

# Climate and Development



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Climate change is a development challenge like no other. Climatic conditions determine where people build and live, and the kind and amount of crops they grow. Climate likewise affects the types and prevalence of disease among humans and livestock—and whether an island or coast remains an attractive tourist destination. In short, every aspect of health, welfare and economic growth is touched by climate, and human activities in any given place are based on expectations that temperatures, precipitation and sea levels will remain within fairly stable ranges.

Climate change disrupts those expectations. In a region as large and diverse as Latin America and the Caribbean this disruption can take many forms. In fact, some sectors and places may even benefit from new conditions. Policy-makers, though, will largely need to consider downside risks and adapt to new and intensified threats. The timing and duration of growing seasons may vary from expected patterns, while rainfall and water from seasonal glacier melt become less dependable. Floods as well as droughts are expected to become more intense, with impacts not only on agriculture but also on transportation and human safety. Rising sea levels and higher storm surges, moreover, can greatly diminish the appeal of carefully planned beachfront hotels, and the bleaching of corals by rising water temperatures and acidification can represent the loss of a destination's prime tourist attraction.

Like more sudden shocks such as economic crises and individual natural disasters, these developments will disproportionately affect the poor. Small-scale farmers are at risk

Besides having a wide range of effects on development, climate change is in part caused by development.

of both income and food insecurity, and seasonal jobs in tourism may become harder to find. People living in substandard housing may find themselves increasingly vulnerable to extremes of heat and precipitation. In a worst-case scenario, an increase in mudslides caused by heavy rains could prove disastrous for residents of *colonias* and *favelas* built on hills and mountainsides around center cities. In addition to the obvious costs of human suffering, all of these outcomes hold the potential to strain public resources and slow countries' development and economic growth.

Besides having a wide range of effects on development, climate change is notable for being in part caused by development. The Industrial Revolution, first in developed countries and eventually around the world, has been largely based on the burning of fossil fuels such as coal, oil and gasoline, releasing the solar energy stored in the remains of carbon-based

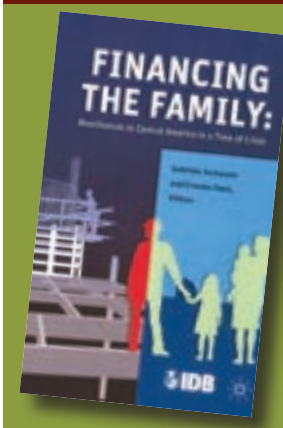
life forms (i.e., plants and animals) from the Earth's distant past. Deforestation has likewise caused the release of carbon stored in trees and other vegetation. In the mid-nineteenth century Irish physicist John Tyndall had already suspected that the gases released by burning fossil fuels, particularly carbon dioxide, might intensify the "greenhouse effect" of the Earth's atmosphere, trapping heat that would otherwise be refracted into outer space.

Developments have largely confirmed Tyndall's thinking. The Earth's climate is an immense and dynamic system with complex interactions among air, land and water, but subsequent research and analysis with a growing

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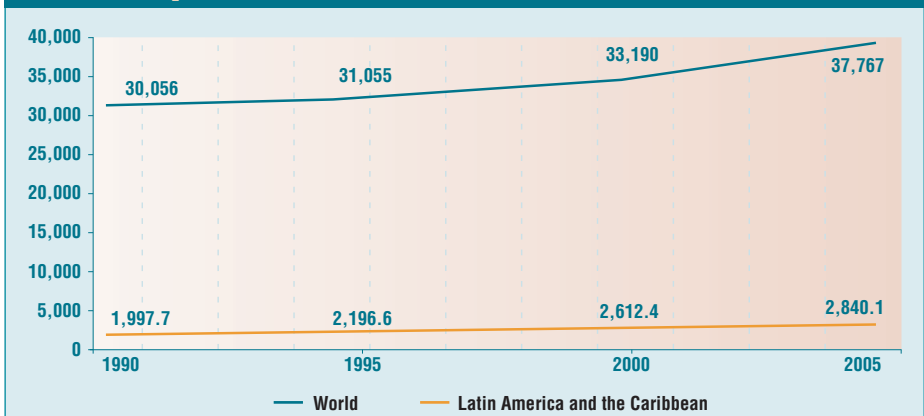
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range of data increasingly indicate that human activities such as burning fossil fuels and deforestation have increased the proportion of greenhouse gases in the Earth’s atmosphere, with an increase in average global temperatures as well.

The increase seems small at first glance: approximately 1.5°C from the mid-nineteenth century to the present. Half of that increase, however, has taken place since 1970, and researchers including those on the Intergovernmental Panel on Climate Change have found that human activity represents the best explanation for this abrupt increase in the rate of warming. This change in the trend line of temperature graphs has come to be known as the “hockey stick” phenomenon. A considerable majority of researchers expect this trend to continue throughout the present century, and current international efforts focus on limiting that increase to about 2 °C between 2000 and 2050, an approach generally known as mitigation.

What do these seemingly abstract global figures have to do with Latin

**Figure 1. Latin America and The Caribbean: Greenhouse Gas Emissions as a Share of the World Total, 1990–2005**  
(Megatons of CO<sub>2</sub> Equivalent)



Source: World Resource Institute (WRI), “Climate Analysis Indicators Tool (CAIT) Version 6.0” [online] [www.cait.wri.org](http://www.cait.wri.org), 2009.

Note: Emissions include CO<sub>2</sub>, CH<sub>4</sub>, SF<sub>6</sub>, N<sub>2</sub>O, PFCs and HFCs, but exclude those from land-use changes.

America and the Caribbean? And how should countries in the region respond to climate change?

These questions can best be addressed in reverse order. As shown in Figures 1 and 2, the region accounts for only a relatively small portion of

the world’s greenhouse gas emissions—most notably only about 4% of global carbon dioxide from consuming fossil fuels—and can play only a small role in mitigation. This does not, though, absolve the region of all responsibility.

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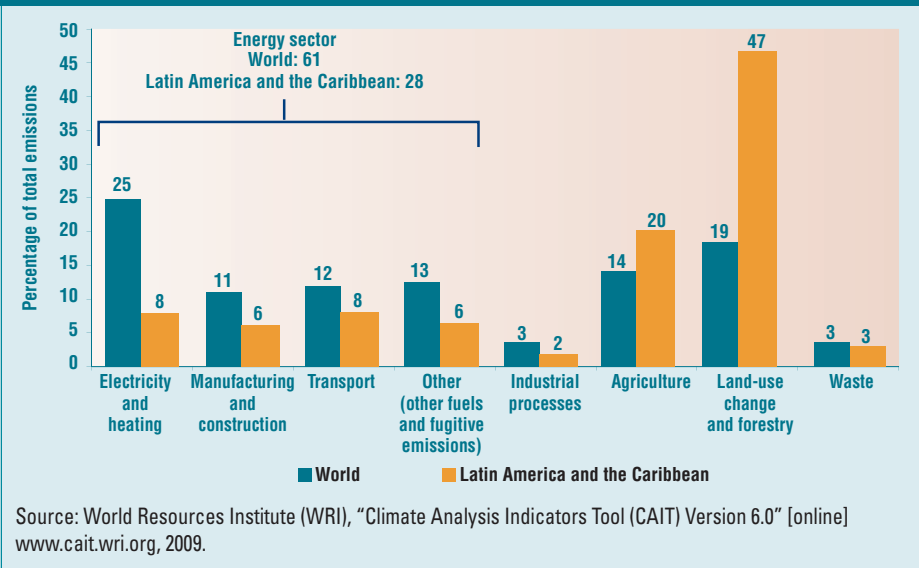
# Climate and Development

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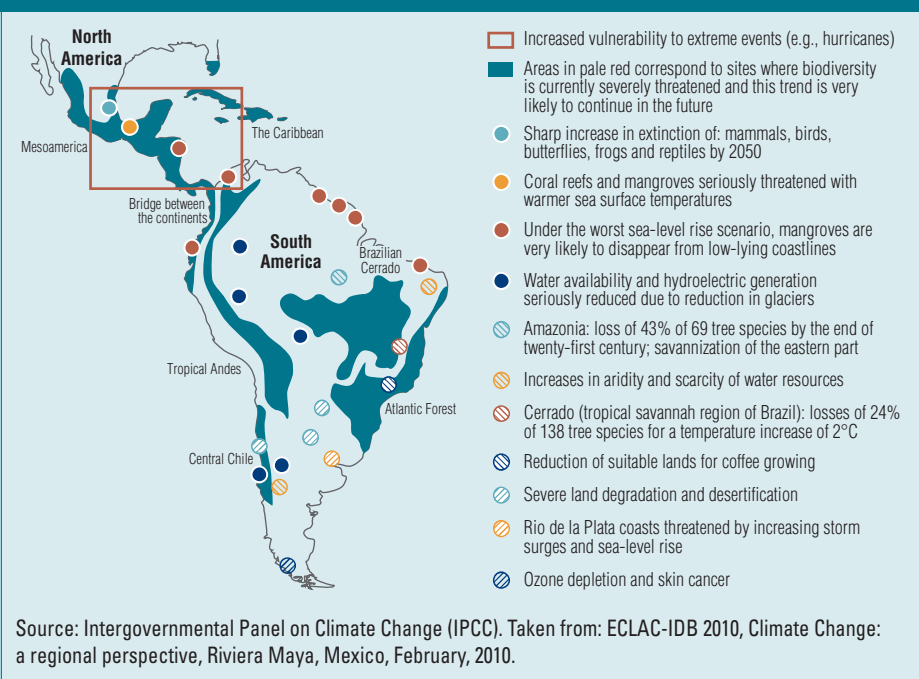
With a fairly small 12% of world greenhouse gas emissions in 2008, but 8.2% of world population, Latin America and the Caribbean actually produces higher per capita emissions than China and India, and those emissions are concentrated in a few large countries with growing energy demand and a growing role in the global economy. Individual countries and the region as a whole must therefore be prepared to contribute to mitigation efforts where they can, particularly in controlling emissions from deforestation and agriculture, if they hope to receive in return substantial adaptation assistance from developed countries and international organizations.

Latin America and the Caribbean will clearly need such assistance, since no country or region can wall itself off from a changing climate and its effects. As Figure 3 shows, seemingly abstract statistics on temperatures and levels of greenhouse gases pose real and specific dangers, some already becoming reality, throughout the region. Central America and the Caribbean, among other areas, faces a significant decline in biodiversity—particularly increased extinction of mammals, birds and butterflies, frogs and reptiles—by 2050, with potentially major effects on tourism and agriculture. Likewise, Brazil’s Northeast is vulnerable to increasing aridity and scarcity of water, and South America’s Amazon region may lose biodiversity and in part change from rainforest to savannah, increasing world greenhouse gas levels in the process. The coasts of the Rio de la Plata in Argentina and Uruguay are vulnerable to increasing storm surges and rising sea levels. Chile alone faces three notable threats: land degradation in the north, reduced availability of water and hydroelectric generation due to shrinking glaciers in the populous center, and increasing risks of skin cancer due to

**Figure 2. Latin America and The Caribbean: Greenhouse Gas Emissions, by Sector, as a Share of the World Total (Percentages)**



**Figure 3. Latin America and the Caribbean: Hot Spots**



ozone layer depletion in the south. These long-term challenges in the region and elsewhere will require an unprecedented

level of long-term and coordinated international action.

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# A Local Focus to a Global Problem

Discussions of climate change are often framed in terms of worldwide averages, but the impacts of climate change will be experienced in greatly varying and highly localized ways. Assessing and analyzing very specific conditions and risks is thus an important step in designing adaptation responses that are both effective and cost-efficient.

The necessary research represents a massive undertaking, but some important work is already underway. A recent IDB study evaluates data on the impact of weather extremes for all of Mexico's 2,454 municipalities and arrives at findings with notable policy implications.

The weather shocks considered are extremes in precipitation and temperature. As would be expected, extremely high or low rainfall has a negative impact on agriculture. It has no clear effect, however, on mortality rates.

Temperature extremes have wider overall effects. Mexico generally does not experience temperatures low enough to affect agricultural production or death rates, but it does experience high temperatures that negatively affect both—an increasingly likely occurrence in a changing climate. Exchanging one day with a temperature of 16–18 °C for one day with temperatures higher than 30 °C, for instance, increases the mortality rate by 0.15 percentage points.

A growing number of such high-temperature days will, unless adaptation is undertaken, add up to a significant change in death rates over time.

A closer examination of the data, moreover, shows major differences between urban and rural areas. Although a high-temperature day increases the death rate by only 0.07 percentage points in urban areas, the comparable figure in rural areas is 0.2 percentage points—almost three times more.

What accounts for this difference? First, and not surprisingly, rural inhabitants are much more likely than their urban counterparts to work in agriculture and other outdoor manual labor. Generally poorer than urban residents, rural residents are less likely to have access to medical care and shelter from hot weather. A second, indirect mechanism is also at work. When crop yields and agricultural output are reduced, rural populations suffer in two ways. Smaller amounts of food are available for household consumption, and there is less food to sell and raise cash for the purchase of other foods and necessities. In other words, both food security and income security are jeopardized. These are especially crucial concerns for small-scale farmers who are unlikely to have crop insurance and may not possess alternative sources of income.

Like location, timing plays a crucial role in the impact of weather shocks. Extremes in precipitation and temperature have substantial negative effects during the agricultural growing season and far smaller effects at other times.

These findings provide meaningful guidance on how scarce resources can best be used for climate change adaptation. In line with the goals of development in general, efforts must be concentrated on the most vulnerable population, in this case rural residents, and those efforts must focus on the most critical time, the agricultural growing season, which can vary according to crop selection and local microclimates. Specific measures can include weather-related crop insurance, discussed elsewhere in this newsletter, and initiatives to improve medical care and shelter in rural areas.

Diversity in geography, economies and populations both within as well as across the countries of Latin America and the Caribbean means that similar assessments will be necessary to set priorities and design cost-effective measures tailored as nearly as possible to local conditions. Starting that process sooner rather than later will mean minimizing the human and economic costs of adapting to climate change.

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Although the scientific understanding of climate change has greatly advanced in recent decades, the design and implementation of mitigation policy represents a work in progress. The discussion of adaptation, moreover, remains in its infancy. Extensive research

is needed to determine how different effects of climate change should be addressed and how solutions should be calibrated to greatly varying local needs. The articles in this issue of IDEA cover some of the IDB's recent research involving responses to climate change on

both the mitigation and adaptation fronts. That research includes both surprising findings and an underlying understanding that the region's development must take into account—and will in many ways be shaped by—how it deals with this unique and inescapable issue.



# Heated Negotiations to Save Trees

Latin American and Caribbean countries can do relatively little to mitigate climate change. If the region were suddenly to stop using fossil fuels altogether—an impossible scenario—the reduction in greenhouse gas emissions would be small, and the resulting impact negligible. Fossil fuel consumption in the region is expected to rise as development proceeds, but for the foreseeable future consumption will remain far below developed country levels.

One area where countries can help mitigate climate change, however, is the prevention and in some cases reversal of deforestation. The second-largest factor in greenhouse gas emissions after fossil fuel consumption, deforestation in developing countries accounts for an estimated 25–30% of emissions resulting from human activity. This occurs largely in the tropical countries of South America, Africa and Asia, where together an area approximately the size of England is deforested every year.

Within Latin America the rate and extent of deforestation has varied considerably. Intergovernmental Panel on Climate Change data for 1990 to 2000, for instance, show that Ecuador recorded the highest deforestation rate at 1.2 percent. In absolute terms, though, this amounted to less than two million hectares, the smallest loss among the region's larger countries and an even smaller loss in terms of global mitigation. During the same years Brazil displayed the region's second-lowest deforestation of 0.4 percent. The vastness of that country's Amazon, however, meant that loss totaled more than 25 million hectares, more than the rest of the region's losses combined and a meaningful loss to global mitigation potential.

Forests, however, generally provide an important environmental service as

carbon sinks, absorbing carbon dioxide from the atmosphere as plants grow. Deforested land generally supports much less biomass, and thus captures far less carbon. The process of deforestation itself, moreover, releases large amounts of carbon from clearing and often burning trees.

Yet developing countries face an acute dilemma. The long-term goal of mitigating climate change around the world may understandably hold little appeal for ranchers seeking new pastures for cattle or poor families who find a new source of income in logging or farming on cleared land. Governments, like their citizens, still receive virtually no large-scale compensation for the services their forests provide for the whole world's atmosphere. In the short term, deforestation pays and forest conservation does not. Countries in Latin America and the Caribbean already face significant adaptation expenses, and foregoing the short-term benefits of deforestation can prove politically unfeasible among populations expecting to improve their standard of living.

How, then, can forest conservation be made to pay?

An IDB study finds that the global issue of climate change mitigation can only be addressed by global solutions such as international treaties involving the largest possible number of countries. The structure of those treaties will prove crucial. Since no global authority can enforce treaties among sovereign nations, compliance can only be brought about by positive incentives. In short, richer and more developed countries will need to pay developing countries for the global benefits provided by intact forests, and they will have to make those payments a viable long-term alternative

to the short-term economic benefits of deforestation.

Arriving at feasible agreements is likely to involve arduous negotiations with a plethora of details, but successful treaties will need to have several characteristics. First, agreements must include a participatory decision-making process and an equitable distribution of costs and benefits. Second, payments for forest conservation must be based on verifiable and consistently measured actions that would not have been undertaken otherwise and that do not cause emissions decreases in one place to be offset by increases in another. In exchange for payments, for instance, developing countries may need to allow monitoring of forests and deforested land by means such as satellite photographs. Finally, countries must not be allowed to free ride on others' efforts. For this reason, and to increase the region's bargaining power, it may be wise for Latin American countries to negotiate as a bloc rather than separately.

Mechanisms that could be included in future agreements are already being developed. The United Nations' Reducing Emissions from Deforestation and Forest Degradation program, created in 2008, includes methods of measuring, reporting and verifying forest conservation that could provide a basis for payments to developing countries.

The participation of Latin America and the Caribbean in tackling a global problem can be facilitated by international organizations including the IDB. Besides ongoing and projected assistance in adaptation, the IDB can provide the expertise and institutional capacity to help countries in the region become partners in mitigation efforts as well as beneficiaries.

# A Forecast for Policy

Like the rest of the world, the countries of Latin America and the Caribbean have a great deal of work to do in facing climate change and relatively little time in which to do it. Unlike developed countries, however, the region is working with fewer resources and other urgent needs to address such as alleviating poverty, reducing crime and building human capital through improvements in education and health care. Making the most effective use of limited resources requires carefully planned policies.

Several IDB studies have begun to provide guidance in regard to both adaptation and mitigation policies. On the adaptation side, one recent study has formulated an index of exposure to extreme weather events (EWEs) such as droughts, floods and hurricanes, all of which are expected to increase in both frequency and intensity. Using data already widely collected in the region, the adaptation of this index could provide a transparent and comparable measurement of which areas are most in need of adaptation efforts and which projects are most likely to protect people and productive assets. In addition to allowing governments to set priorities, this index can assist international donors and lenders in determining how to allocate funds.

Taking a highly specific approach, another IDB study examines several of the Bank's projects to assess how thoroughly to consider vulnerability at the local level, particularly among the sectors most at risk. A review of projects in Argentina (agriculture), Barbados (coastline management), Brazil (water resources) and Nicaragua (forest biodiversity) leads to two recommendations for the design of future projects. First, future project proposals should include indicators of sensitivity and

vulnerability to climate change; this requirement should apply to all proposals and not only those explicitly related to adaptation. Second, climate change adaptation must be considered apart from meeting other goals that may either help or hinder adaptation efforts. While increasing income, for example, is a standard goal of many development projects, the effects of that increase on adaptation are unpredictable. A community may use its newfound prosperity to make its infrastructure more resilient to EWEs. On the other hand, that prosperity can fuel consumption and construction in vulnerable areas. Those who design and monitor projects, therefore, cannot assume that increasing income will inevitably solve other problems.

Although mitigation is expected to remain secondary to adaptation in Latin America and the Caribbean, it will nonetheless grow in importance as several of the region's larger economies grow and increase their fossil fuel consumption. With this in mind, IDB researchers have attempted to determine how countries in the region should approach mitigation, and explain why they should do so. Clearly, the responsibilities as well as the benefits of mitigation efforts are not just for rich countries. From a global perspective, bringing all developing countries into mitigation efforts is important because, without assistance, poorer countries will have to allocate already scarce resources from mitigation to adaptation as they address further impoverishment resulting from climate shocks—a dangerous and potentially irreversible downward spiral. In addition, the incentives that can be included in international agreements, such as conditional payments or other measures, can lead developing countries to

rise to the occasion and improve their mitigation efforts.

When should a developing country announce its mitigation policy? A casual observer might imagine that a developing country should wait to announce its transition from high to low emissions only after developed countries do so first—free-riding on others' initial efforts before making a commitment themselves. Taking a wider range of factors into account leads to a surprisingly different conclusion: developing countries should announce their emissions reduction policy at an early date. Such an announcement eliminates the uncertainty faced by investors seeking to build facilities in a country, or retrofit existing facilities to new emissions standards, both of which involve great expense and long-term planning. Eliminating uncertainty on emissions policy is especially important in attracting and retaining foreign direct investment, an important aspect of some Latin American and Caribbean countries' development strategies.

Not surprisingly, the details of mitigation policy will depend on the political economy of each country. Research on the potential impact of environmentally-oriented fuel tax reforms in Argentina, Bolivia and Uruguay finds a range of results. In all three countries, emissions could be reduced by increasing taxes on more-polluting fuels such as diesel and lowering those on less-polluting energy sources such as gasoline, electricity and natural gas. Likewise, firewood and other highly-polluting biomass fuels would ideally be taxed in all three countries, although that is impossible in practice because those fuels are generally gathered and sold in the informal economy. In other

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# Preparing for a Rainy Day: The Case for Weather Insurance

Adaptation to climate change can—and must—take several forms. In some areas farmers may have to plant new varieties of their current crops or change crops altogether. In other areas construction and infrastructure will need to be relocated or strengthened to meet the challenges of rising storm surges and sea levels.

Yet not all of the adaptations will be so concrete or readily apparent. Institutions and financial instruments will also have to evolve to manage risk in an increasingly unpredictable atmosphere, and policymakers must be prepared to offer measures that are carefully designed as well as politically acceptable.

A recent IDB study takes some of the first steps in designing measures that could be implemented in Latin America. The study examines the feasibility of weather insurance for reservoir-dependent farmers in two irrigation districts, one in Mexico that is partially rain-dependent and one in Peru that depends entirely on runoff from the Andean highlands. In both districts, ongoing and projected

increasing variability in climate conditions, including greater frequency of extreme events such as droughts and disruptions of seasonal glacier melts, means that farmers may not receive all of their scheduled water allocations.

The study applies a model for two scenarios developed by the Intergovernmental Panel on Climate Change, one with a world of uneven local development and a second with long-term global convergence in development levels and standards of living. Using data from recent decades and projections to 2030, the authors find that farmers' welfare would be significantly improved by participating in a weather insurance program when compared to self-insurance or going without insurance altogether.

Demonstrating the potential value of a weather insurance scheme is one thing, however, and implementing it is another. While managing weather risk in developed countries has largely been an extension of existing services provided by entities such as energy and insurance companies, in developing

countries the necessary institutional infrastructure remains a work in progress. Irrigation districts and farmers' organizations provide a necessary foundation, but their expertise will have to be complemented by the strengths of other actors to establish and sustain a functioning weather insurance market. Those participants can include insurance and reinsurance companies, financial institutions (including microfinance providers), non-governmental organizations and government agencies in combinations that will depend on local circumstances and may well feature public-private partnerships.

Further design of weather-related insurance in Latin America and the Caribbean will require extensive effort on the part of economists, policymakers and stakeholders, and implementing weather insurance schemes will involve trial and error. Nonetheless, these short and medium-term costs should be more than offset by stabilizing both agricultural production and farmers' incomes in a time when weather is expected to become more and more unpredictable.

## A Forecast for Policy

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instances, the particular features of each country's economic activity, vehicle fleet and traditional fuel sources mean that in each case a different mix of changes is necessary. Issues of particular importance include ensuring that taxes do not place an excessive burden on low-income households and

finding an equitable way to divide the burden of taxes between urban and rural areas. In any event, environmental taxes should generally not be expected to provide a "double dividend" of improving government revenues as well as reducing emissions.

The assessment of how to proceed

in both adaptation and mitigation is just beginning. Continuing this analysis represents far more than a theoretical exercise. Instead, it provides the foundation of concrete policies that governments in the region and around the world will need to implement sooner rather than later.



## New Publications

Available in English only unless otherwise stated.

### BOOKS



*Inchauste, Gabriela, and Ernesto Stein, editors*

#### **Financing the Family: Remittances to Central America in a Time of Crisis**

Interest in learning how to make the most of the developmental benefits of remittance flows has grown worldwide, but few attempts have been made to summarize existing knowledge in a way that is easy to digest. *Financing the Family* adds to that body of knowledge with a summary of recent research that emphasizes experimental approaches, focuses on Central America, and analyzes the impact of the recent financial crisis. It finds that while remittances generate many benefits for both migrants and their families back home, the long-term effects of migration on social cohesion and child welfare demands further study. The book also considers innovative financial instruments that give migrants greater control over the money they send home. Finally, the book exposes the vulnerability of Central American countries to a weaker U.S. economy. It demonstrates how focusing on the sectors and states where migrants are concentrated can allow for better policy responses in the face of economic downturns.

### WORKING PAPERS

*Agüero, Jorge M.*

#### **Causal Estimates of the Intangible Costs of Violence against Women in Latin America and the Caribbean (IDB-WP-414)**

Violence has a striking gender pattern. Men are more likely to be attacked by

a stranger, while women experience violence mostly from their partners. This paper estimates the costs of violence against women in terms of intangible outcomes, such as women's reproductive health, labor supply, and the welfare of their children. The study uses a sample of nearly 83,000 women in seven countries from all income groups and all sub-regions in Latin America and the Caribbean. The results show that physical violence against women is strongly associated with their marital status because it increases the rate of divorce or separation. Violence is negatively linked with women's health and with important short-term health outcomes for their children. Using a natural experiment in Peru, the study finds that the effects of domestic violence on child health outcomes appear to be causal.

*Ardanaz, Martín, and Carlos Scartascini*

#### **The Economic Effects of Constitutions: Do Budget Institutions Make Forms of Government More Alike? (IDB-WP-427)**

According to an influential theory, presidential systems present smaller governments because the separation between those who decide the size of the fiscal purse and those who allocate it creates incentives for lower public expenditures. In practice, forms of government vary greatly, and budget institutions are one (of many) drivers of this variation. This paper argues that under more hierarchical budget rules, presidential and parliamentary systems generate similar incentives for the executive branch to shape the size of government. Presidentialism negatively impacts government size only when executive discretion in the budget process is low. However, the negative effect of presidentialism on expenditures vanishes or is even reversed when the executive's discretion over the budget process is higher. Hence, bud-

get institutions that impose restrictions on the legislature's ability to amend budget proposals can make political regimes look more alike in terms of fiscal outcomes.

*Caruso, Germán, Carlos Scartascini, and Mariano Tommasi*

#### **Are We All Playing the Same Game? The Economic Effects of Constitutions Depend on the Degree of Institutionalization (IDB-WP-237)**

The understanding of the economic effect of formal institutional rules has progressed substantially in recent decades. These formal analyses take for granted that institutional arenas such as Congress are where decision-making takes place. That is a good approximation in some cases (such as many developed countries today) but not in others. If countries differ in how institutionalized their policymaking is, the impact of formal political rules on policy outcomes might depend on that. This paper explores that hypothesis and finds that some important claims regarding the impact of constitutions on policy outcomes do not hold for countries in which institutionalization is low. The findings suggest the need to develop a broader class of policymaking models in which the degree to which decision-making follows "the rules" is also endogenized.

*Cavallo, Eduardo, Andrew Powell, Mathieu Pedemonte, and Pilar Tavella*

#### **A New Taxonomy of Sudden Stops: Which Sudden Stops Should Countries Be Most Concerned about? (IDB-WP-430)**

This paper proposes a new taxonomy of Sudden Stops comprised of seven categories with definitions depending on the behavior of gross and net capital flows. The incidence of different types of Sud-

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## New Publications

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den Stops is tracked over time and the type of Sudden Stop is related to economic performance. Sudden Stops in Net Flows associated with reductions in Gross Inflows are more disruptive than those in which surges in (only) Gross Outflows dominate. The paper further discusses the mechanisms that might result in Sudden Stops in Gross Flows that are not Sudden Stops in Net Flows, such that shifts in financial assets or liabilities do not require a sharp current account adjustment. Still, Sudden Stops in Gross Inflows that do not provoke a sharp contraction in Net Flows may also be disruptive, including Sudden Stops that are driven by “other flows”—which include banking flows.

*Foureaux Koppensteiner, Martin, and Marco Manacorda*

### **The Effect of Violence on Birth Outcomes: Evidence from Homicides in Rural Brazil (IDB-WP-416)**

This paper uses microdata from Brazilian vital statistics on natality and mortality between 2000 and 2010 to estimate the impact of in-utero exposure to local violence—measured by homicide rates—on birth outcomes. Focusing on small communities, the analysis shows that exposure to violence during pregnancy leads to deterioration in birth outcomes: one extra homicide during the first trimester of pregnancy increases the probability of low birth weight by around 6%. Results are particularly pronounced among children of poorly educated mothers, implying that violence compounds the disadvantage these children already suffer as a result of their households’ lower socioeconomic status.

*Guarín, Arlen, Carlos Medina, and Jorge Tamayo*

### **The Effects of Punishment of Crime in Colombia on Deterrence, Incapacitation, and Human Capital Formation (IDB-WP-420)**

Using individual data on persons arrested in the Medellín Metropolitan Area, this paper assesses whether the change in punishment at age 18, mandated by law, has a deterrent effect on arrests. No deterrent effect was found on violent or property crimes, but was found on non-index crimes, specifically those related to drug consumption and trafficking. The change in criminal penalties at 18 years of age does not explain future differences in human capital formation among people arrested immediately after versus immediately before reaching 18 years of age. There is no evidence that the longer length of time to recidivate on the part of individuals arrested for the first time immediately after reaching 18 implies future differences in human capital formation. These results suggest a specific deterrence effect resulting from the harsher experience while in prison of those arrested right after reaching 18.

*Ibáñez, Ana María, Catherine Rodríguez, and David Zarruk*

### **Crime, Punishment, and Schooling Decisions: Evidence from Colombian Adolescents (IDB-WP-413)**

This paper uses a natural policy experiment to estimate how changes in the costs of engaging in criminal activity influence adolescents’ decisions on crime participation and school attendance. After an exogenous decrease in the severity of judicial punishment imposed on Colombian adolescents, crime rates in Colombian municipalities increased. This effect appears to be larger in municipalities with a higher proportion of adolescents between 14 and 15 years old. The study suggests that one possible explanation is less effort by police to capture teenage suspects. The probability that boys of this same age group attend school decreased following the change in the juvenile justice system. This effect is stronger for boys from homes where the heads of household are less educated.

*Lora, Eduardo*

### **The Distance between Perception and Reality in the Social Domains of Life (IDB-WP-423)**

The distance between perception and reality in the social domains of life is often striking. Using survey data on Latin American countries, this paper presents the main empirical findings on the gaps between perception and reality in four social domains—health, employment, security, and social ranking. Psychological biases may explain part of the gaps. Biases associated with cultural values are very relevant for health and job satisfaction. Cultural differences across countries are pronounced in perceptions of health, while cultural differences across socioeconomic groups are more apparent in job satisfaction. Affect and availability heuristics are the dominant sources of bias in the case of security. Subjective social rankings are less culturally dependent but more dependent on a country’s socioeconomic development. The gaps between objective and subjective social indicators are a rich source of data to help understand how perceptions are formed, identify important aspects of people’s lives that do not appear in official indicators, inform public debate on social policy, and shed light on public attitudes on key social issues.

*Machado, Fabiana V.P.*

### **Decentralization and Accountability: The Curse of Local Underdevelopment (IDB-WP-397)**

Decentralization of public service provision has been an important item on the agenda of developing countries. While some scholars and practitioners argue that decentralization improves provision due to higher accountability, others note its potential pitfalls. In particular, decentralization to local communities characterized by poverty, low levels of education, and inequality may lead to low account-

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## New Publications

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ability and higher susceptibility to political capture. This paper explores these dynamics empirically in Brazilian municipalities where primary education is provided by schools under municipal as well as state management. The performance of these two types of school in the same municipalities is compared in terms of their inputs and the efficiency of service delivery. The results suggest that there are indeed drawbacks to decentralization in municipalities where inequality is high and education and political participation are low.

*Medina, Carlos, Jairo Núñez, and Jorge Andrés Tamayo*

### **The Unemployment Subsidy Program in Colombia: An Assessment (IDB-WP-369)**

This paper assesses the effects of the Colombian Unemployment Subsidy (US), which includes benefits as well as training for some recipients. The study finds that beneficiary participation in the labor market, earnings, and household income do not increase, and for some populations decrease during the 18 months after leaving the US program. Enrollment in formal health insurance falls. Effects on male heads of household include lower earnings, reduced labor participation, and higher unemployment rates. The study also finds a small though statistically significant positive effect on beneficiaries' school attendance, but none on their children's weight or height at birth. The results are sensitive to the type of training that beneficiaries receive. Overall, the program serves more as a mechanism for smoothing consumption and providing social assistance than for increasing labor market efficiency.

*Stein, Ernesto, and Lorena Caro*  
**Ideology and Taxation in Latin America (IDB-WP-407)**

This paper examines the impact of ideology on tax revenues in Latin America, using a panel of 17 countries from 1990 to 2010. As a first approach, a fixed-effects model is used to identify the impact of ideology on taxation; left-leaning governments are associated with increases in total tax revenues and income tax revenues of 2.1% and 1.3% of GDP, respectively. There is no effect on revenues from VAT or social security taxes. To deal with endogeneity problems, an event study and a difference in difference methodology are used to track the behavior of revenues around the time of the shifts to the left. Tax revenues and income tax revenues increase by 1.5% and 0.8% of GDP when comparing revenues immediately before and after the shift in ideology. The pattern of tax revenues around ideological shifts suggests that the effects are causal.

*Vetter, David M., Kaizô I. Beltrão, and Rosa M. R. Massena*

### **The Impact of the Sense of Security from Crime on Residential Property Values in Brazilian Metropolitan Areas (IDB-WP-415)**

Using a hedonic residential rent model for Brazil's metropolitan areas, this study estimates that increasing the sense of security in the home by one standard deviation would increase average home values by R\$1,513 (US\$757), or about US\$13.6 billion if applied to all 18.0 million households in the study area. The principal components analysis of sense of security and crime victimization variables indicates that higher-income households feel more secure from crime in the home, even though theft and robbery victimization rise with household income and rent level. Higher levels of home protection measures by higher-income households partially explain this result.

## POLICY BRIEFS

*Galiani, Sebastián, Manuel Puente, and Federico Weinschelbaum*

### **How Can Latin America Help the World to Cope with Climate Change? The Issue of Deforestation (IDB-PB-182)**

Latin America has a comparative advantage in deforestation compared to other forms of climate change mitigation. Thus, to the extent that Latin America should engage in mitigation, the optimal climate change policy should manage these advantages by generating incentives in Latin America to deal with forestry. This paper describes the problem of deforestation and studies the market failures that arise in relation to forestry emission problems, analyzing them from a global public good perspective. The paper describes other problems related to forestry emission issues and presents a non-exhaustive review of proposed solutions and policy recommendations.

## TECHNICAL NOTES

*Clerc, Jacques, Manuel Díaz, and Bruno Campos*

### **Development of a Procedure for the Construction of GEI Emission Abatement Curves Incorporating the Uncertainty Associated with the Main Mitigation Variables (Desarrollo de una metodología para la construcción de curvas de abatimiento de emisiones de GEI incorporando la incertidumbre asociada a las principales variables de mitigación) (only available in Spanish) (IDB-TN-541)**

The general objective of the study is to develop a methodology for the preparation of greenhouse-gas abatement curves for the energy demand sector, incorporating the uncertainty associated to the variables involved

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in estimating the marginal abatement costs. This approach will be applied in a case study of the power generation sector as well as to three other demand sectors in six Latin American countries.

### OUTSIDE PUBLICATIONS

*Busso, Matias, Jesse Gregory, and Patrick Kline*

“Results of the Federal Urban Empowerment Zone Program,” *Focus+*, Vol. 30:1, Spring/Summer 2013.

A growing number of “place-based” policies target economic support to specific geographic areas, rather than to individuals. Economists have traditionally expressed skepticism

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## Look Who’s Talking

*This section of the newsletter spotlights presentations or events sponsored by RES in recent months.*

**José Antonio Ocampo presented his latest book, *The Economic History of Latin America since Independence* by Luis Bértola and José Antonio Ocampo May 29, 2013**

Latin America’s economic history is characterized by large inequalities with deep roots in the region’s colonial past. In particular, Latin America’s historical performance has been determined by i) patterns of labor relations largely inherited from the colonial past and ii) forms of integration into the world economy that have been reinforced by the industrial revolution and globalization. In regard to the latter, the region’s largely natural resource-based growth has proven slower than that of the industrial model, and its peripheral position in the world economy has made access to external financing unstable. Latin America’s domestic institutions, however, have proven functional for certain forms of integration into world markets; in particular, those institutions have succeeded in capturing the rents associated with natural resources and benefiting from industrialization. The size of countries and industries, with varying impacts on economies of scale,

became an important development during industrialization.

The economic history of the region can be divided into four phases: i) post-independence; ii) the export age, from circa 1870 to 1929; iii) the era of state-led industrialization; and iv) the period of market reforms. Following independence, a traumatic nation-building process and incomplete state-building resulted in several “lost decades” for much of the region. Some countries fared notably better than others, however, and the region as a whole performed better than other parts of the developing world. During the export era Latin America successfully integrated into the “first globalization,” but with significant differences among and within countries, largely stemming from differences in labor mobility.

The era of state-led industrialization was largely successful and characterized by less statism than commonly believed. Though industrialization benefited from high levels of government protection in its early stages, the shift to industrialization was in part an unwanted effect of global crises that forced the region to become more self-sufficient in manufacturing. Industrialization, moreover, was a gradual process that built on its own successes. Although industrialization was led by the state rather than an “industrialist” class, the process was less interventionist and more reli-

ant on foreign direct investment than is generally acknowledged.

Latin America’s prevailing economic model shifted from industrialization to economic liberalization as a result of the debt crisis (the “lost decade”) of the 1980s. Market reforms have had some success in integrating the region into the second era of globalization, but they have proven a relative failure in terms of GDP growth. In some countries the long-term growth of the industrialization period has been followed by long-term stagnation or slow growth, a possible sign of falling into a middle-income trap. Latin America’s per capita GDP as a percentage of world average GDP has fallen markedly since 1980, and per capita GDP in comparison to that of other developing countries has likewise fallen. Closely related to this disappointing performance is that the region has yet to build strong technological and innovation systems.

These macro trends have been reflected in indices of human development and poverty. The human development index gap between Latin America and industrial countries declined markedly during the industrialization period, and income distribution generally improved. In addition, poverty notably declined between 1950 and 1980. Since 1980 progress in these areas has slowed.





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ticism that these programs actually benefit the residents of communities receiving support. Indeed, standard economic models of spatial equilibrium suggest mobile workers and firms will take advantage of the benefits associated with local policies by relocating across the boundaries of targeted areas. Local land prices should then rise and offset any welfare gains that might otherwise accrue to prior residents. This paper examines these predictions by evaluating the economic effects of Round I of the federal urban empowerment zone program, one of the largest place-based policies in the United States. The findings build on an active literature on smaller, state-level programs.

*Checchi, Daniele and Luca Flabbi*

**“Intergenerational Mobility and Schooling Decisions in Germany and Italy,”** *Rivista di Politica Economica*, July-September, 2013.

Intergenerational mobility in education and income is affected by the influence of parents on children’s school choices. This study focuses on the role played by different school

systems in reducing or magnifying the impact of parents on children’s school choices and more generally on intergenerational mobility. It compares two apparently similar educational systems, Italy and Germany, to show how the common feature of separate tracks at the secondary school level may actually produce different impacts of parents on children’s choices. Using data from a cross-country survey (PISA 2003), the paper shows that the greater flexibility of the Italian system (where parents are free to choose the type of track) translates into greater dependence from parental background. These effects are reinforced when considering expectations, since the aspiration to go to college is affected not only by the school type (as in any tracked system) but also by parental education (at least in the case of Italy). Country-specific data sets are used to study the impact of family background on actual post-secondary school choices: this impact is greatly reduced when secondary school tracks are controlled for. Overall, women’s behavior is more independent from family backgrounds than men’s behavior.

*Scartascini, Carlos, Ernesto Stein, and Mariano Tommasi*

**“Veto Players and Policy Adaptability. An Intertemporal Perspective”.** *Journal of Theoretical Politics*. Published online before print Sept. 12, 2013, doi: 10.1177/0951629813494486.

The capacity to sustain policies over time and to adjust policies in the face of changing circumstances are two desirable properties of policymaking systems. Veto player theory, a very influential approach in comparative politics, suggests that polities with more veto players have the capacity to sustain policies at the expense of the ability to change policy when necessary. This paper argues that once intertemporal considerations are explicitly included, it is not necessarily true that polities with more stable and credible policies have more difficulty adapting their policies, nor that polities with more veto players have more difficulty adjusting policies to new circumstances. More generally, the paper argues that, when studying the effects of political institutions on policy outcomes, an intertemporal perspective might lead to predictions different from those emanating from more a-temporal approaches.

## Network News

### LACEA-LAMES 2013

Oct. 31-Nov. 2, 2013  
Colegio de Mexico, Mexico City, Mexico

The 18th annual meeting of the Latin American and Caribbean Economic Association (LACEA) and the 28th annual meeting of the Econometric Society (LAMES) will be held Oct. 31 in Mexico City, Mexico.

### Ninth Meeting of the Latin American Financial Network (LFN)

Oct. 30, 2013  
Central Bank of Mexico

The Ninth Annual Meeting of the LFN is being co-organized by the IDB, the Central Bank of Mexico and the World Bank’s Office of the Chief Economist for Latin America and the Caribbean. This year’s meeting will focus on the changing face of global and regional finance.

### DC Political Economy Seminar: “Programmatic Targeting”

Oct. 4, 2013  
Allan Drazen,  
University of Maryland

[www.iadb.org/res/researchnetwork](http://www.iadb.org/res/researchnetwork)