditures.** The HOI will increase faster when programs are more targeted toward groups that are excluded or marginalized. To accelerate progress, Uruguay could consider **aligning expenditures to vulnerable groups and to goods and services where the HOI remains low.** These efforts should also focus on addressing important supply side constraints in the education system. **Key priorities for consideration include:**

- Increasing public social spending in disadvantaged departments such as Tacuarembó or on indicators such as completion of sixth grade on time that are lagging behind. The HOI framework can highlight which indicators are lagging behind and in which departments, allowing for better targeting of expenditures.
- **Continuing efforts to expand access to early childhood development programs.** The results suggest that large gains in pre-school attendance rates of up to 31 percentage points have occurred over the last decade, largely due to increases in coverage rates. **This is an especially positive result in light of studies that find preschool attendance has a strong effect on the number of completed years of formal education** (Berlinski, Galiani and Manacorda, 2007).
- **Continuing efforts to improve the completion of ninth grade on-time,** with improvements in educational quality that would lower repetition and dropout rates after sixth and seventh grades, particularly for children in the lowest wealth quintile. While around 50 percent of children in the poorest decile had repeated a grade in primary school, the rate was only 5 percent for children in the richest decile. The results for the HOI of the Program for International Student Assessment (PISA) highlight that the typical Uruguayan student is below the level of competence of the typical OECD student, and students from the poorest quintile in Uruguay are worse still.
3. Realign incentives

Realign and strengthen incentives that support and accelerate the expansion of the HOI itself:

- **Consider expanding anti-poverty transfers** (*Asignaciones Familiares*) and aligning incentives to explicit national education and public health goals. *Asignaciones Familiares* is conditional on certain health and education requirements and is primarily focused on opportunities for children. These conditions could be strengthened to link more directly with national goals, such as the law for compulsory school through ninth grade, and thus the program could potentially serve as a vehicle to accelerate progress towards the goal of universal access to ninth grade on time.

- **Consider public investment to expand access to information and communications technology across all of Uruguay’s departments.** Access to a computer and an internet can be an important instrument for preparing students for the challenges of the XXI Century. Improving access to computers is a key policy objective of the Government of Uruguay. Nonetheless, using data from the 2008 household survey, access to a computer and/or the internet in the home according to an equal opportunity principle is relatively low in Uruguay. This access is likely rising with the Government’s Plan Ceibal program, but the impact of the program is yet unknown. A full evaluation of Plan Ceibal’s impacts on educational outcomes and more broadly on households’ economic opportunities is suggested.

**STRUCTURE OF THE REPORT**

The report is organized around the main achievements and challenges Uruguay faces from the perspective of expanding opportunities for children in the XXI century – a perspective that is consistent with the country’s stated social welfare goals and upper middle-income status. Chapter 2 presents the main achievements and challenges faced at the national level in access to opportunities for key goods and services: education, health, housing and infrastructure, and information and communications technology. It also presents results over time using limited comparable data. Chapter 3 explores the geographic distribution of the HOI in depth as well as the distribution of gains and losses over time. Both chapters measure opportunities to access a basic set of goods and services and an expanded set more consistent with Uruguay’s relative development, whenever data allows.

This report also offers some policy applications of the equality of opportunity framework as well as policy considerations to support an opportunity-enhancing environment. Chapter 4 provides an assessment of how recent education, social, and technological programs may fare from the perspective of expanding opportunities to children. Chapter 5 concludes.
CHAPTER 1 - MEASURING EQUALITY OF OPPORTUNITY IN URUGUAY: THE FRAMEWORK

ABSTRACT

This chapter sets the framework for the report. Uruguay has achieved significant poverty reduction since 2005 and has historically been one of the most egalitarian countries in Latin America. However, poverty in Uruguay continues to be particularly high for youth and children. Current levels of poverty, inequality, and the distribution of basic social services may be affecting the opportunities of future generations in ways that reinforce the persistence of poverty and inequality over time.

1.1 POVERTY, INEQUALITY, AND EQUALITY OF OPPORTUNITY IN URUGUAY

Uruguay has achieved significant poverty reduction since 2005 and has historically been one of the most egalitarian countries in Latin America. Figure 1.1 shows that poverty increased significantly during the 2002-2003 economic crisis and started decreasing in a sustained manner some time after the recovery. Still, national moderate poverty continues to be close to 22 percent. Income inequality is low in Uruguay compared to other countries in Latin America and the Caribbean (LAC), but unlike most countries registers a slightly increasing trend.

Figure 1.1: Poverty and Inequality in Uruguay

On the other hand, Uruguay’s upper middle-income status and explicit national goals go beyond progress in inequality and poverty reduction to reach higher standards. A benchmarking exercise comparing social indicators of all countries in the world shows that the relative

1 The National Equity Plan (Plan de Equidad Social) adopted recently states a very ambitious social protection and social development agenda (www.mides.guy.uy).
The performance of Uruguay is heterogeneous across different dimensions of social development. In some indicators such as access to primary and secondary schooling, Uruguay is among the top 20 percent of countries in the world. Similarly, Uruguay ranks high on access to basic health services. However, on progression to secondary schooling and repetition rates, Uruguay ranks among the bottom 30 percent in the world, a performance inconsistent with its relative income and overall social development level (Figure 1.2).

**Figure 1.2: Benchmarking Uruguay and the World: Repetition Rates and Secondary School**

Poverty in Uruguay is particularly high for youth and children. Figure 1.3 shows the percentage of the poor distributed by age, highlighting a very high concentration of poor persons between ages 4-16. This measure of poverty uses household per capita income rather than consumption and therefore the high concentration of poverty among children and youth is partly

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2 For details on the benchmarking methodology and results for several indicators see Chapter 2 (section 2.2.3: education; 2.3.2: health; 2.4.3: housing and infrastructure; and 2.5.3: information and communications technology).
due to the fact that poor households tend to have more children. However, some features remain unexplained. In most LAC countries, this graph has a U shape as children and the elderly are out of the labor force, while the percentage of the poor drops remarkably around age 16-18 as youth become economically active. In the case of Uruguay, youth and young workers until age 37 still register a significant number of poor.\textsuperscript{3} Also unlike other LAC countries, poverty among the elderly in Uruguay is very low due in part to the effectiveness of the social protection systems in place. This concentration of poverty among youth and children has been noted by policymakers in Uruguay, and specific actions are under way, including a redesign of anti-poverty income transfers currently focused on children living in poor households (Asignaciones Familiares).

\textbf{Current levels of poverty, inequality, and the distribution of basic social services may be affecting the opportunities of future generations in ways that may reinforce the persistence of poverty and inequality over time, including poverty among children.} Moreover, the inter-generational transmission of poverty tends to have a negative effect on aggregate human and physical capital accumulation, essential for sustained economic growth. Income transfers focusing on children in poor households are helpful and go in the right direction but, as stated explicitly by the Government of Uruguay, they are not sufficient to level the playing field for Uruguayan children and provide equal opportunity.

This report focuses on opportunities for children including access to education (not just in terms of quantity but quality as well), progression to secondary school, health, quality housing and infrastructure, and information and communications technology. The opportunities structure for children, in particular children in poor households, has an impact on future opportunities, including participation in the labor and financial markets, and future poverty levels.

1.2 \textbf{Measuring Equality of Opportunity}

In a strict sense, equality of opportunity implies that pre-determined conditions outside one’s control such as place of birth, parental education, household per capita income, gender or ethnicity, should not prevent an individual from having access to basic goods and services. Observed differences in access in adults, even within an equality of opportunities framework, could exist if they are due to differences in ability, luck, effort, or individual preferences.\textsuperscript{4} It is widely accepted that in the case of children, equality of opportunities implies access to basic goods and services that are important for their capacity for development, and that there should not be observed differences in this access based on pre-determined conditions outside their control.

This report uses the Human Opportunity Index (HOI) to measure the extent to which children in Uruguay have equal and universal opportunities to access the basic goods and services that they need to advance in life and have a chance to reach their potential as adults. It draws upon the methodology first introduced in Barros \textit{et al.} (2009) and then further refined in Molinas \textit{et al.} (2010). This measurement takes into account both average coverage and

\textsuperscript{3} Note that poverty has been estimated using household per capita income including public transfers and subsidies (from social protection or anti-poverty programs).

The Human Opportunity Index is a synthetic measure of inequality of access to basic services (crucial to basic opportunities) for children aged 0-16:

$$HOI = \overline{p} \ (1 - D)$$

$$\hat{D} = \frac{1}{2\overline{p}} \sum_{i=1}^{n} w_i |\hat{p}_i - \overline{p}|$$

Where $\overline{p}$ is the average coverage or access to a service or an opportunity

$D$ measures inequality in the distribution of opportunity or coverage dissimilarity among children from groups with different pre-determined circumstances such as gender, race, household income level, parental education, urban residence.

$w_i$ are the population weights (for different circumstance groups).

$\hat{p}_i$ is the estimated probability of having access to an opportunity/service for each one of the groups with different pre-determined circumstances.

The HOI increases as long as average coverage increases and is more equitably distributed among different groups of interest. The HOI ranges from 0 (0 coverage or maximum dissimilarity equal to 1) to 1 (universal coverage). The HOI penalizes inequality in the distribution of opportunities with an increase in $D$. Thus, for two countries with identical average coverage, the HOI would be higher for that country with lower $D$ (dissimilarity among groups).

The HOI is estimated for each one of the basic services and opportunities of interest such as access to education or water. Basic opportunities are those for which there is broad consensus regarding universal provision to children (by the State, markets, or household). This basic set of opportunities can be expanded to better suit the needs and aspirations of middle income countries such as Chile, Brazil, and Uruguay.

The HOI for each good and service can be aggregated by a simple average. This average is referred to as the Human Opportunity Index (HOI). Data permitting, each HOI can also be estimated for different regions or administrative units within a country to improve social program targeting and the distribution of social expenditure.

Source: Barros et al. (2009) and Molinas et al. (2010).

**Uruguay ranks high among LAC countries in the provision of basic opportunities for children according to an equality of opportunity principle.** Figure 1.4 shows the 2010 national HOI projections in Molinas et al. (2010) averaged across five very basic goods and services for which there was comparable data across countries circa 1998 and 2008 (access to water, sanitation, electricity, completing sixth grade on time, and school attendance for children 10-14 – two points in time are needed for the projections). Given the basic nature of
opportunities considered in Molinas et al. (2010), it is not surprising that Uruguay ranks among the best performers in the region, second only to Chile and registering similar levels to Mexico, Costa Rica, Venezuela, and Argentina.\(^5\)

**Figure 1.4: Equality of Opportunities in Uruguay and LAC – The 2010 Aggregate Human Opportunity Index (HOI)**

![Graph showing equality of opportunities in Uruguay and LAC](image)

This study deepens the analysis on Uruguay presented in the regional studies and measures new dimensions of opportunities for children that are considered relevant challenges for a country like Uruguay. The regional studies are constrained by the need for comparability across several countries in the choice of circumstances and opportunities. A country study can work with a much broader spectrum of opportunities and circumstances. Also, as societies universalize more basic opportunities and reach a certain degree of development, they incorporate in their horizon the universalization of more sophisticated opportunities. This study measures opportunities for access to education, health, housing and infrastructure, and information and communications technology (such as computers and internet use) at national and department levels (see Table 1.1). Opportunities are reported for children through age 16, and not only for children through age 10 as in the Molinas et al. (2010) regional study.

\(^5\) However, Uruguay only has national data for 2006 and 2008, thus the projections are based on a short period. See Chapters 2 and 3 on data issues regarding the inter-temporal evolution of the HOI for Uruguay. For more detail see also Annex 1.
This study also controls for a larger set of circumstances, a refinement to the analyses of circumstances included in the LAC HOI from the regional report. As mentioned above, the LAC HOI had a minimum common denominator across countries of both basic opportunities and circumstances, given data comparability constraints. In this report we included key circumstances such as ethnicity that due to comparability issues across countries were not included in computing the LAC HOI. Table 1.2 shows the set of circumstances included in both reports and the reference units to which they apply. The circumstances of children are predetermined and from an equality of opportunity standpoint, should not affect their access to basic goods and services.
1.3 OBJECTIVE AND STRUCTURE OF THE REPORT: EQUALITY OF OPPORTUNITY - ACHIEVEMENTS AND CHALLENGES IN URUGUAY

The objective of this report is to provide detailed analysis of the opportunities for youth and children in Uruguay, based on an equality of opportunity principle. The report is organized around the main achievements and challenges Uruguay faces from the perspective of equality of opportunities in the XXI century – a perspective that is consistent with the country’s stated social welfare goals and upper middle-income status. Chapter 2 presents the main achievements and challenges faced at the national level in access to opportunities for key goods and services: education, health, housing and infrastructure, and information and communications technology. Chapter 2 also presents results over time using limited comparable data.

Chapter 3 explores in depth the geographic distribution of the HOI as well as the distribution of gains and losses over time. Both chapters measure opportunities to access a basic set of goods and services and an expanded set more consistent with Uruguay’s relative development, whenever data allows. Examining access to opportunities for children versus wealth/welfare across geographic areas complements the view taken by the World Development Report 2009. Policy efforts to equalize the differences in the standard of living between regions are likely to be counterproductive to economic development. Instead, policy makers can focus on the equalization of basic opportunities for children and improving mobility and geographic integration via communications and transportation.

This report also offers some policy applications of the equality of opportunity framework as well as policy options to support an opportunity-enhancing environment. Chapter 4 provides a partial assessment of how recent education, social, and technological programs may fare from an equality of opportunities perspective. Chapter 5 concludes.

<table>
<thead>
<tr>
<th>Reference Unit</th>
<th>Pre-determined circumstances</th>
<th>Regional Study</th>
<th>Uruguay Study</th>
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<td>Both parents in household (yes / no) X</td>
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<tr>
<td></td>
<td>Per capita income (log pesos) X</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Number of children younger than 16 X</td>
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<tr>
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<td>Number of years of schooling X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td>Child</td>
<td>Area of residence (urban / rural) X</td>
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<tr>
<td></td>
<td>Ethnicity (Afro / Indigenous descendant) X</td>
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CHAPTER 2. RAISING THE BAR: EQUALITY OF OPPORTUNITY IN URUGUAY – RELEVANT CHALLENGES FOR THE XXI CENTURY?

ABSTRACT

This chapter analyzes new dimensions of opportunities for children that are considered relevant challenges for Uruguay’s open and relatively developed economy as it sets its sights on reaching the levels of developed countries. Although there is still room for improvement in achieving sixth grade on time, one of the basic indicators, this chapter raises the bar for Uruguay by focusing on more challenging indicators within the areas of education, health, housing and infrastructure, and information and communication technologies.

2.1 INTRODUCTION

Uruguay stands out in the Latin America and Caribbean region as one of the countries that provides the highest level of equality of opportunities to children. As shown in Figure 1.4 (Chapter 1), Uruguay is performing well under the aggregate Human Opportunity Index, ranking second in the region in the 2010 projections. The country’s high performance can also be seen among the HOI’s five disaggregated indicators of opportunities for children: completion of sixth grade on time, school attendance between ages 10-14, and access to drinking water, sanitation services, and electricity.

In the context of a generally high performance upper middle income country that is among the most developed countries in the region (ranking third in the Human Development Index for LAC)\(^6\), what are the relevant challenges for Uruguay in the XXI Century? The five indicators of basic opportunities mentioned above are those covered in the regional study, necessarily chosen to conform to data available across all 19 countries. Although there is still room for improvement in one of these indicators, this chapter aims to raise the bar for Uruguay by focusing on a set of more challenging indicators within the areas of education, health, housing and infrastructure, and information and communications technology. The new dimensions of opportunities for children analyzed in this chapter are considered relevant challenges for Uruguay’s open and relatively developed economy as it sets its sights on reaching the levels of developed countries.

In education, the most relevant additional dimensions of opportunities, given Uruguay’s context and the available data, include: attendance rates through age 16, completion of ninth grade on time, and the ability to speak and write in more than one language. Uruguay has universalized access and entrance into primary education for more than two decades. However, a rapidly developing economy will require an even more educated labor force, requiring higher sets of skills that can only be achieved through secondary school and vocational training. Therefore, student attendance rates through age 16 become a more relevant dimension to analyze. In addition, by having passed legislation to increase compulsory education from 6\(^{th}\) to 9\(^{th}\) grade in 1973, the completion of ninth grade on time rather than sixth grade on time becomes the relevant dimension to analyze. However, one of the most notable problems and inefficiencies

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of the educational system is the widespread grade retention and drop-out rate, which negatively affect the possibility of on-time completion. Finally, for a country seeking to advance in the XXI century, it is important that human capital accumulation also include skills that are transferable in a global economy. Therefore, the ability to speak and write more than one language becomes another relevant dimension of opportunity to analyze within education.

The health section presents the following additional dimensions of opportunities for Uruguayan children: access to preventive dental visits and to health services. Uruguay has a strong public presence in the provision of health services, among the best health indicators in LAC, and has been characterized by socio-economic indicators comparable to those of high-income countries. However, one of the main challenges faced by Uruguay’s health sector is the rising cost of health care, part of which can be contained through stressing preventive care. Given these facts, both preventive care and regular services are challenging dimensions to analyze in Uruguay’s case. These choices also reflect the reality that little data is available in the country’s surveys for analysis of other indicators.

In the housing and infrastructure section, the relevant additional dimensions of opportunities given Uruguay’s context include: access to higher standards of sanitation services and access to dwellings that are well-constructed and in safe areas. Uruguay ranks high on the basic HOI indicator for access to electricity, water, and basic sanitation. However, the more relevant challenge is to strive for the stricter definition of access to sanitation services that is closer to developed country standards. Rather than including access to septic tanks, the stricter dimension of opportunity focuses on universal access to the public sewage network as the quality of septic tanks is hard to assess. In addition, in seeking to reach developed country standards, it is also important to face the challenge of providing dwellings for its population that are constructed in non-flood risk areas (a rural challenge) and regularized lots.

Finally, the information and communication technologies section presents the following additional dimensions of opportunities for Uruguay: access to cell phones, landlines, computers, and the internet in the household. As with education, for a country seeking to advance in the technological XXI century, it is important that human capital accumulation includes transferable skills in a global economy. The fastest and most direct ways to connect to the global economy and learn XXI century skills are through cell phones, computers, and the internet. Without access to these dimensions of opportunities, children would be starting technologically behind the developed countries of the world.

The remainder of the chapter is divided as follows. Each of the four sections on education, health, housing and infrastructure, and information and communication technologies described above (Sections 2.2-2.5) will present the value of the corresponding Human Opportunity Indices for each indicator as well as data on coverage rates (percent of children with access to each opportunity) and the D-index (the dissimilarity index that reflects how equitably opportunities are allocated across groups). For each indicator an effort will be made to also present Uruguay’s results in context with other middle income countries and/or developed countries of interest to Uruguay, thus benchmarking Uruguay’s performance in a series of selected indicators. Since values for the Human Opportunity Index do not exist for most countries, the benchmarking will be based on variables from the World Bank’s World Development Indicators. Lastly, each of these four sections will end with an analysis that identifies the circumstances that most affect
inequality of opportunity. Section 2.6 will present results for the Human Opportunity Index over time, while Section 2.7 will conclude.

2.2 Education

Primary schooling in Uruguay has been compulsory since 1877 and universal since the 1950s. As a consequence, literacy rates among the adult population are high, reaching 97.1 percent among men and 98.2 percent among women (Berlinski, Galliani and Manacorda, 2007). Consequently, Uruguay has proposed more challenging goals for itself, passing legislation in 1973 extending compulsory education from primary education (ages 6-11) to junior high school (“ciclo básico”, ages 12-14). Even more challenging, however, is a focus on completing compulsory education on time, that is without repeating and therefore without the added costs and inefficiencies to the educational system.

In the area of educational opportunities, this section will focus on analyzing the more challenging dimensions of opportunity linked to attendance rates through age 16, completion of ninth grade on time, and the ability to speak more than one language. However, even the value of the HOI for finishing sixth grade on time shows important challenges, negatively affected by high repetition rates. This section will therefore also include an analysis of two of the most notable inefficiencies of Uruguay’s educational system: widespread grade retention and early drop out (Manacorda 2006). Both features are common to other Latin American countries (Urquiola and Calderon, 2004).

2.2.1 HOI: School Attendance

Although primary school entrance and attendance rates are almost universal, they decrease for children in secondary school. The Human Opportunity Index for school attendance of children 6-12 years old (those attending primary school) is 99 percent in 2008 (see Fig 2.1a). However, when the HOI is calculated for 12-17 year olds, the index decreases to 80.7 percent. The school attendance variable measures the gross attendance rate (that is, school attendance independent of grade) for children between the ages of 12 and 17. This measure is therefore including children in late primary, middle school, or throughout secondary education.

As noted in Chapter 1, the HOI synthesizes into a single indicator measurements of both the level of opportunities in a society (the average coverage rate for a given opportunity) and how equitably those opportunities are distributed (the dissimilarity index, or D-index). The high value for the HOI for school attendance of 6-12 year olds implies both universal coverage and a low D-index (Fig. 2.1b) for this younger cohort. The values for 10-14 year olds are also included as these correspond to the basic opportunities from the regional study, although updated to 2008 values. The more challenging dimension in this section focuses on 12-17 year olds since a rapidly developing economy will require a labor force with, on average, constantly higher skills achieved through secondary school and/or vocational training.
The difference in coverage rate seems to be the more important of the two factors affecting the overall HOI for school attendance. The lower HOI value for the 12-17 year old age group is due both to a decrease in coverage and an increase in the D-index. The 2008 value of the D-index is 4.8 percent, indicating that only 4.8 percent of the opportunities for 12-17 year olds to attend school need to be reallocated in Uruguay to eliminate the differences across the defined circumstance groups. The D-index increases from 1.2 for 10-14 year old children, indicating that there is a slight worsening in the equality of opportunity of school attendance for older children. In other words, better-off groups and worse-off groups are on average 4.8 percent, instead of 1.2 percent, above or below the national average of school attendance. In terms of coverage, however, the effect is more important. Coverage decreases by close to 15 percent when comparing school attendance for 6-12 year olds (primary school) versus 12-17 year olds.

2.2.2 HOI: Completion of ninth grade on time

The HOI of completing sixth grade on time is low for Uruguay’s level of development and decreases by half for the more challenging indicator of ninth grade on time. Around 78 percent of all opportunities needed to ensure universal on-time access to primary education are both available and allocated equitably in 2008 (Fig. 2.2a). In terms of the components of the HOI, 83.1 percent of children had completed primary education on time (coverage; Fig. 2.2b), but out of these opportunities 5.9 percent were not allocated equitably (D-index). For the indicator of completing ninth grade on time, the HOI decreases sharply: only 34 percent of the needed opportunities for universal coverage of a junior high school education were both available and allocated equitably in 2008.

The decrease in the HOI at higher grades is due both to lower coverage and a higher D-index. Coverage decreased from 83.1 percent for completion of sixth grade on time to 46 percent for completion of ninth grade on time. The D-index more than quadrupled to 26.3 percent for ninth grade on time completion. The latter implies that 26 percent of the opportunities needed to ensure universal on-time access to education through ninth grade would need to be reallocated in Uruguay to eliminate the differences across defined circumstance groups. In other words, better-off and worse-off groups are on average 26 percent above or below the national average of on-time ninth grade completion.
2.2.3 Benchmarking education indicators for Uruguay using the WDI

Using the World Development Indicator’s definition of “persistence to grade 5”, Uruguay shows an improvement between 1998-2007, but remains low compared to OECD countries or compared to countries at the same income per capita in other regions. The purpose of incorporating WDI data is to compare Uruguay’s performance to that of other relevant countries in order to place the country’s performance in context. Comparisons of the HOI itself is not possible since the HOI has yet to be calculated outside Latin America, while within the region the latest data available for most countries is still circa 2005 and based only on a basic set of indicators. Therefore, this section includes a brief comparison with other countries using the available WDI data. Fig 2.3 shows that persistence to grade 5 for Uruguay in 2007 is lower than that of OECD countries, even looking at their rates in 1997. In addition, persistence to grade 5 for Uruguay in 2007 is also lower than in Mexico, Chile, or Poland, however Uruguay presents a stronger improvement over the decade.

Benchmarking persistence to 5th grade with all countries, Uruguay’s position is in the upper third of the distribution, improves slightly over time, but worsens when controlling for country characteristics. The Benchmarking exercise (explained in Box 2.1) calculates predicted percentiles for where a given country is located in a distribution of countries for a given indicator. Looking at past performance, the predicted percentiles can be used by Uruguay to set realistic future targets. For this indicator, Uruguay comes out in the upper third of the distribution of 142 countries in the WDI (see Fig 2.4a), which implies that it does still have room for improvement. The unconditional change over time shows an improvement, however it is relatively small (see Fig 2.4b). Finally, controlling for country characteristics (i.e., the conditional change of the indicator seen in Fig 2.4b), Uruguay’s position slightly worsens.
For the indicator of progression to secondary school, using the same benchmarking exercise, Uruguay’s performance is relatively quite low. Uruguay’s data point for this indicator in the WDI corresponds to 2006. Out of 156 countries, Uruguay is only within the lower third of the distribution, quite out of line with its development level (Fig 2.5a). Uruguay experiences practically no change in this indicator between 2000 and 2006, coming out near the middle of the distribution. Conditional of country characteristics, there is not much change to this average result. (Fig. 2.5b)
2.2.4 HOI: Children speaking and writing a second language

The Human Opportunity Indices for both of the more challenging indicators of speaking and writing English reveal similarly low values as the HOI of completing ninth grade on time. For the Uruguay of the XXI century, in addition to advancements in school progression, it is important to accumulate human capital that is transferable in a global economy and across labor market sectors (World Bank 2007 Investment Climate Report). The HOI indicators for 14-18 year olds speaking and writing English fit this description and are available in the household surveys. Around 37 percent of all opportunities needed to ensure universal access to writing English were available and equitably distributed, higher than the 34 percent for on-time completion of ninth grade. Only 28 percent of all opportunities needed to ensure universal access to speaking English as a second language were available and equitably distributed (Fig. 2.6).

Source: Author’s estimations based on Encuesta Continua de Hogares 2006
Box 2.1: Benchmarking Uruguay’s performance

The social indicators used in the Benchmarking exercise are from the World Bank’s World Development Indicator data base. For each indicator, we follow a common approach. First, we compare the level of the indicator in Uruguay in 2007, or the most recent year, to the most recent data available for other countries in the World Bank’s data bases. The data for all countries are plotted in the form of the cumulative distribution function and Uruguay’s position in the distribution is noted.

Second, we compare the average annual change of the indicator in Uruguay between 2000 and 2007 (or latest available) to the distribution of average annual changes for all countries in the WB data bases between 1985 and 2007. The number of observations on the changes varies depending on the information available for each indicator. In this comparison, there are no controls made for differences in characteristics across countries. It is a strict comparison of Uruguay’s value for the change with the unconditional distribution of changes that have occurred in all other countries over the more than 25 year time period.

Finally, we present comparisons of the average annual change in an indicator controlling for differences in the characteristics of the country. The controlling for country differences is done by using quintile regressions to estimate the relation between the indicator and a set of characteristics of the country at different points of the distribution. In contrast to an Ordinary Least Squares (OLS) regression that estimates the relation at the mean of the distribution, quintile regression can estimate the relation at the median, the 25th percentile or, indeed, at any given percentile. Just as the estimated coefficients from an OLS regression might be combined with values of the country characteristics to yield a predicted mean value of the indicator, the estimated coefficients from each one of the quintile regressions are combined with the given country characteristics to yield predicted percentiles. These predicted percentiles are plotted and the actual change in the indicator is compared to the distribution of predicted percentiles. If the actual change is towards the upper end of the distribution of predicted percentiles, performance would be considered good. If it is towards the lower end of the distribution of the predicted percentiles, performance would be considered poor. Note that the predicted percentiles are specific to the country. Thus, what would be considered good or poor performance would be expected to vary across countries.

How the Benchmarking exercise can be used as a tool for policy making?

Looking backwards at past performance, it is possible to use the predicted percentiles to look forward and guide what Uruguay might pick for a target. If Uruguay wanted to be aggressive in pursuing a target, it might set out to try to achieve the value equal to the 80th percentile of its distribution of predicted percentiles. It could also choose to set a target relative to its past performance. It might choose as a target the value that corresponds to the percentile that is 20 points above what it has achieved in the past. The predicted percentiles can be used to determine whether previous targets that have been set—for example, an MDG or lower repetitions rates in secondary school—seem achievable or not. If achieving the goal would require Uruguay to perform at a level considerably above the level it has performed in the past, it might not be reasonable to assume that the goal would be reached.

Countries characteristics included in the regressions are GDP per capita, poverty rate, income inequality, dependency rates and percentage of rural population.
Coverage is a more important impediment than the dissimilarity index in the overall HOI for both speaking and writing English. The 2008 value of the D-index is between 13 and 15 percent for both indicators, reflecting that between 13 and 15 percent of opportunities for 14-18 year old children to speak and write English need to be reallocated in Uruguay to eliminate the differences across the defined circumstance groups. In terms of coverage, only 33-43 percent of children could speak or write English, that is, only 33-43 percent of the opportunities needed to speak or write English were available (Fig. 2.7). The coverage variable is further from its goal of 100 percent than the D-index from its goal of 0 percent.

The coverage rate is also the more important factor for the higher HOI of writing English than of speaking English. The difference in the D-indices of speaking and writing English is only 2 percentage points. On the other hand, 10 percent more children between 14-18 years of age can write English than can speak English. Therefore, as of 2008, it is more important to increase the availability of opportunities to this more challenging and transferable human capital skill than to focus on equitable distribution.

2.2.5 Repetition rates

As mentioned earlier, the most notable problems of the educational system are widespread grade retention and early drop out. The next two sections analyze both these rates, although not through the HOI methodology, rather through descriptive statistics and benchmarking with other countries. Berlinksi et. al (2007) report evidence from a specific education module administered in conjunction with the Encuesta Continua de Hogares of 2001 illustrating a long delay in the transition through the primary school system due to widespread grade retention. “Despite normal entry into school (average age at entry is 5.82 versus a theoretical entry age of 6), and universal enrollment in primary school, by age 12 about 54 percent of children still have not completed primary education (sixth grade)” (Berlinksi et al, 2007, pp.5-6). In 2006, repetition in primary school affected 27 percent of children aged 6-17, while 25 percent of those between 13 and 17 years old had repeated at least one year in secondary school (Fig. 2.8).

Figure 2.8: Repetition in primary and secondary school, children 6-17 years old–Uruguay 2006

[Pie charts showing repetition rates for children 6-17 in primary school and children 13-17 in secondary school]

Source: Author’s estimations based on Encuesta Continua de Hogares 2006
Repetition rates are too high given Uruguay’s income per capita, especially in secondary school. Using data from the WDI (2008), Figure 2.9 presents repetition rates for primary and secondary education in several countries. The results show that Uruguay has higher repetition rates than most countries of similar GDP per capita levels, such as Argentina, Mexico, and Chile. Repetition rates for Uruguay are much higher than Poland, Lithuania, Ireland, or Finland, especially in secondary school.

**Figure 2.9: Repetition rates in primary and secondary**

*Repetition rate, primary (percent of total enrollment)*

*Repetition rate, secondary (percent of total enrollment)*

Source: World Development indicators, September 2008. Selected Countries

Repetition rates are considerably higher for children from poor households. Children in the bottom decile of the income distribution have repetition rates that are above the national average. While around 50 percent of the children in the poorest decile had repeated a grade in primary school, in the richest decile only 5 percent of the children had repeated a grade in primary (Fig. 2.10).

**Figure 2.10: Children 6 to 17 years old that repeat one or more grades in primary school by income decile**

*Primary 6-17 years old*

Source: Author’s estimations based on Encuesta Continua de Hogares 2006
2.2.6 School dropout

Although dropout rates are not significant at the primary level, these rates become considerable during middle school and especially high school. In Uruguay, dropouts at the primary level are not significant, averaging about 1 percent. However, dropout rates average 6 percent in middle school and a critical 25 percent by secondary school, reaching almost 33 percent for 17 year olds (Fig. 2.11). For middle school, deficiencies in terms of coverage are noteworthy, especially given the fact that it is a compulsory level. Drop-out rates have also increased over time, from an average of 3 percent in 2000 to 5.2 percent in 2007 (Fig. 2.12). Repetition is an important contributory factor in the occurrence of dropouts. Repetition and dropouts seem to be associated phenomena, given that repeaters are about seven times more likely to drop out than non-repeaters (MEMFOD 1999, 14).

Figure 2.11: Percentage of children in each age group not attending school

![Graph showing percentage of children in each age group not attending school]

Source: Author’s estimations based on Encuesta Continua de Hogares 2008

Figure 2.12: School dropout - Grades 7-10 public schools

![Graph showing school dropout rates for Grades 7-10 public schools]

Note: Dropout is defined as the proportion of students that had more than 50 absences and whose position is unknown. Source: ANEP
2.2.7 Relative importance of circumstances in explaining equality of opportunity

This section summarizes the relative importance of each circumstance considered in the report. For completion of ninth grade on time, secondary school attendance, and the ability to speak and to write in English, the most important circumstance variables are parent’s education, followed by per capita income and then gender. Area (urban or rural) and ethnicity had the lowest impact of all circumstances. Gender is most important only for primary school attendance. The results indicate that as in the regional report, parent’s education continues to define an important divide in educational opportunity among children in Uruguay (Table 2.1).

Table 2.1: Relative importance of the seven circumstance variables in the inequality of access to education

<table>
<thead>
<tr>
<th>Circumstance</th>
<th>Complete</th>
<th>School attendance</th>
<th>Knows a second language</th>
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<td>Sixth grade on time</td>
<td>Ninth grade on time</td>
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<tr>
<td>Number of siblings</td>
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</tr>
<tr>
<td>Ethnicity</td>
<td>6</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Author’s estimations based on Encuesta Continua de Hogares 2006 and 2008

2.3. Health

Uruguay had among the highest health indicators in LAC throughout most of the last half century, and has been characterized by socio-economic indicators comparable to those of high-income countries. As of 2007, life expectancy at birth is 76 years, the under-5 mortality rate is 14 per 1,000 live births, 99 percent of births are delivered in a hospital or clinic, immunization rates for measles are at 96 percent for children ages 12-23 months, and the prevalence of infectious diseases is low (WDI, 2009). Social expenditure is also comparable to that of developed countries, and Uruguay is one of the highest spenders on health in terms of GDP in LAC.

One main challenge for Uruguay in the health sector is to contain rising health care costs, possible in part through stressing preventive care. Health expenditures have been increasing faster than the cost of living, while between 1994 and 2003 the health share of GDP increased by more than 20 percent. Many of the increasingly expensive illnesses to treat are non-communicable diseases that in many cases are preventable. Therefore preventive care would be an important way to decrease costs. However, lack of data only allows an analysis of preventive dental care, and not preventive medical care. In addition, for a country with a strong presence of the state in the provision of health services it is important to explore if there is universal access to preventive health services.

In the area of health opportunities, and due to a lack of data in the household surveys, this section will focus on analyzing the dimensions of opportunity linked to preventive dental care and access to health services for children under the age of 16. The lack of good health data, for example via a Demographic and Health Survey (DHS), makes it impossible to do an analysis of opportunities.
on other indicators. Therefore, this section will include a benchmarking analysis using instead all available countries in the WDI database. The indicators covered include infant mortality rates, life expectancy at birth, and the percentage of low birth-weight babies.

2.3.1 HOI: Access to preventive dental services and health services

The HOI for preventive dental care shows the need for an improvement in coverage. The HOI of 65 percent for preventive dental care (Fig. 2.13a) disaggregates into a low coverage rate of 67 percent and low D-index of 3.4 percent (Fig. 2.13b). Therefore, unequal allocation of opportunities does not play an important role, but rather what is necessary to improve access to this opportunity is an increase in coverage.

Access to health services shows higher coverage. The HOI of 72.8 percent for access to health services will likely improve as a consequence of the recent reforms in the health system. As seen in Fig 2.13b, however, the coverage rate is around 76 percent and the D-index value implies that only 4 percent of the opportunities to access health services need to be reallocated in Uruguay to eliminate the differences across the defined circumstances groups. This data is from the 2008 household survey and does not capture the impact of the 2007 health reform, which had explicit mechanisms to expand coverage, especially among children in poor households.

![Figure 2.13: HOI in access to health services](Image)

Source: Author’s estimations based on Encuesta Continua de Hogares 2006

2.3.2 Benchmarking health indicators for Uruguay using the WDI

Using the World Development Indicator’s infant mortality rate, Uruguay shows relatively low rates as in developed countries, but less-than-average improvements over time, even when controlling for country characteristics. As in the education section, the purpose of incorporating WDI data is to compare Uruguay’s performance to that of other relevant countries in order to place the country’s performance in context. As before, comparisons of the HOI are not possible since the HOI has yet to be calculated outside Latin America. In addition, Uruguay faces an important dearth of health information within its household (or other) surveys. Therefore, this section includes a brief comparison with other countries using the available WDI data. Figure 2.14a shows that Uruguay’s 2006 value is around the 28th percentile (top third) in the distribution of countries for the infant mortality rate indicator. Since the indicator is a
mortality rate, then the lower one is in the distribution the better since the goal is to decrease mortality. Figure 2.14b shows that Uruguay is at the 65th percentile (or bottom third) when comparing its ability to reduce the infant mortality rates, even when controlling for country characteristics.

**Figure 2.14: HOI Benchmarking health indicator for Uruguay**

![Figure a](image1)

![Figure b](image2)

![Figure c](image3)

![Figure d](image4)

![Figure e](image5)

![Figure f](image6)

Source: Author’s estimations based on Encuesta Continua de Hogares 2006
For the indicator of life expectancy at birth Uruguay shows more positive results, while for the indicator of the percent of babies with low birth-weight, Uruguay is only around the middle of the distribution. In general, Uruguay shows positive health statistics relative to the 200 countries in the WDI database. Uruguay’s data point for life expectancy corresponds to 2006, while for low birth-weight it corresponds to 2002 in the WDI database. For the former, Uruguay’s position is around the 80th percentile (Fig. 2.14c/d). However, for the indicator of low-birthweight, for which the lower the placement in the distribution the better, Uruguay’s position is only at the 45th percentile implying much room for improvement (Fig. 2.14e). The indicator for change over time puts Uruguay around the 42nd percentile of the distribution, but when controlling for country characteristics, Uruguay is around the 20th percentile, implying it has made relatively positive strides over this period (Fig 2.14f).

2.3.3 Relative importance of circumstances in explaining equality of opportunity

This section summarizes the relative importance of each circumstance considered in the report in explaining inequality in the more challenging indicators relating to equality of opportunity in health. For access to preventive dental care, the most important circumstance variable is parents’ education, followed by per capita income and then ethnicity. This relative result of the D-index is one of the few times that the ethnicity circumstance seems to make a difference, even if small. For health services coverage, the most important circumstance variables are per capita income and presence of parents, with number of siblings in third place (Table 2.2).

<table>
<thead>
<tr>
<th>Circumstance</th>
<th>Preventive Dental care</th>
<th>Preventive medical care</th>
<th>Health Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Parent's education</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Per capita income</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Number of siblings</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Gender</td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Presence of parents</td>
<td>7</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Author’s estimations based on Encuesta Continua de Hogares 2006 and 2008

2.4. HOUSING AND INFRASTRUCTURE

Uruguay has achieved almost universal access to water, electricity, and sanitation facilities, as defined by the World Development Indicators (2009). It ranks among the top countries in terms of its population’s access to these services. Even so, in seeking to reach developed country standards, Uruguay must focus on providing even higher quality services.

In the area of opportunities in housing and infrastructure, this section will focus on analyzing the more challenging dimensions of opportunity linked to access to sanitation (under a stricter definition), and access to dwellings in non-flood risk areas and in regularized lots. For the
sanitation indicator, rather than including access to septic tanks, the stricter dimension of opportunity focuses on universal access to the public sewage network.

2.4.1 HOI: Access to sanitation under stricter definition

The HOI for sanitation decreases by half when using a stricter sanitation definition that is more in line with developed country standards. The basic HOI for access to electricity and water (chapter 1) reaches almost 100 percent while for access to basic sanitation the HOI is 73 percent (Fig. 2.15a). For the latter, both coverage (at 81 percent) and the D-index (at 10 percent) have room for improvement (Fig. 2.15b). Uruguay faces a tougher challenge, however, when one analyzes the stricter definition of sanitation (a connection to the public sewage network, not just access to septic tanks). This is the relevant opportunity to analyze given Uruguay’s efforts at being more in line with developed country standards. In this case, the results show that both coverage and the allocation of opportunities require strengthened efforts. Coverage drops to a low 46 percent, while the D-index rises to nearly 19 percent, implying that 19 percent of the opportunities are inequitably distributed.

![Figure 2.15: HOI of access to infrastructure](image)

**Source:** Author’s estimations based on Encuesta Continua de Hogares 2008

2.4.2 HOI of Access to dwellings constructed in non-flood risk areas and regularized lots

The HOI for access to dwellings in regularized lots is relatively high, while access to rural dwellings in non-flood risk areas is low, mostly due to bad coverage. The analysis on non-flood risk areas refers only to rural dwellings due to data limitations, and includes the risk of floods for the dwelling as well as for the roads that lead to the dwelling as defined in the household survey. The HOI for rural dwellings constructed in non-flood risk areas, inclusive of the roads leading to the dwelling, is about 68 percent. On the other hand, analyzing all households nationally, the HOI for dwellings in regularized lots is almost 86 percent (Fig. 2.16). The coverage rate for the former is a mere 70 percent, versus the close to 90 percent coverage rate for dwellings constructed in regularized lots. In both cases, the D-index is rather low, implying that the focus for Uruguay should be to increase the coverage rate, i.e., the opportunities of children to access better dwellings.

However, Uruguay is experiencing a recent increase in the number of dwellings constructed in irregular or marginal areas around the main cities. In general, these dwellings have no access to clean water and sanitation facilities. This reality is affecting more
and more children every day in Latin America and in Uruguay. According to a census of irregular settlements that was conducted in 2006, there were a total of 676 irregular settlements in Uruguay that year, which is an increase of 73 percent with respect to 1998/2000 (see Table 2.3). Of these irregular settlements, around 60 percent were established in Montevideo and 40 percent in the Interior. According to this same census, 6 percent of the total population lives in irregular settlements, representing 195,772 persons and 53,638 households (see Table 2.4). Table 4 presents these totals disaggregated for Montevideo and the rest of the country. Within Montevideo, children between the ages of 0 and 14 years make up 36 percent of the population living in irregular areas (Fig. 2.17).

**Figure 2.16: HOI of access to well-constructed housing**

Note: The data for dwellings in non flood-risk areas refer only to rural households, and include the risk of flooding of roads leading to the dwelling. Source: Author’s estimations based on Encuesta Continua de Hogares 2008

**Table 2.3: Irregular settlements, by year**

<table>
<thead>
<tr>
<th>Number of irregular settlements</th>
<th>1998/2000</th>
<th>2006</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montevideo</td>
<td>364</td>
<td>412</td>
<td>11.7</td>
</tr>
<tr>
<td>Rest of the country</td>
<td>100</td>
<td>264</td>
<td>62.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>464</strong></td>
<td><strong>676</strong></td>
<td><strong>73.8</strong></td>
</tr>
</tbody>
</table>

Note: The total values for the Interior are not strictly comparable given that the 1998 survey only took place in census localities of more than 10,000 people (according to CPVH 1996), while the 2006 survey was extended to all the national territory. Source: “Relevamiento de asentamientos irregulares 2005-2006”, Convenio INE-PIAI, INE Uruguay, 2006

**Table 2.4: Irregular settlements**

<table>
<thead>
<tr>
<th>Number of households</th>
<th>Number of persons</th>
<th>Total population</th>
<th>Percentaje of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montevideo</td>
<td>39,116</td>
<td>144,707</td>
<td>1,325,968</td>
</tr>
<tr>
<td>Rest of the country</td>
<td>14,522</td>
<td>51,065</td>
<td>1,915,035</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>53,638</strong></td>
<td><strong>195,772</strong></td>
<td><strong>3,241,003</strong></td>
</tr>
</tbody>
</table>

Source: INE Uruguay, 2006
Using the World Development Indicator’s definition of improved water source and improved sanitation facilities, Uruguay shows high rates as in developed countries, and therefore lower possibilities of improvement over time under these definitions.
Benchmarking Uruguay’s performance to the world using WDI data confirms Uruguay’s high levels in access to water and sanitation. Although Uruguay is among the lower part of the distribution in terms of changes in the indicator (Fig. 2.18b and 2.18d), this is to be expected when the levels of access are so high (Fig. 2.18a and Fig. 2.18c). When controlling for country characteristics, Uruguay does better, coming in at around the 38th percentile (Fig. 2.18d). Overall, however, the WDI does not have more challenging indicators in this area that one could use to benchmark Uruguay’s performance, so the results of the previous sections are more helpful to frame the relevant challenges facing the country.

2.4.4 Relative importance of circumstances in explaining equality of opportunity

This section summarizes the relative importance of each circumstance in explaining inequality in the more challenging indicators considered for housing and infrastructure. For the first time, “area” (urban versus rural) matters as a circumstance to explain the inequality of access. It is the most important circumstance for the stricter definition of access to sanitation, as well as for electricity and for access to dwellings constructed in non flood-risk areas. For access to dwellings constructed in a regularized lot, the most important circumstance is per capita income, followed by parent’s education. After area, per capita income is the next important circumstance for all indicators (Table 2.5).

Table 2.5: Relative importance of the seven circumstance variables in the inequality of access to basic infrastructure

<table>
<thead>
<tr>
<th>Circumstance</th>
<th>Sanitation</th>
<th>Water</th>
<th>Electricity</th>
<th>Dwelling constructed in a non flood-risk area</th>
<th>Dwelling constructed in a regularized lot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conexion</td>
<td>Sewage network and septic tanks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Parent’s education</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Per capita income</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Number of siblings</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Gender</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Presence of parents</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Author’s estimations based on Encuesta Continua de Hogares 2006 and 2008

2.5 INFORMATION AND COMMUNICATIONS TECHNOLOGY

To be ready for the challenges of the XXI century it is important for Uruguay to consolidate its achievements and improvements in school progression and completion of secondary and tertiary school, but also to increase the accumulation of human capital under the form of transferable abilities. The use of information and communication technologies is central in the globalized world, as well as the economic growth of countries. Children’s access to modern technologies can provide them with transferable skills and exposes them to new forms of learning and the possibility of developing different capacities. These skills will be essential in their future participation in the labor market, leading also to a more productive and multifaceted labor force for the country.
In the area of information and communications technology opportunities, this section will focus on analyzing the more challenging dimensions of opportunities linked to access to computers, the internet, cell phones, and telephone landlines in the household.

2.5.1 HOI: Access to a computer or the internet in the household

The HOI for access to a computer or the internet in the household are low in 2008, in particular for the internet. The HOI indicators are estimated for children 6-16 year olds, that is, children that are attending primary school and children in secondary school that are more familiar with the use of computers.\(^7\) Around 39 percent of all opportunities needed to ensure universal access to a computer were available and equitably distributed, higher than the 11.6 percent for access to internet (Fig. 2.19). Around 50 percent of 6-16 year olds had a laptop or desktop computer in their home.

![Figure 2.19: HOI in access to computers and internet](image)

Source: Author’s estimations based on Encuesta Continua de Hogares 2008

It is difficult at this point to accurately know from household surveys the number of children who benefit from Plan Ceibal.\(^8\) Having access to a computer and internet are likely improving due to the implementation of Plan Ceibal. However, the question employed in the 2008 Encuesta Continua de Hogares does not allow the analyst to distinguish between desktop and laptop computers. In addition, the specific question regarding Plan Ceibal introduced in one of the modules of the 2008 ECH does not allow the analyst to fully identify the number of children in each household that has received a laptop. The question asks if any children in the household have received a laptop, making it difficult to accurately count the beneficiaries of the Ceibal Plan. Consequently, the HOI for computers at home examines access to both types of computers and is based on the information provided in the survey about the household assets.\(^9\)

The degree of inequality of opportunities for access to the internet is high in 2008, and is associated with low levels of coverage. Only 21.6 percent of 6-16 year old children had a computer with internet connection in their homes in 2008. The D-index of 46.5 percent implies a highly inequitable allocation – almost half of the opportunities to access the internet at home

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\(^7\) The results are using the available 2008 household survey, thus the findings are before the full implementation of Plan Ceibal. Note also that the age group of the children considered for the HOI goes beyond primary school.

\(^8\) More information on Plan Ceibal is available in Chapter 4.

\(^9\) The use of administrative data is beyond the scope of this paper, and may nonetheless not include information necessary to calculate the HOI, such as parents’ education, household income, and other required circumstances.
need to be reallocated to eliminate the differences across groups. This value is almost twice the amount of the D-index for access to a computer, which is 20.2 percent in 2008. Both indicators imply that there is much room to improve the inequality of access to these opportunities.

**Important disparities are observed in 2008 when the coverage rates are analyzed by income quintiles.** While more than 90 percent of the households in the richest quintiles have a computer (laptop or desktop) in their household, coverage rate of access to computer for children living in the poorest quintile is 25 percent in 2008 (Figure 2.20). The gap in access to computers of children 6 to 12 years old living in poor and rich households in Uruguay may have been reduced due to the implementation of Plan Ceibal. The Government has been distributing a laptop to each child attending primary public schools (380,000 students in total). In terms of access to the internet, the differences between the poorest and richest quintiles are higher than for the access to computers. Only 3 percent of the children living in the poorest households have internet in their homes in 2008, as compared to 50 percent of the children in the top quintiles. Most children access the internet in cyber cafes (48.7 percent) and at school (47 percent), mainly to gather information or for entertainment (Figure 2.21).

**Figure 2.20: Access to computer and internet in the household by income deciles**

![Figure 2.20: Access to computer and internet in the household by income deciles](source)

Source: Author’s estimations based on Encuesta Continua de Hogares 2008
2.5.2 HOI: Access to cell phones or landlines in the household

The HOI for access to cell phones at home for children 0-16 years old is high, with almost universal coverage and a low dissimilarity index. The HOI was 91.5 percent in 2008 (Fig. 2.22), which disaggregated into a coverage rate of 93.7 percent and a D-index of 2.3 percent. This implies that only 2.3 percent of the opportunities needed to ensure universal access to cell phones at home would need to be reallocated in Uruguay to eliminate the differences across defined circumstance groups.

In the case of access to landline phones, the HOI for this same age group is much lower, reflecting both a much lower coverage rate and a higher dissimilarity index in 2008. The HOI for access to a landline at home was 38.1 percent in 2008, about 40 percent of the HOI value for cell phones (Fig. 2.22). Coverage rates drop to only about 50 percent while the D-index jumps to 24.2 percent, implying almost a quarter of the opportunities would need to be reallocated to eliminate differences across circumstance groups. One of the reasons for a smaller HOI in landline phones is that in Uruguay, like in many other countries, there is a clear substitution of fixed telephone lines by cellular phones. Also, in remote and rural areas coverage and penetration of cell phones can be more easily extended than landlines since the latter require more investment in infrastructure.
Cellular phones are fast becoming available everywhere. There is an extensive literature on the importance of cell phones as a tool for human development, poverty reduction and improved quality of life. The opportunity to have access to cell phones can reduce transport and transaction costs, increase the opportunity to access to information and assistance in case of an emergency. It can also be essential in the development of small businesses and the household economic activities.

2.5.3 Benchmarking communication technology indicators for Uruguay using the WDI

**Benchmarking the use of computers per person with all countries, Uruguay’s position is in the 70th percentile of the distribution (above the world’s median).** The population’s access to computers in Uruguay improves considerably over time but the country’s performance worsens when controlling for country characteristics. For this indicator, Uruguay comes out in the upper tail of the distribution of 193 countries in the WDI (see Fig 2.23a), but still has room for improvement. The unconditional change over time shows a huge improvement that placed the country among the higher performers (in the 70th percentile). However, controlling for country characteristics worsens Uruguay’s relative position, falling far below the median performance to the 15th percentile (Fig 2.23b).

**Benchmarking access to the internet, Uruguay’s relative position is lower than for computers, however, both conditional and unconditional changes show relatively very strong positions.** Uruguay is around the 62nd percentile of the distribution of 207 countries with access to the internet in 2008 (Fig. 2.24a). However, when the predicted percentiles for changes over time are computed, Uruguay shows a positive change and its position is closer to the 88th percentile(Fig. 2.24b). In addition, even when controlling for country characteristics, Uruguay’s position stays in the 80s range. These results show that Uruguay ranks among the high performance countries in both computer and internet access.
**Figure 2.23: Benchmarking- computers per person**

2.23a: Uruguay’s position – Distribution of the level  
2.23b: Predicted percentiles, unconditional and conditional change

Source, World Development indicators, September 2008. All World Countries

**Figure 2.24: Benchmarking- Access to internet**

2.24a: Uruguay’s position – Distribution of the level  
2.24b: Uruguay’s position – Distribution of the level

Source, World Development indicators, September 2008. All World Countries

**Table 2.6: Relative importance of the seven circumstance variables in the inequality of access to technologies**

<table>
<thead>
<tr>
<th>Circumstance</th>
<th>Access to</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Computers in the dwelling</td>
<td>Internet in the dwelling</td>
<td>Cellphone</td>
<td>Phone in the dwelling</td>
</tr>
<tr>
<td>Area</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Parent’s education</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Per capita income</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Number of siblings</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Gender</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Presence of parents</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>5</td>
<td>5</td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Author’s estimations based on Encuesta Continua de Hogares 2008
2.5.4 Relative importance of circumstances in explaining equality of opportunity

For access to all four indicators (Table 2.6) (computers, internet, cell phones, and landlines), the most important circumstance variables are per capita household income followed by the parent’s education. The D-index specific to the presence of both parents is the third highest of all circumstances in the case of access to computers, the internet and landlines in the household. Number of siblings is the third most important circumstance in the case of access to cell phones. Area (urban or rural), gender and ethnicity had the lowest impact of all circumstances.

2.6 HOI - Changes over time

Even though Uruguay has started the decade with high levels of opportunities, stagnation of the opportunity structure in Uruguay is becoming an important challenge. A continuous improvement in opportunities is essential for a sustainable and continuous reduction of poverty and inequality in Uruguay (World Bank, 2007). This section analyzes the evolution of the five basic human opportunity indicators between 1998 and 2008 in Uruguay. Due to data limitations, the analysis only refers to the changes in HOI in Uruguay urban areas. Before 2006, Uruguay’s Household Surveys only covered urban areas. As a consequence, all comparisons across time are limited only to urban areas (see Annex 1 for more details).

As can be seen in Table 2.7, the HOIs in access to water and electricity show an improvement of 0.13 and 0.2 annual percentage points, respectively, over a decade. In the case of the HOI in education, there has been no improvement in the equal opportunity of completing six years of education on time for children between 12 to 16 years of age. However, in the case of school attendance for those aged 10-14, the HOI increased from 93.4 in 1998 to 95.4 in 2008.

| Table 2.7: Changes in Human Opportunity Indices in Infrastructure and Education |
|---------------------------------|-----------|-----------|
| **Infrastructure**              |           |           |
| Access to Electricity (Ages 0-16) | 98.0      | 99.3      | 0.13     |
| Access to Water (Ages 0-16)     | 94.8      | 96.9      | 0.21     |
| Access to Sanitation (Ages 0-16) | 78.4      | 76.0      | -0.24    |
| **Education**                   |           |           |
| Sixth grade on time (Ages 12-16) | 78.0      | 78.0      | 0.0      |
| School attendance (Ages 10-14)  | 93.4      | 95.4      | 0.2      |

Note: Changes in Human Opportunity Index estimated using bootstrap method. Changes in infrastructure variables are not statistically significant. The sampling frame in 2008 included smaller sampling units than those in 1998. This suggests that 2008 levels and therefore rates of change might be biased towards zero.

Source: Author’s estimations based on Encuesta Continua de Hogares 2008

As shown in chapter 1, Uruguay ranks among the high performers. However, as shown in the previous table, even though consistent progress has been observed in most of the indicators, the improvements are not what one would expect for a middle income country like Uruguay.

The HOI provides an instrument to gauge advances in equality of opportunity over time for a country. It can be interpreted as a social welfare function that reacts to both changes in overall access to basic opportunities for children, as well as to their equitable distribution. From a policymaker’s point of view, to know about the specific source of change in the index is an interesting and useful tool that can help to track progress toward providing a set of basic opportunities to all children within a society.
This section explores how the changes in the value of the index (Table 2.7) can be decomposed into those that are due to a scale effect and those that are due to a distributional effect (Figure 2.24). The improvements shown are because coverage rose or because inequality declined, or a combination of both. The data in Figure 2.25 reveal that the majority was due to the scale effect—an increase in coverage holding inequality of opportunity constant. This is especially the case for the changes in the HOI in access to water, electricity and completing six years of education on time. The HOI increase in water, for example, was due mostly to an increase in coverage, holding the inequality (distribution) rates constant.

**Figure 2.25: Decomposition of annual change in Human Opportunity Index, Basic Opportunities, 1998 to 2008**

Changes in access to electricity were driven not only by an increase in coverage (0.84 percentage point increase over 10 years) but also by an improvement in distribution (Figure 2.25). The latter implies that opportunity has been growing for the poorest segments of the population (around 0.45 percentage points over the decade). It is important to highlight that even though these improvements are small in magnitude they are still a positive outcome. HOI improvements are smaller when coverage of a basic service is already universal, as is the case for electricity in Uruguay’s urban areas.

Changes in the HOI in access to sanitation, while not strictly comparable due to changes in the survey sampling frame, have a negative performance. Both coverage and distributional effects show a negative change in 2008 with respect 1998. However, as will be shown in chapter 3, access to sanitation increased by a lot in some departments, stayed constant or decreased in other departments over the span of the past decade. The scale effect drove these movements in either direction.

In education, the decomposition of the change in the HOI for school attendance shows that there was a demonstrable increase in the coverage rate (of around 1.2 percentage points for the decade; i.e., 0.12 percentage points per year) as well as an improvement in distribution (a distributional effect of 0.8 percent for the decade). As shown in Table 2.7, the HOI of

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10 One property of the HOI is that changes are additively decomposable. Any change in the index can be attributed either to an increase in the coverage rate, \( p \) (scale effect), or a reduction in the index of inequality of opportunity, \( D \)-index (distributional effect). See Box 3.1 in Chapter 3.
completing six years of education remained constant over the last ten years. However, when decomposing the change into scale and distributional effects, an increase in coverage of educational opportunity is observed over the period that was neutralized by a less equitable distribution of opportunity (Fig. 2.25).

2.7 CONCLUSIONS

This chapter analyzed new dimensions of opportunities for children that are considered relevant challenges for Uruguay’s open and relatively developed economy, thus raising the bar for the country as it seeks to reach towards more developed stages.

The Human Opportunity Index of 99 percent in 2008 implies almost universal primary school attendance rates, but decreases to 81 percent for children in secondary. The HOI for sixth grade on-time completion of 78 percent is low for Uruguay’s level of development, yet decreases by half for ninth grade on-time completion. The latter HOI reflects that only 34 percent of the needed opportunities are both available and allocated equitably. The HOI for the ability to speak and write English, which are important human capital skills transferable in a global economy, are relatively low at 28 and 37 percent, respectively. In health, the HOI for access to preventive dental care and health services are 65 and 73 percent, respectively. The HOI for sanitation drops from 73 to 37 percent when using a stricter definition more in line with developed country standards (i.e., defined as connection to the public sewage network). The HOI for access to dwellings in regularized lots is relatively high at 86 percent, while access to rural dwellings in non-flood risk areas (including non-flood risk roads) is low at 68 percent. However, the number of irregular settlements has increased by 73 percent between 2000 and 2006. In communications technologies, the HOI for access to a computer and to the internet for 6-16 year olds were 39 and 12 percent in 2008, respectively. The HOI for children’s access to cell phones and landline phones at home were 92 and 38 percent, respectively. In all cases, an increased focus on coverage turns out to be an important requirement. However, a more equitable allocation of opportunities, as calculated through the dissimilarity index, is also required for ninth grade on time, speaking and writing English, and access to health services, sanitation, computers, internet, and landlines. In particular, access to the internet has the worst dissimilarity index in 2008 of all opportunities considered.

The most important circumstances in explaining the inequality in the more challenging opportunity indicators tend to be parent’s education and per capita income. Parent’s education is most important for the educational indicators, continuing to define an important divide in educational opportunity among children in Uruguay. Per capita income is most important for the communications technology indicators as well as access to dwellings in regularized lots. For the health indicator “access to preventive dental care”, per capita income is also important, but parent’s education is most important. Lastly, for access to sanitation and to dwellings in non flood-risk areas, the most important circumstance explaining the inequality is area (urban vs rural), a circumstance that is not important in any other case. The presence of parents is the second most important circumstance for health services and third most important for most communication technologies. The gender circumstance makes a slight difference only for the educational opportunities, but coming in third place. Lastly, the ethnicity circumstance only makes a slight difference (third place) for preventive dental care and access to dwellings in regularized lots.
CHAPTER 3: OPPORTUNITIES FOR ALL? THE DISTRIBUTION OF OPPORTUNITIES ACROSS THE COUNTRY

ABSTRACT

This chapter considers how the set of opportunities that are critical in determining opportunity for economic advancement in life are distributed across the country. These five basic opportunities are grouped into two broad categories of education and infrastructure: completing sixth grade on time, school attendance and access to electricity, water, and sanitation. The chapter examines how different departments are doing on each of these dimensions and how different regions of the country have evolved over time.

3.1 GEOGRAPHIC VARIATION IN THE HOI

This chapter examines how opportunities for economic advancement in life are distributed across the departments of Uruguay. First, the chapter presents disaggregated measures of the Human Opportunity Index by department and establishes whether the observed differences are statistically significant. It underscores whether differences are driven by differences in coverage or disparate penalties imposed by the HOI for inequality. Second, it delves into how opportunities for advancement have evolved across regions of the country over time.

Examining access to opportunities for children versus wealth or welfare across geographic areas complements the view taken by the World Development Report 2009. Policy efforts to equalize the differences in the standard of living between regions are likely to be counterproductive to economic development. Instead, policy makers can focus on the equalization of basic opportunities for children and improving mobility and geographic integration via communications and transportation.

3.1.1 HOI: Completing sixth grade on time

Not all children across the country have the same opportunities to complete sixth grade on time. For 12-16 year olds, the chapter considers whether the opportunity to complete sixth grade on time is universally available. Figure 3.1 displays on a department level map of Uruguay the results of the HOI computed for each department. The results show that the value of the index ranges from 62 to 89. This suggests that in the department with the lowest value of the index

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11 Confidence intervals computed via 100 bootstrapped replications.
12 The data identifies if 12-16 year old children have completed at least six grades. Box 1 details how ad hoc changes in the survey since 2006 do not allow the direct measurement of on-time completion of sixth grade. The sample is therefore constrained to possess the characteristics of those who would be on time and predicted probabilities of on-time completion are obtained for use in computing the HOI.
13 The chapter controls for the core set of circumstances considered in Barros et al. (2009): (i) child’s gender, (ii) child’s area of residence (urban or rural), (iii) family head’s number of years of schooling (quadratic specification), (iv) per capita household income, (v) whether the child lives in a two-parent household, and (vi) number of children under the age of 16 in the household. For technical details on how the index is measured see Barros et al. (2009), chapters 1 and 2.
roughly 62 percent of all opportunities needed to ensure universal access to primary education are both available and allocated equitably to children between the ages of 12 and 16.

The highest value of the index (at 89) occurs in Tacuarembó. 100 bootstrap replications of the HOI reveal that the levels of the index for Durazno and Soriano are statistically indistinguishable from those of Florida (Figure 3.2). The evidence suggests that when it comes to the universal provision of the opportunity to complete sixth grade on time there are departments (such as Tacuarembó) that are second only to regional leader Jamaica’s national average and departments
(for instance, Paysandú and San Jose) that are operating at the level of the Dominican Republic – a country whose GNI per capita is substantially lower than that of Uruguay.\footnote{The comparisons being made here utilize the information in Tables 2.3 and 2.5 of Barros et al. (2010). The World Development Indicators database reports GNI per capita, PPP (current international $) of 7,800 for the Dominican Republic and 12,550 for Uruguay. Each value is for the most recent year available – 2008.}

Other pair-wise comparisons are possible in Figure 3.2. These reveal that Canelones and Flores are no different from each other in the value of the index and that both are near the national mean – the dashed vertical line included for reference. Figures in Annex 3, show that while these two departments have the same level of the HOI they have very different penalties for inequality applied to them. The higher penalty applied to Flores is also shown in Figure 3.1.

\subsection*{3.1.2 HOI: School attendance}

Children across the country have virtually the same high level of access to school attendance. Children between 10 and 14 years of age in virtually all parts of the country are provided the opportunity to attend school equally. The level of the HOI is between 90 and 96 across all 19 departments of the country (Figure 3.3). To put these numbers in context, consider that the national numbers for Ecuador, El Salvador, Nicaragua, Guatemala and Honduras are all lower than that of the lowest-ranked Uruguayan department.\footnote{As implied by Barros et al. (2010), pp. 57 and 62.}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{SchoolAttendance}
\caption{School attendance, Coverage and HOI}
\end{figure}
The department of Lavalleja has the lowest value of the HOI (Figure 3.4) and the highest penalty (Annex 3). While this implies that the opportunity to attend school is less equitably distributed in this department than elsewhere in the country – the value of the index suggests that roughly 90 percent of all opportunities needed to ensure universal access to school for children between the ages of 10 and 14 were available and distributed equally. This suggests that even the lowest-performing department of Uruguay is performing 10 percentage points higher than Guatemala.

3.1.3 HOI: Access to electricity

The **HOI for access to electricity is virtually universal.** Access to electricity is also very equitably distributed across the country (Figure 3.5). The department of Tacuarembó lags behind all other departments in terms of access, but by a relatively small margin (Figure 3.6). The slightly larger gap in the HOI is explained by the fact that Tacuarembó experiences the largest penalty for inequality (4.5 points). Nevertheless, these differences are relatively small and the country as a whole shows positive results for electricity.
3.1.4 HOI: Access to water

Unlike electricity, there is more variability in equality of access to water. Departments across the country have high levels of the HOI – in excess of 80 percent virtually everywhere (Figure 3.7). However, this suggests that there still exist departments where one fifth of children are not provided access to water with an equality of opportunity principle in mind.
Departments such as Rivera and Tacuarembó lag behind all other departments, while Montevideo claims near universal provision of access to water. The dashed vertical line in Figure 3.8 is included for reference and is the national value of the index. Rivera and Tacuarembó have substantial penalties for inequality as shown in Annex 3.

**Figure 3.8: Access to water – Confidence intervals**

3.1.5 HOI: Access to sanitation

There exist departments where less than two-thirds of the opportunities needed for equal access to sanitation are available and equitably distributed. This is true even though a household is considered as having access to sanitation if it is connected to the public sewerage system and if it has a septic tank. Figure 3.9 presents the results for coverage and the HOI of
access to sanitation. Penalties for inequality differ across departments and range from a low of 2 (Canelones) to a high of 15 (Flores).

**Figure 3. 9: Access to sanitation, Coverage and HOI**

Access to sanitation

Coverage rates using ECH 2008 data

HOI index values using ECH 2008 data

(Children 16 years of age and under)

**Figure 3. 10: Access to sanitation – Confidence intervals**

Uruguay: HOI Values by Department

Confidence interval computed using 100 bootstrap replications
Dashed line is national estimate reported in Chapter 2
Disparities exist across all departments and are large and statistically significant (Figure 3.10). Consider for example that the level of the index for Southern Cone countries is 76. The data from the Encuesta Continua de Hogares (2008) suggest that only 5 departments do better than this. The remaining 14 departments provide access to sanitation substantially less equitably.

3.1.6 HOI: Access to a toilet in the home

Like access to water, more remains to be done to ensure equality of access to a toilet in the home. In examining housing conditions, earlier work focused on access to electricity, water and sanitation networks. The chapter expands on the set of opportunities and examines whether children have access to a toilet in the home (Figure 3.11). As in the case of sanitation, there are departments where only two-thirds of the opportunities needed for universal access are available and equitably distributed which coexist alongside departments where almost ninety percent of the opportunities needed for universal access are available and equitably distributed.

Figure 3.11: Access to a toilet in the home (Children 16 years of age and under)

3.1.6 HOI: Access to public sanitation

Access to sanitation is lower when a stricter yardstick is adopted. When one raises the bar by which one measures a given opportunity, the evidence on equality of opportunity is much starker. For instance, when septic tanks are included (as in the original basic indicator), the HOI for the 19 departments ranges between 59 and 88. However, when only a connection to the public sewerage system is considered, a condition more in line with developed country standards, the range of values is substantially larger – from 11 to 57. Not only is there more of a range, but as is evident from Figure 3.12, the levels are much lower as well.

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16 As reported in Barros et al. (2010), Table 2.4, p. 58.
Figure 3.12: Access to sanitation: Applying a more stringent definition

**Original Definition**

<table>
<thead>
<tr>
<th>Coverage</th>
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</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coverage</th>
<th>HOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to sanitation</td>
<td></td>
</tr>
</tbody>
</table>

Note: The stringent definition excludes septic tanks.

### 3.1.7 HOI: Access to health services

As noted in the previous chapter, the narrow focus for the health indicator is dictated by the lack of availability of health data (See Annex 1 for more details). Nor does available data (2008) capture the impact of the recent health reform in 2007.

**By 2008, at most only half the opportunities needed for equal access to health services were available and distributed fairly.** This section considers access to health for children under the age of 16. As with several of the other opportunities considered in this chapter, Montevideo has...
the highest value of the HOI. In particular, 65 percent of the opportunities needed for universal access are available – in other words the coverage rate is 65 percent. Of these, 20 percent (13 percentage points) are distributed unfairly yielding 52 percent of opportunities needed for universal access that are available and distributed equitably (Figure 3.13). In the least equitable department – Artigas – the situation is bleaker. Only 34 percent of children under the age of 16 report that they have health coverage. This means that roughly one-third of the opportunities needed for universal access are available. Of these, one-third are not distributed equitably. Consequently, only 23 percent of the opportunities needed for universal access are available and distributed fairly.

**Figure 3.13: Access to health services, Coverage and HOI**

Note: For children under the age of 16

### 3.2 The evolution of opportunities over time by regions in Uruguay

This section explores the evolution of equality of opportunity by region over time. The discussion that follows compares data from the urban areas sampled in 2008 to data from the urban areas sampled in 1998. As noted in Chapter 2, the sampling frame between the two rounds varies – smaller cities were included in the 2008 round. Assuming that smaller cities have lower coverage rates, the changes documented here are smaller than they would be if the sampling frames were identical. In the absence of a detailed and current census, this section is used to illustrate how changes in the value of the index can be decomposed into those that are due to a scale effect and those that are due to a distributional effect (See Box 3.1). This is done using the five administrative regions of the country: Montevideo, Interior Center North, Interior Center South, Interior North and Interior South.\(^\text{17}\)

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\(^{17}\) Interior North is comprised of Artigas, Salto and Rivera. The Interior Center South is made up of Soriano, Florida, Flores, Lavalleja and Rocha. Interior Center North is comprised of Paysandú, Río Negro, Tacuarembó, Durazno, Treinta y Tres and Cerro Largo. Colonia, San José, Canelones and Maldonado make up the Interior South
Box 3.1: Decomposing Changes

The Human Opportunity Index can change over time due to one of two reasons – an increase in the coverage rate ($\bar{p}$) or a decrease in the index of inequality of opportunity (D-Index). Barros et al. (2009) refers to an increase in coverage as a scale effect and to a reduction in inequality of opportunity as a distribution effect. We adopt the same convention in this chapter. Conceptually, we decompose any observed changes in the HOI over time into two parts: the change that would have occurred if coverage were held constant and the change that would have occurred if inequality of opportunity were held constant. Consider two values of the HOI computed from the 1998 and 2008 rounds of the ECH – $O^{1998}$ and $O^{2008}$. The change in the index can be decomposed as follows:

$$\Delta_{2008-1998} = O^{2008} - O^{1998} = \Delta_p + \Delta_D$$

(1)

The scale effect, $\Delta_p$ is defined as:

$$\Delta_p = \bar{p}^{2008}(1 - D^{1998}) - \bar{p}^{1998}(1 - D^{1998})$$

(2)

The distributional effect, $\Delta_D$ is defined as:

$$\Delta_D = \bar{p}^{2008}(1 - D^{2008}) - \bar{p}^{2008}(1 - D^{1998})$$

(3)

For each of the basic opportunities considered in the report by Barros et al. (2008), we calculate equations (2) and (3) for each department separately. White bars correspond to the scale effect while shaded bars correspond to the distributional effect.

3.2.1 Changes in sixth grade on time

The data reveal that while some regions moved up, others moved very little and still others experienced a reduction in their levels of the HOI. For instance the Interior South region recorded a 4 percentage point increase in the HOI in the course of the decade from 1998-2008. This corresponds to an annual percentage point change of 0.4. Figure 3.14 plots the components of this annualized percentage point change. The majority of the region’s movement was due to the scale effect – an increase in coverage holding inequality of opportunity constant. Similarly, the Interior Center North region experienced an increase of approximately three percentage points which was also mostly due to an increase in the coverage rate holding inequality constant. At the other extreme, both Montevideo and the Interior North of the country experienced a similar reduction in the HOI (roughly 2 percentage points). In both cases it appears that a decline in coverage rates and an increase in the inequality of its distribution contributed almost equally. It is difficult to determine if this is entirely due to the change in sampling frame.
3.2.2 Changes in school attendance

School attendance evolved in a markedly different manner over this time frame (Figure 3.15). Virtually all regions registered an increase in the equality of opportunity. The largest increases were in the Interior North (6 percentage points over the decade) and the Interior South (3 percentage points). In the Interior North of the country the increases were mostly due to an expansion of coverage rates. Montevideo and the Interior Center North stayed nearly constant.
3.2.3 Changes in access to electricity

For two out of the five regions in the country, the decomposition reveals very little change in the value of the HOI over the course of a decade (Figure 3.16). A disaggregation reveals that in many departments virtually all urban areas already universally provided electricity as of 1998. In a few departments there was evidence of an increase (4 percentage points) but it was not as large as the gains seen in school attendance. There is some evidence to suggest that the scale effect tended to be larger than the distributional effect in contributing to the improvements in equality of opportunity particularly in the Interior North and the Interior Centre North.

Figure 3.16: Decomposing changes in access to electricity

3.2.4 Changes in access to water

There was a demonstrable increase in coverage rates in the Interior South – roughly 8 percentage points. This corresponds to 0.8 percentage points each year as depicted above. Departments in this region such as San Jose and Colonia experienced large increases in equality of opportunity (Figure 3.17). The scale effect contributed almost entirely to these gains. Other regions such as Interior Center North stayed nearly constant over this period while urban parts of the Interior Center South declined 2 percentage points over the period 1998 to 2008.

3.2.5 Changes in access to sanitation

Access to sanitation increased by 5 to 6 percentage points in some departments, stayed constant in others and actually decreased 8 percentage points in the urban areas of Montevideo over the span of the past decade (Figure 3.18). In general it appears that the scale effect drove these movements in either direction. This implies – given our assumptions regarding the sampling frame – that most of the change in the index value can be explained by changes in coverage rates holding the inequality of their distribution constant.
Figure 3.17: Decomposing changes in access to water

Figure 3.18: Decomposing changes in access to sanitation
3.3 Conclusions

While levels of equality of opportunity for the basic indicators are high (at a national level) there are notable exceptions in both education and housing for specific departments. Evidence from the most recent round of the continuous household survey suggests that Uruguay’s aggregate national figures mask substantial heterogeneity across departments. In keeping with earlier results however, there is a high degree of equity in access to some but not all opportunities. On a number of physical infrastructure dimensions – such as access to electricity and water – the country appears to have achieved near-universality. Access to sanitation continues to be a challenge. In the realm of education however, while the opportunity to attend school is universally available to 10 to 14 year olds it appears that the opportunity to complete sixth grade on time is not universally available for 12 to 16 year olds. This accords with what is known about the Uruguayan education system.

Across all five of the basic opportunities considered here, there are some departments that are repeatedly at the bottom. In particular, Tacuarembó has the lowest value for the opportunity indices for access to electricity (91), water (82) and sanitation (59). However, being at the bottom means very different things in the case of each indicator. In the case of water more than 80 percent of the opportunities needed for universal access were available and equitably distributed. In the case of sanitation only 60 percent were. Similarly, Lavalleja has the lowest value of the index in school attendance (89). In Paysandú and San Jose less than two-thirds of the opportunities needed for equitable access to completing sixth grade on time were available and equitably distributed.

To the extent possible, the chapter explores equality of opportunity as it relates to aspects of the health sector. The chapter notes the dearth of publically available household data on more usual metrics of health and well-being – such as immunization records. Consequently the equality of access to health services is measured and the results show that there appears to be a great deal of room for improvement. Even in the most equitable department of the country only half of the opportunities needed for universal access are available and fairly distributed. In the least equitable department over three-fourths of the opportunities needed for universal access are either unavailable or unfairly distributed.

When a more holistic view of housing conditions is taken and one includes whether or not a toilet exists in the home and incorporates a more stringent standard of access to sanitation, the results show that some departments in Uruguay fare poorly.

When disaggregating gains over time by geographic region, the gains in completing sixth grade on time are concentrated in the Interior South and the Interior Center North of the country. The Interior South also experienced an increase in the HOI for attending school. The Interior North and the Interior Center North experienced gains in electricity and sanitation while the Interior South experienced the largest gains in access to water.
CHAPTER 4: EDUCATION POLICY AND THE HUMAN OPPORTUNITY FRAMEWORK

ABSTRACT

This chapter applies the framework of the HOI to the country’s education system. It examines policies designed to increase the number of years of schooling children in Uruguay receive as well as policies that seek to measure and improve their learning experience.

4.1 THE QUANTITY AND QUALITY OF EDUCATION AND EQUALITY OF OPPORTUNITY

This chapter assesses policies on the quantity and quality of education available to Uruguayan children from the point of view of equality of opportunities. A number of reforms to the education system have been undertaken that confirm that an increase in both quantity and quality are policy priorities for the government. These include but are not limited to: 18

1. An increase in the number of pre-primary school slots (late 1990s).
2. An increase in the number of years of compulsory schooling from 6 to 9 (1973).
3. Participation in the Program for International Student Assessment (PISA) – a cross-country student assessment undertaken by the OECD (2003 and onwards).

The chapter provides evidence to suggest that gains in providing access to early education have not been sustained at later stages nor has high quality education been equally available. The chapter uses data on test scores from the most recent round of the PISA assessment to construct an HOI on the acquisition of average knowledge levels. 19 The results suggest that Uruguayan test takers score lower than their counterparts in OECD countries. In addition, the differences between Uruguay as a whole and the OECD countries that take part in PISA are as large as the differences between the lowest and highest quintiles of test takers within Uruguay. Grade retention profiles across quintiles suggest that compulsory schooling laws are not influencing the behavior of all groups equally. The chapter then considers how well-aligned on-going initiatives such as greater access to technology and Asignaciones Familiares are with these goals.

18 Cerdan-Infantes et al. (2007) evaluate the effect of the expansion of the school day from half day to full day in Uruguay on the test scores of 6th graders. They find that the largest gains accrue to students in schools that are the worst off to begin with. For related evidence on Chile please see Kruger et al. (2009a and 2009b). In addition, the country has long been providing cash transfers (under various names) to ostensibly reduce poverty and raise education levels. However, see the evidence in Pampillón (2007) on how cash transfers may not be succeeding in increasing education levels.

19 Since PISA does not collect comparable information on circumstances (household income, parental education, gender, ethnicity, urban vs. rural), we deviated from the Human Opportunity Index methodology above. Differences are noted in the footnotes to the relevant tables.
4.1.1 Pre-school attendance

**In the late 1990s, the government expanded access to early childhood education.** There has been an increase in pre-primary enrollment – more so for 5 year olds than for 4 year olds and more so for children from higher-income backgrounds than for children from lower-income backgrounds.\(^{20}\) We calculate the HOI for the urban areas of each region in Uruguay in both 1998 and 2008. We then decompose the change for each region as described in the previous chapter. The results of this decomposition are reported in Figure 4.1.

The data suggest that large gains have occurred in the pre-school attendance of children between the ages of 3 and 5 all across Uruguay. The largest gains occurred in the Interior North (led by departments such as Rivera) and the Interior Center South (led by departments such as Flores). In 1998 for instance, the Interior North of the country could only claim a value of the HOI of 42 percent. This implies that of the opportunities needed for equal access, only 42 percent were available and equitably distributed. By 2008, this region had achieved an increase in the index of 31 percentage points. These large gains were predominantly due to an increase in coverage rates. In contrast, in 1998 in both the Interior South and the Interior Center South of Uruguay roughly half (55 percent) of all opportunities needed for equal access were available and equitably distributed. Here too, gains were largely due to increases in coverage rates. The change in urban sampling frames that occurred in the intervening years of the survey suggests that the magnitudes of the increases documented below are smaller than they might have been if the sampling frame had stayed the same.

**Figure 4.1: Decomposing changes in the HOI for pre-school attendance**

Using data from earlier rounds of the ECH, Berlinski, Galiani and Manacorda (2007) examine the impact of the expansion of preschool education on students’ trajectories through primary school. They find that preschool attendance had a strong effect on completed years of formal education and reducing repetition rates. By age 10, those who have attended pre-school have almost a third of a year more of education than those who have not. By age 16, this advantage had increased to 1.1 additional years of completed education.

4.1.2 Policies to improve grade retention

Compulsory schooling laws do not appear to be influencing all income groups equally. A law change in 1973 was intended to raise the compulsory schooling requirements from six to nine years for everyone. However, the rate at which students drop out of school varies substantially across income groups. Figure 4.2 below reveals a flow of dropout after primary completion across all income quintiles in Uruguay – both in 1998 and in 2008. The poorest quintile has the steepest dropout rate while the richest quintile has the flattest. A quarter of a century after the law change, only about 55 percent of children in Uruguay’s lowest quintile are still in school in grade 9 compared to virtually 100 percent of the children in the country’s highest quintile. The situation is disconcertingly similar in 2008. In part this might be due to the change in sampling frame described earlier.

![Figure 4.2: Grade survival profiles](image)

Note: Urban areas of the country only. Sample is limited to those between the ages of 10 and 25. Figures show Kaplan-Meier survival curves that adjust for incomplete schooling observations. Source: Authors’ calculations from ECH 1998 and 2008.

4.1.3 Monitoring the quality of education: an HOI for learning

While Uruguay performs better than most LAC countries on PISA, the quality of education its students are receiving is notably lower than the average for OECD countries. Students within the Uruguayan education system also appear to be receiving a different quality

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21 Figure 4.2 depicts the proportion of children (10-25 year old cohort) that has completed each grade (including grade 1). We estimate the proportion of the cohort that has completed a grade adjusting for the fact that some students are still in school and we cannot observe their ultimate grade completed. For instance in 2008, 35 years after the law increasing compulsory schooling had been on the books, virtually 100 percent of the richest children in the country were completing grade 9. However, only 50 percent of the poorest children in the country were doing so. Additional details on the methodology are available online at [http://go.worldbank.org/IOHNXM9IX0](http://go.worldbank.org/IOHNXM9IX0). Accessed on January 12, 2010.
of education according to household income level. PISA releases student test score data as well as an assessment of the level of competence a particular score reflects. Consequently, the HOI for learning is computed as follows: each student’s test score is compared against the score that corresponds to a level of competence that is considered the OECD average – level 3. Thus we compute the HOI for whether or not a child scores at least at level 3. We report below sample questions and descriptions of what skills OECD-PISA considers of a particular level of competence. Levels of competency are reported for mathematics, reading, and science that range from levels 1 (lowest) to 6 (highest). These levels of competency are defined as follows:

- At competence level 1, students can answer questions involving familiar contexts where all relevant information is present and the questions are clearly defined. They are able to identify information and carry out routine procedures according to direct instructions in explicit situations. They can perform actions that are obvious and follow immediately from the given stimuli. 95 percent of all OECD test-takers perform at this level or higher. Box 4.1 below contains an example of a question that tests competence level 1.

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<tr>
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<td>226</td>
<td>35</td>
</tr>
</tbody>
</table>

Marina’s feet are 163 mm long. Use the table to determine which Zedland shoe size Marina should try on.

- At competence level 3, students can execute clearly described procedures, including those that require sequential decisions. They can select and apply simple problem-solving strategies. Students at this level can interpret and use representation based on different information sources and reason directly from them. They can develop short communications reporting their interpretations, results and reasoning. The OECD average corresponds roughly to level 3. A sample question from competency level 3 is provided for a clearer illustration (Box 4.2).
In 1998 the average height of both young males and young females in the Netherlands is represented in this graph.

According to this graph, on average, during which period in their life are females taller than males of the same age?

In light of these definitions, the performance of Uruguayan students is far below the demonstrated competencies of the OECD average in Mathematics, Reading and Science. Table 4.1 displays the fact that while Uruguay does well compared to its LAC counterparts in PISA, there exist substantial gaps in the learning HOI when Uruguay is compared to even the poorest performing OECD country. In each of the three subjects tested – mathematics, reading and science – the distance between Uruguay and the poorest OECD performer is more than 10 points. Uruguay has an HOI of 22 when looking at level 3 learning in mathematics and reading while its HOI in science is 21. This suggests that roughly only 20 percent of the opportunities needed for universal access to level 3 knowledge were available and equitably allocated, and thus roughly 80 percent were either unavailable or inequitably allocated. Note that level 3 is the average for OECD countries. The top performing OECD country (Canada in each subject) had on average three times the opportunities to access these knowledge levels available and equitably allocated in comparison to Uruguay.
Table 4.1: HOI: Achieving Level 3 (PISA 2006)

<table>
<thead>
<tr>
<th>Country</th>
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<th>Country</th>
<th>Reading</th>
<th>Country</th>
<th>Science</th>
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Source: Estimates produced based on PISA data, 2006. Canada and France do not include school location as exogenous variable. * USA reading data was not released due to a printing error in the exam booklet.

An examination of the test score data underlying the HOI for learning reveal that the Uruguayan test score distribution lies to the left of the OECD average distribution. This suggests that the typical Uruguayan student is below the level of competence of the typical OECD student by as much as two-thirds of a standard deviation. The difference in mean scores in mathematics, reading and science in 2006 was roughly 60, 71 and 63 points, respectively.

The theoretical and empirical literature is replete with several complementary pieces of evidence on the production of learning\(^22\) that can be used to gain perspective on the magnitude of the standard deviation gap. For instance, evidence from the Netherlands suggests that an additional month of schooling can produce 5 – 6 percent of a standard deviation gain in learning for 4 year olds depending on the subject (mathematics and language, respectively).\(^23\) A similar study in Argentina (Berlinksi, Galiani and Gertler, 2009) finds that an additional year of pre-primary education can increase tests scores for third graders by 23 percent of a standard deviation. Thus, the schooling-to-learning gradient in this Argentine study is roughly 2 percent of a standard deviation per month – less than half of that found in the Norwegian study. This would suggest that the gap in learning between the average Uruguayan and OECD student reflects a difference of roughly twenty to thirty months of schooling.\(^24\)

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\(^{22}\) See for instance Todd and Wolpin, 2003 and 2005.

\(^{23}\) See the evidence from the quasi-experimental study of Leuven et al., (2009).

\(^{24}\) Note that this line of reasoning is fraught with assumptions. We intend only to give the reader a broad sense of the magnitude and not to assert that the production of learning for 4-year-olds in Norway is identical to that of 15-year-olds in Uruguay. Nor are we asserting that learning is solely produced by school inputs. Home inputs are critical.
also. On the complementarity of skill production, see for instance the work of Cunha and Heckman (2007), and Cunha, Heckman, Lochner and Masterov (2006a and 2006b) and the references cited therein.
There also exists a learning gap across income groups within the country. The test score difference between the top and the bottom quintile is roughly of the order of magnitude of one standard deviation (Figure 4.3). This is true irrespective of the subject – Mathematics, Reading or Science. To put this in context consider that the so-called Black-White test score gap in the United States is roughly one standard deviation. This gap in the US has influenced the production of educational legislation and directed the flow of funding.

When the test score distributions of the lowest and highest quintile are overlaid, they reveal that the differences between quintiles are of the same order of magnitude as the differences between Uruguay as a whole and the OECD average reported above. This suggests that students from the poorest quintile in Uruguay are even further behind the typical student taking the PISA assessment in OECD countries.

4.2 Initiatives to improve educational attainment and learning

In such a setting how well-aligned are Asignaciones Familiares and programs for access to information technology with the government’s aims of improving the quantity and quality of education its children receive? Section 4.2.1 compares Asignaciones Familiares with other similar programs in the region and stresses the need for more stringent enforcement of the program’s conditions. It underscores the need to ensure that quality does not suffer as school enrollment increases. Section 4.2.2 considers how access to computers and the internet at home varies across departments.

4.2.1 Comparing targeting and conditionality of Asignaciones Familiares to other programs

The new system of Asignaciones Familiares, as introduced in 2008, is geared towards supporting children from poor households. As such, it can be compared to Conditional Cash Transfers (CCT) in other countries. We look at the two dimensions of targeting and conditionality of the program, and compare them to the current arrangements of the two most well-known CCTs in Latin America: Brazil’s Bolsa Familia and Mexico’s Oportunidades. Bolsa Familia is the largest CCT program in the world, covering 11 million families, or about one quarter of Brazil’s population. Oportunidades is currently serving 5 million families, comprising almost a quarter of Mexico’s population. With a target population of 500,000 children (Presidencia de Uruguay, 2007), Asignaciones Familiares is significantly smaller than these two programs in absolute terms. As a share of the population, however, it is much larger with the projected number of beneficiaries comprising significantly more than half the country’s children under the age of 18.

The benefit structure varies by program. In Brazil it is differentiated by poverty level, whereas Uruguay distinguishes level of school and birth order. Oportunidades contains a range of components that go beyond the support of education and health of children, such as transfers to the elderly or for food and energy needs of the household (SEDESOL, 2009). The Mexican stipends for students have escalating amounts by grade. The increments are particularly high at

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25 The PISA questionnaire asks respondents about whether their household owns one of a list of seventeen assets. We compute an index of asset ownership based on the score of the first four principle components. We then create quintiles based on this index.

26 Hanushek 2001.

27 The previous Asignaciones Familiares system for formal-sector employees remains in force, but is not considered here. See the Banco de Prévision Social’s website (wwwbps.gub.uy) for more details.
the transition from primary to secondary school and from secondary to higher secondary (Educación Media Superior). In addition, under Oportunidades the amounts received by girls are higher than those for boys of the same grade in secondary education. The difference becomes incrementally larger with every additional grade (SEDESOL, 2009).

**Targeting**

The new Asignaciones Familiares targets children of households with per capita income below the national poverty line. Besides household income, other characteristics, such as household composition and housing conditions, including sanitation, are measured through a proxy-means score to determine eligibility under the scheme (Ley 18.227 Asignaciones Familiares). Proxy-means tests are much more common in CCTs than means testing, with Brazil’s Bolsa Familia being one of the few exceptions (Fiszbein and Schady, 2009).28

Asignaciones Familiares does not rely on geographic targeting on poor areas or districts, in contrast to most CCTs, including Bolsa Familia and Oportunidades (Fiszbein and Schady, 2009). In Brazil, municipalities are in charge of program targeting and registration, whereas in Mexico and Uruguay this responsibility lies with the program’s implementers.

**Conditionality**

For those households that qualify for Asignaciones Familiares according to the proxy-means test, benefits are received for all their children aged 0 to 5; for children up to age 14 enrolled in primary education (age 16 if valid reasons can be provided); and for children up to age 18 enrolled in secondary education. The age limits are extended for disabled children, and benefits – depending on circumstances – continue to be paid until they are replaced by the disability pension (BPS, 2007). Enrollment appears to be sufficient for eligibility and maintaining a certain attendance record is not enforced under the program. Most CCTs, on the other hand, require an attendance record of at least 80 percent of school days (Fiszbein and Schady, 2009). Both Oportunidades and Bolsa Familia call for at least 85 percent school attendance, but the period over which this attendance has to be maintained varies from one to three months.

In addition to attendance requirements, some countries have also introduced performance criteria: for example, Cambodia requires passing grades; Turkey allows a grade to be repeated only once; and Nicaragua requires grade promotion at the end of the school year (Fiszbein and Schady, 2009). The absence of attendance and performance conditions renders Uruguay’s Asignaciones Familiares as one of the most lenient schemes.

On the health side, Asignaciones Familiares, Oportunidades and Bolsa Familia all require children to undergo regular medical check-ups. In addition, under Oportunidades all members of the household, and not just children, are obliged to such visits, as well as the attendance of health and nutrition lectures by mothers. Bolsa Familia requires vaccinations for children under the age of 7 in addition to follow-up visits to monitor nutritional status. Pregnant women need to undergo pre- and post-natal check-ups and attend health and nutrition seminars.

In Mexico the enforcement of conditions is rigorous, and benefits are reduced at the first round of noncompliance. The Brazilian scheme is somewhat more forgiving, initially relying on a warning system. Non-complying households are largely seen as in need of additional “care” and

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28 The most recent means test employed by Brazil uses an eligibility threshold that is indexed to the minimum wage (Lindert et al., 2007).
problem solving, rather than penalties (Fiszbein and Schady, 2009). In a comparative study of CCT program variations in 16 countries, only three were found to apply no punishment at all, while seven applied light penalties and six countries resorted to full penalties (ibid.). Attendance requirements under Asignaciones Familiares could be monitored and enforced to ensure that learning is actually occurring. However, increased enrolment requirements would place additional burdens on the educational system, which also faces important supply side constraints that would also need to be addressed.

4.2.2 Access to Technology and Learning

**Equality of access to information technology varies greatly across the country in 2008.** In 2007, the Government introduced the Plan Ceibal with the aim of providing one laptop per child and teacher in elementary school and ultimately to ensure that all students are within 300 meters of a wifi spot. More recently, the program is also being expanded progressively into secondary school. The purpose is the inclusion and access of society to information and knowledge. This section looks at children’s access in 2008 to computers and the internet at home across departments. Since Plan Ceibal was in its early stages in 2008, the data presented below does not fully reflect access to computers and internet for students in Uruguay in 2010.

**4.2.2.1 Computers at home**

**There is a large disparity across departments as of 2008 in 6-16 year old children’s access to computers at home.** The question employed in the 2008 Encuesta Continua de Hogares does not distinguish between desktop and laptop computers. Consequently, the HOI for computers at home examines access to both types of computers. The data suggest that this access is not equitably distributed across the country. In the departments with the most equitable access, 80 percent of the opportunities needed to ensure equal access to computers for children between the ages of 6 and 16 were available and fairly distributed in 2008. In the department with the least equitable access only 26 percent of the opportunities were available and fairly distributed in 2008 (Figure 4.4). With the implementation of Plan Ceibal, coverage is likely to have expanded and the 2009 household survey may show a higher HOI. As more household survey data becomes available, and with the use of administrative records, the impact of Plan Ceibal on learning, household welfare, and economic opportunities should be assessed.
4.2.2.2 Internet at home

Access to an internet connection at home according to an equal opportunity principle is rare in 2008. The survey asks respondents to report whether their homes in 2008 have access to the internet via a dial-up connection or whether they have a monthly contract. The data reveal that in Montevideo in 2008 roughly 30 percent of children 6 to 16 years of age have access to an internet connection at home. In other words only 30 percent of the opportunities needed for universal coverage were available. Of these 45 percent (13 percentage points) were not allocated equitably. As a result only 16 percent of needed opportunities for universal access were available and distributed fairly in 2008 (Figure 4.5). However, it is important to note that under Plan Ceibal the government has established over 250 public places with an internet connection.

The estimated value of $\bar{p} = 0.30$. The value of the D-Index was 45 percent. $\bar{p}(1 - D) \approx 16$.

As evaluations of the program begin, it will be important to track not only direct effects such as greater access to technology but also the additional benefits of greater student engagement, reduced dropout and repetition, and better attendance, as well as the broader impacts on the households of improved access to information. There is already evidence emerging of improvements in educational outcomes that could be linked to Plan Ceibal, but in the absence of formal evaluations, administrators have chosen not to attribute them to the program. In the academic literature, there is mixed evidence on the effects of computer use on learning. Malamud and Pop-Eleches (2008) examine the effects of computer use in the home and Rouse and Krueger (2003) and Angrist and Lavy (2001) examine the effects of computer use in the classroom. While Malamud and Pop-Eleches (2008) find that recipients of a computer at home in Romania displayed decreases in time spent on TV watching, they also displayed decreases in time spent on doing homework. Rouse and Krueger (2003) find that while computers in schools may improve some aspects of students’ language skills they do not translate into actual reading skills. Angrist and Lavy (2001) do not find that the introduction of computers in Israeli classrooms raises student test-scores. Thus, in the absence of a formal evaluation of Plan Ceibal, it is premature to make any claims about the effectiveness of the program on test scores. If Plan Ceibal leads to increases in student learning, it could be a vital input into addressing the drop-out problem displayed by the Uruguayan educational system.

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CHAPTER 5. CONCLUSIONS AND POLICY CONSIDERATIONS

Uruguay has achieved high levels of equality of opportunity in terms of access to core basic services such as school enrollment, water, electricity and sanitation. In other areas, such as completion of sixth and ninth grade on time, there exists a significant gap to universal access. Without accelerated progress on these dimensions, Uruguay risks falling behind other countries in the region, as well as trailing further behind the developed countries. Even though the country has shown progress on health and access to technology as of 2008, it will take some time before all groups of children benefit from access to high quality health services and full access to information and communications technology. At the sub-national level, further attention is necessary for some departments like Tacuarembó that face worrying gaps in universal access to sanitation.

In general, current social policy in Uruguay, guided by the National Equity Plan, is in sync with these challenges, progressive from the perspective of household per capita income, and consistent with the aim of expanding access to basic opportunities for all children. The recently implemented anti-poverty transfer program (*Asignaciones Familiares*), early childhood development program, and Plan Ceibal are primarily focused on opportunities for children. Nonetheless, as highlighted below there is still room for improvement to accelerate opportunities to access basic goods and services for all children. In all cases, it will also be important to address supply side constraints in health and education to ensure higher quality and maximize the benefits from the various programs. As a policy tool, the HOI can serve to build consensus across political parties since the focus is on equalizing children’s opportunities, rather than on equalizing adults’ outcomes, which can be affected by talent or effort. In the case of Uruguay, where consensus already seems to exist over the issue of equality of opportunities, the HOI can help identify areas where progress needs to be accelerated. To this end, several policies could be considered.

1. National targets and monitoring framework

The HOI framework can be utilized to monitor progress towards expanding opportunities to access basic goods and services for all children. By providing information on Uruguay’s current position, including in comparison with other countries as well as an internal comparison across departments, the HOI framework can provide inputs to help set out the country’s policy objectives and national targets. As has been seen, the framework can also be utilized to monitor progress towards more challenging opportunities or to monitor the evolution of existing opportunity gaps.

Since data is required for monitoring, the HOI framework thus also serves as a means to highlight data restrictions. Several constraints stand out in the Uruguayan case:

- Consistency of coverage: national surveys only exist since 2006, hence only urban comparisons can be made over long-periods of time.
- Continuity of modules: some modules only exist for once year (such as the special 2006 module on school repetition and drop out and the ability to speak and write English), making some comparisons impossible from 2006 to 2008.
• Data on key health outcomes and access to services: the national household survey (ECH) lacks routine questions on health and no Demographic and Health Survey exists.

2. Targeting programs or expenditures

The HOI can provide a means to focus the targeting of programs or expenditures. The HOI will increase faster when programs are more targeted toward groups that are excluded or marginalized. To accelerate progress, Uruguay could consider aligning expenditures to vulnerable groups and to goods and services where the HOI remains low. These efforts should also focus on addressing important supply side constraints in the education system. Key priorities for consideration include:

• increasing public social spending in disadvantaged departments such as Tacuarembó or on indicators such as completion of sixth grade on time that are lagging behind. The HOI framework can highlight which indicators are lagging behind and in which departments, allowing for better targeting of expenditures.

• continuing efforts to expand access to early childhood development programs. The results suggest that large gains in pre-school attendance rates of up to 31 percentage points have occurred over the last decade, largely due to increases in coverage rates. This is an especially positive result in light of studies that find preschool attendance has a strong effect on the number of completed years of formal education (Berlinski, Galiani and Manacorda, 2007).

• continuing efforts to improve the completion of ninth grade on-time, with improvements in educational quality that would lower repetition and dropout rates after sixth and seventh grades, particularly for children in the lowest wealth quintile. While around 50 percent of children in the poorest decile had repeated a grade in primary school, the rate was only 5 percent for children in the richest decile. The results for the HOI of the Program for International Student Assessment (PISA) highlight that the typical Uruguayan student is below the level of competence of the typical OECD student, and students from the poorest quintile in Uruguay are worse still.

3. Realign incentives

Realign and strengthen incentives that support and accelerate the expansion of the HOI itself:

• Consider expanding anti-poverty transfers (Asignaciones Familiares) and aligning incentives to explicit national education and public health goals. Asignaciones Familiares is conditional on certain health and education requirements and is primarily focused on opportunities for children. These conditions could be strengthened to link more directly with national goals, such as the law for compulsory school through ninth grade, and thus the program could potentially serve as a vehicle to accelerate progress towards the goal of universal access to ninth grade on time.
Consider public investment to expand access to information and communications technology across all of Uruguay’s departments. Access to a computer and an internet can be an important instrument for preparing students for the challenges of the XXI Century. Improving access to computers is a key policy objective of the Government of Uruguay. Nonetheless, using data from the 2008 household survey, access to a computer and/or the internet in the home according to an equal opportunity principle is relatively low in Uruguay. While access is expected to have increased with the Government’s Plan Ceibal program, it will be important to evaluate the impact of the program on educational outcomes, as well as the broader effects on households due to increased access to technology and information.
ANNEX 1: Data constraints in Uruguay’s encuesta continua de hogares

The data at our disposal pose several challenges and have limited our ability to provide a comprehensive assessment of the state of human opportunity. We note, in particular, the following constraints:

Methodological changes in Uruguay’s Household Surveys

The Encuesta Continua de Hogares (ECH) is the main household survey in Uruguay. As its name suggests, the ECH is conducted throughout the year by the Instituto Nacional de Estadística (INE). It was first conducted in 1968 in Montevideo, and through 2005 it covers all the urban areas with at least 5,000 inhabitants, which are home to 91 percent of the Uruguayan urban population. In 2006, the INE implemented the Encuesta Nacional de Hogares Ampliada (ENHA) extending the survey coverage to rural areas. In 2007 and 2008 the INE continues with the ECH but now with national coverage that is representative at the urban, rural and departmental level. The ECH gathers information on individual socio-demographic characteristics, employment status, hours of work, wages, incomes, type of job and education. This process of changes in coverage, sample frames, and modifying the questionnaires of the ECH calls for a careful treatment of the data. Comparisons of statistics, whenever possible, should take into account differences in methodology at each point in time.

Background

From 1968 until 1979 the ECH was conducted only in Montevideo. In 1980 some major changes were implemented. In addition to the extension to the rest of the country, the questionnaires were substantially modified and are practically similar to the actual ones. The areas that have been surveyed since 1980 until now are two: Montevideo and Interior Urbano.

At first, the Interior Urbano covered the urban cities with at least 5000 inhabitants according to the 1975 Census. Those cities were represented by the 18 “Capitales departamentales” and the two biggest cities of the adjacent areas of Montevideo (the so-called 20 mayores). Between 1982 and 1990 the coverage was extended in order to be representative of those cities with at least 900 inhabitants (according to the census data of 1975 and 1985 for the periods 1982-1985 and 1986-1990 respectively). The sample of cities with 900 to 5000 inhabitants were randomly selected. Nevertheless, there was very little variation in the cities included every year.

In 1991, in addition to a change in the basic questionnaire, the coverage of the Interior Urbano was modified. The 20 mayores then became the urban cities with at least 10,000 inhabitants. Besides, a sample of cities was selected to be representative of those with 900 to 10,000 inhabitants. This coverage of the Interior Urbano did not change until 1998, and was the most long-lasting since 1980.

In 1998, the ECH experienced some major changes. First, coverage was extended to all the cities located in a radius of 30 km from Montevideo (the Periferia). Second, the Interior Urbano was split in two categories. The first one was representative of all the cities with at least 15,000

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32 Source: Winkler Herman (2005)“ Poverty and Inequality in Uruguay: Methodological Issues and a Literature Review”, CEDLAS, UNLP
inhabitants. According to the 1996 Census, that category included the 18 “capitales departamentales” and other 8 cities. In some of them, the coverage was extended to their adjacent areas. The second category was representative of those cities with 5000 to 15,000 inhabitants. There were 20 cities in Uruguay with those characteristics, distributed in 12 departments. Instead of including all of them, the INE selected one city by department, with a probability proportional to its number of inhabitants.

Prior to 2006, household surveys in Uruguay did not sample rural areas of the country. Consequently, the only geographical groups that can meaningfully be compared when estimating the Human Opportunity Index over time are limited to administrative divisions or the aggregated division between Montevideo and the urban interior. Beginning in 2006, rural areas have been included in the sampling frame. While this allows a more fine-grained comparison of differences across regions, a lack of continuity in modules makes it difficult to accumulate repeated observations on indicators of interest.

Continuity of modules

Part of the analysis in Chapter 2 was possible due to the availability of two special modules included in the 2006 Household Survey (ENHA). In the second trimester of the survey the INEC included a module on Labor Training, Communication Technologies (that included more specific questions on access to the internet such as how frequent the person uses the internet and for what purpose) and child labor. The third trimester included special questions on education (grade repetition in primary and secondary school, and whether the person speaks and writes English) and health (if the person was sick, if the person visited a doctor and was prescribed any medication, or if the person did any preventive health and dental controls). Some of the questions included in the 2006 special modules were a good opportunity to analyze important aspects related to children’s equality of opportunity such us children’s school performance and their health access and status. However, the fact that these modules were only included in the 2006 household survey imposes a restriction to our analysis since no more frequent data is available to do comparisons over time.

Absence of modules

A review of the academic and policy literature reveals many references to the fact that Uruguay has historically performed above the regional average in the health sector. However, routine questions on health are missing in the ECH. Nor has a survey such as the Demographic and Health Survey ever been conducted in Uruguay. A limited number of publically available datasets focused on health behaviors have been identified but they are too narrow in scope or coverage to allow an assessment of equality of opportunity for the development of health policy at the national or departmental level.
ANNEX 2: HOI and the inequality penalty
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