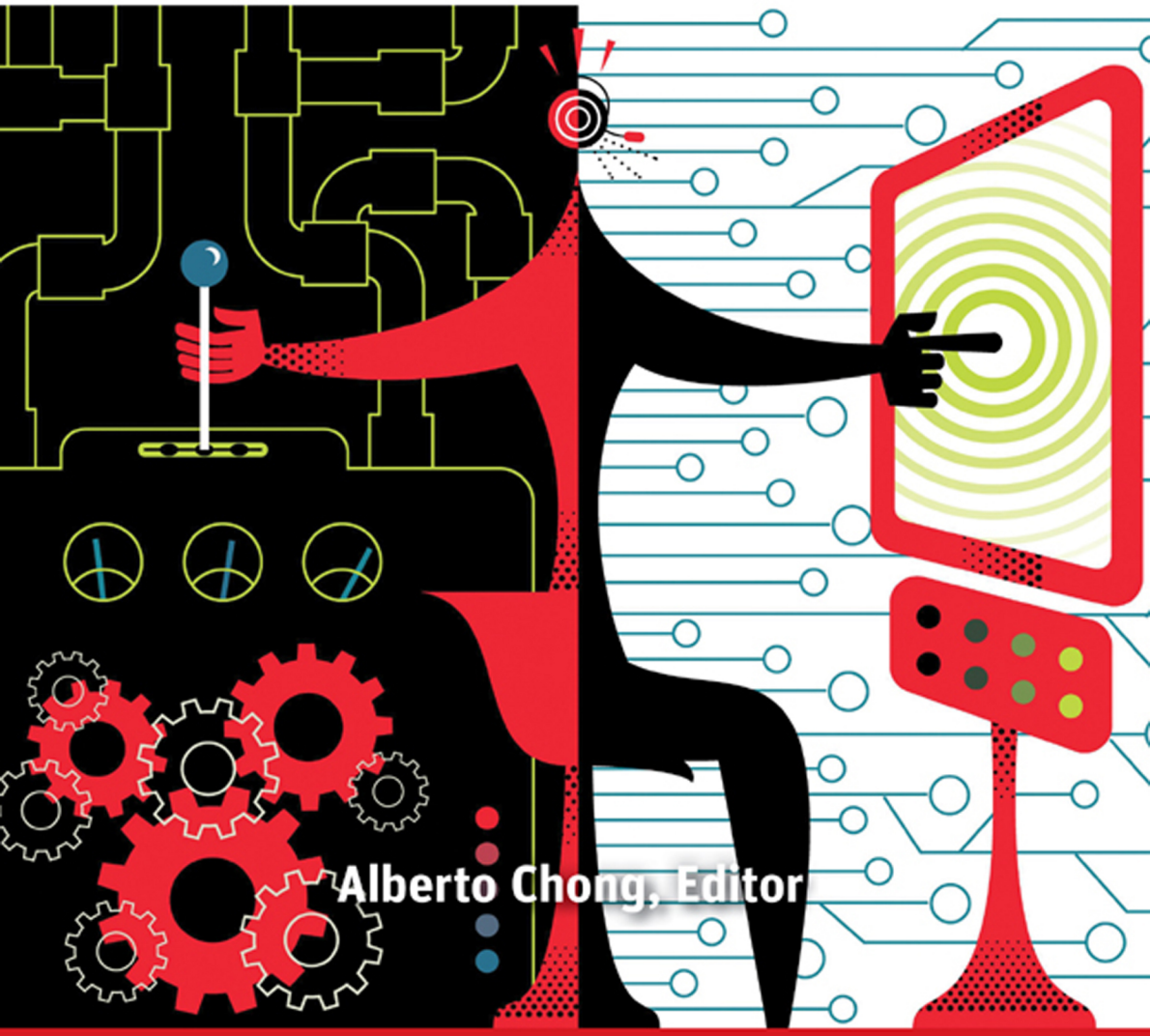
Development Connections

UNVEILING THE IMPACT OF NEW INFORMATION TECHNOLOGIES



Alberto Chong, Editor

DEVELOPMENT IN THE AMERICAS

IDB

Acknowledgments

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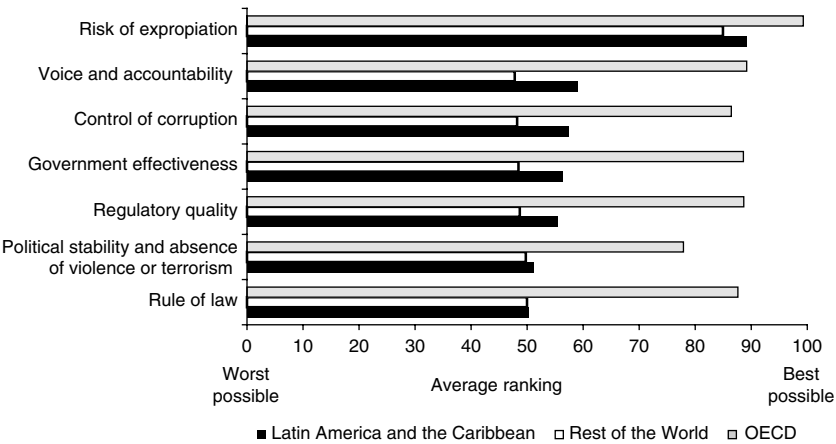
Rewiring Institutions

Institutions shape economic and social behavior. Countries with lower institutional quality are more likely to have slower economic growth, higher economic inequality, more social conflicts, and fewer and lower-quality public services.

While the institutional development of countries in Latin America and the Caribbean is similar to the world average, the region lags far behind developed countries in governance indicators (see figure 4.1). Consider these measures. In an index devised by Acemoglu, Johnson, and Robinson (2001) that looks at differences in institutions resulting from different types of states and policies,[1] Latin America and the Caribbean scores 89 out of 100, close to the world average of 85, but well behind the average of 99 for the countries of the Organization for Economic Co-operation and Development (OECD). In a World Bank measure of democratic accountability, the region scores well compared to the world average (59 versus 48 out of 100), but trails the average of 89 for OECD countries. The pattern is similar for corruption, which many consider to be an important determinant of economic performance. Although the region's average exceeds the world average (57 versus 48 out of 100), it lags well behind the OECD average of 86 (World Bank, 2006).

Institutional development is strongly associated with economic growth. Patterns of colonial settlement around the world affect the quality of current institutions, which in turn affect the rate

Figure 4.1 Governance Indicators

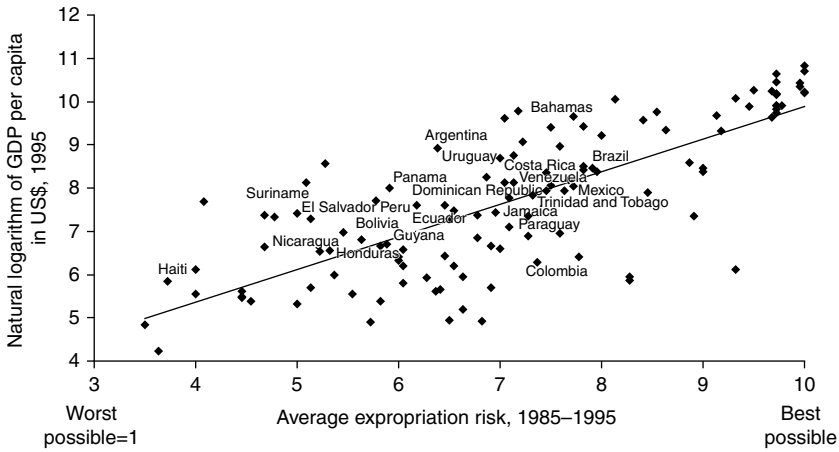


Source: For all variables calculations are based on World Bank (2009), except Risk of expropiation which is based on Acemoglu et al (2001).
Note: Variables correspond to 2009, except Risk of expropiation which is 1995.

of economic growth (Acemoglu, Johnson, and Robinson, 2001). Figure 4.2 shows that variation in income per capita is positively associated with variation in the risk of expropriation as a proxy for institutions. This relationship is particularly important in Latin America and the Caribbean. Enterprises in the region report that the most important constraints to their development are high levels of informal employment and political instability (World Bank, 2010a).

Institutional development also has an effect on economic inequality. Good institutions provide better economic opportunities to the population (Chong and Gradstein, 2007). By contrast, countries with lower institutional development tend to exclude a significant portion of the population from economic development, generating higher economic inequality. Importantly, institutional quality and income inequality not only go hand in hand;

Figure 4.2 Economic Growth and Institutions



Source: Political Risk Service Group (2005) and World Bank (2010b).

they reinforce each other and the double causality holds for a wide variety of institutional indicators.

This evidence highlights the need for policies aimed at improving institutional development. However, overarching macro policies in this area are hard to formulate, demand considerable political will, require a long period of deep reforms, and yield mixed results, at best. An alternative approach is to focus on interventions that seek to change individual behavior and social norms, which are the foundation for institutional development. This chapter presents evidence pointing in this direction, focusing on recent experiences—mostly in Latin America and the Caribbean. The highlighted studies test whether information and communication technologies (ICTs) can be effective tools to improve the efficiency of government, to help the population hold the government accountable, and to change social behavior in a way that it supports better institutional development by increasing voting rates and enhancing other forms of political and social participation.

Government Goes Online

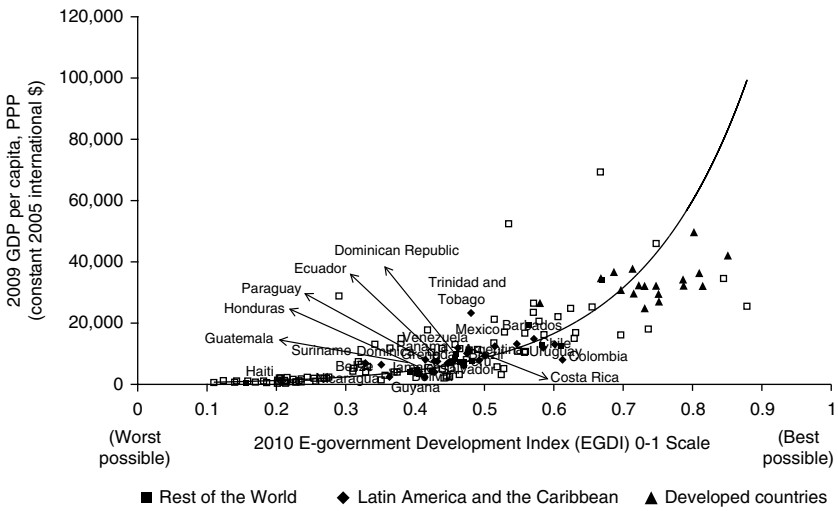
Since the early 1990s, governments around the world have come to realize the potential of ICTs for improving the efficiency of their administrative processes, enhancing the transparency of public office, and providing innovative services to the population. E-government uses Internet-based platforms to organize administrative procedures at the government level. Even though there are no formal studies of the effects of e-government, developed countries tend to use these types of services more, and countries with more widespread use of them tend to be less corrupt, as shown in figures 4.3 and 4.4.

The ICT revolution has allowed information to travel faster and in a more transparent way. The public sector has recognized these advantages and is increasingly using ICTs to improve administrative procedures and provide services more efficiently to citizens.

The region hosts several remarkable examples of online government purchasing systems. In Chile, the government is using an e-procurement system to purchase goods from the private business sector (http://www.chilecompra.cl/). Ministries, municipal governments, hospitals, and the armed forces can use ChileCompra's platform for tenders for both domestic and foreign companies. In Trinidad and Tobago, the Ministry of Finance has put in place a web-based procurement tool (http://www.Finance.gov.tt) that allows suppliers to bid online for contracts to supply goods or services.

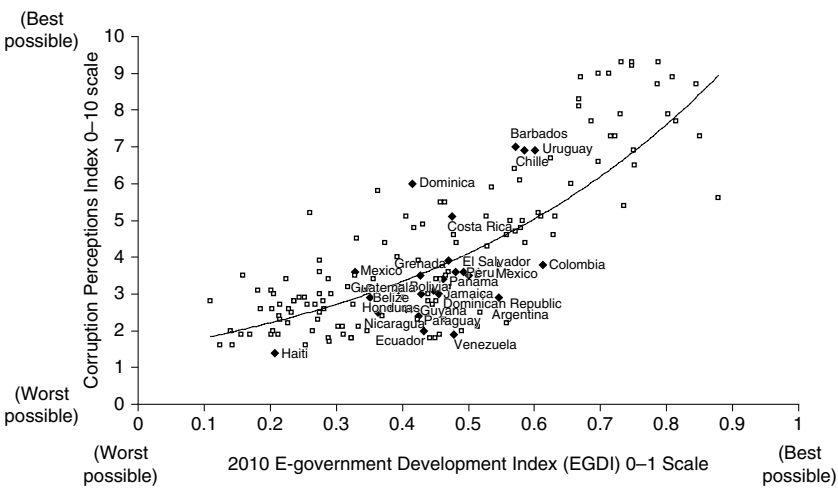
Local governments and small communities are also exploiting the potential of ICTs to improve the efficiency of government services. In Peru, the Institute for Peruvian Studies (IEP) designed and manages the *Municipio al Día* website (http://www.municipioaldia.com), which provides management and investment support to municipalities through virtual services, with a focus on

Figure 4.3 E-government Development Index and Income



Source: United Nations (2010) and the World Bank (2010).

Figure 4.4 E-government Development Index and Corruption Perceptions Index



Source: United Nations (2010) and Transparency International (2009).

poor municipalities in rural areas. In Brazil, the provincial government implemented a program called *Acessa São Paulo* (http://www.acessasaopaulo.sp.gov.br) to address digital exclusion. The program provides Internet access to low-income citizens through community access points called *Infocentros*, and transfers management procedures to the beneficiary communities. By doing so, communities can define their own priorities, including how to use the equipment donated by the provincial government.

In Mexico, the e-government strategy has greatly extended the number of online services available to citizens. One of its greatest successes has been the creation of a single government portal, which earned itself the 2003/2004 Stockholm Challenge Award for e-government, an international award given to recognize innovative ways to use ICT for the benefit of users and society. Overall, however, the effectiveness of these innovations remains limited by the low level of citizen access to Internet services in Mexico (OECD, 2005). This remains a problem throughout the region.

The expansion of e-government services to rural and traditionally excluded populations is helping to break down traditional patterns of exclusion and neglect in citizens' interactions with government officials (Bhatnagar, 2002). The E-Government Development Index, or EGDI, is derived from a survey developed by the United Nations that can track the relative performance of the national governments in the region in their use of ICT (United Nations, 2010).[2] As shown in figure 4.5, the three top-ranked countries in Latin America are Colombia, Chile, and Uruguay, followed closely by Argentina and Mexico. Barbados leads the ranking among the Caribbean region, thanks to its better telecommunication infrastructure and higher adult literacy and gross enrollment, followed by Trinided and Tobago and fambica. Overall, the Caribbean region's index stands below the world

average. Costa Rica and El Salvador lead the Central American nations.

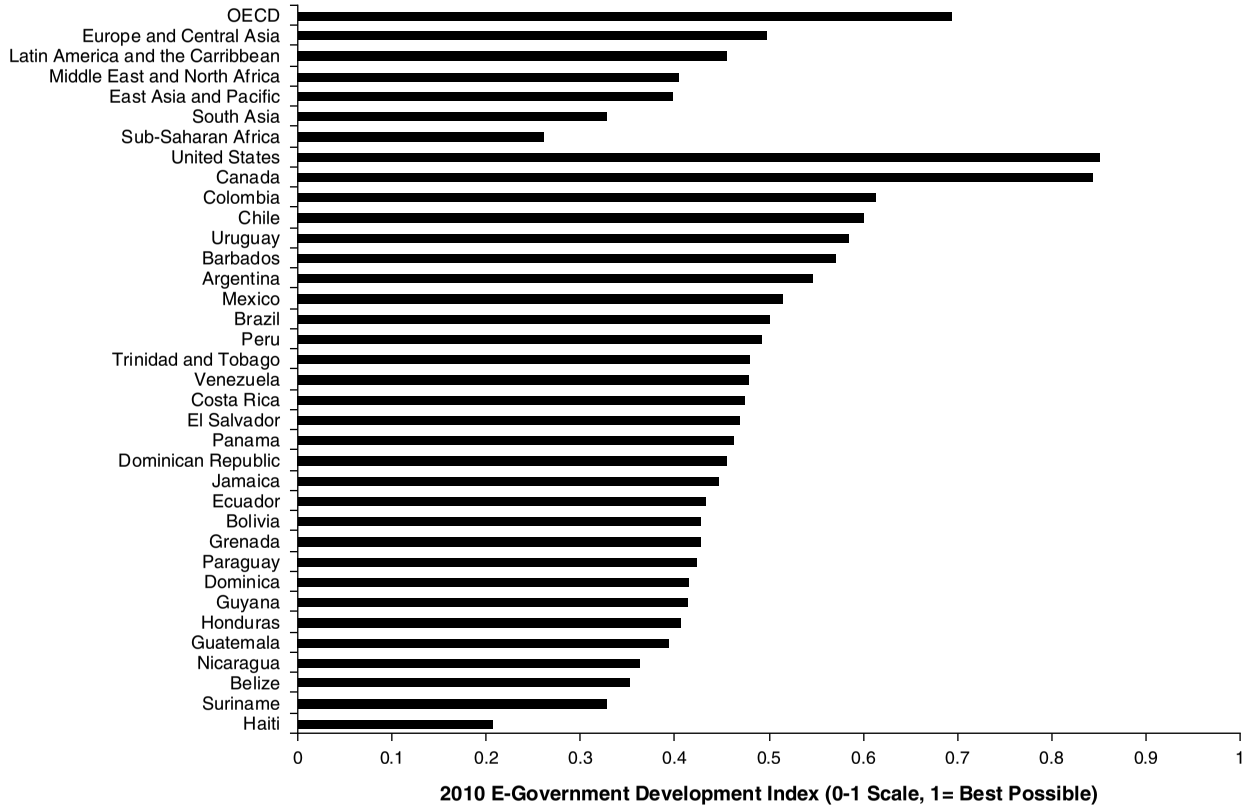
Overall in the region, the use of ICTs is helping to improve many aspects of public administration. However, as yet, no formal evaluations of these types of programs yield strong conclusions about what works and what does not in the applications of these technologies to public office.

Innovation in E-government

Although the incidence of e-government in Latin America and the Caribbean is higher than in most countries around the world, the region still has a huge margin to extend the reach of public services in sectors like education, employment, and poverty relief. To cite two examples from other parts of the world, in India, an innovative e-government response to rural poverty and unemployment is an e-payment system for the National Rural Employment Guarantee Scheme, which makes use of biometric smart cards. The card uniquely identifies every citizen, with a fingerprint scanner to benefit illiterate citizens, bringing more transparency and accountability to the system. In the United States, in New York State, an e-government tool called SMART 2010 (short for Skills Matching and Referral Technology) connects unemployed New Yorkers with available jobs. A completed résumé in electronic format is fed into the New York Department of Labor's SMART 2010 system at a career center. The computer program analyzes résumés for skills and work experience and then electronically contacts unemployed New Yorkers via e-mail, recommending job openings based on their experience and skills.

Recent examples of creative uses of ICTs to improve the provision of public services have also arisen in Latin America and the Caribbean, thanks to the financial support of the Inter-American

Figure 4.5 E-government Development Index



Source: United Nations (2010).

Development Bank (IDB). These cases have been rigorously evaluated, allowing conclusions to be drawn about what works and what does not in the application of ICTs to the delivery of public services.

In La Paz, Bolivia, a program was aimed at improving the renewal of the national identity card by the Identification Unit of the Bolivian Police. Chong, Machicado, and Yáñez (2010) ran a randomized control trial of the program by comparing applicants randomly assigned to a digital renewal process to those randomly assigned to a manual renewal process (see box 4.1 for another application by the police, this time in Colombia).

Adopting relatively simple information technology led to significant improvements in the quality of public service delivery. Specifically, applicants assigned a digital renewal process take 35 percent less time to complete their renewal processes and have a 12 percent higher probability of completing the renewal process, on average, as compared to those randomly assigned to a manual process. These results are encouraging, given the low-quality delivery of public service in developing countries and the challenges faced by these countries in reforming public service delivery.

In Colombia, an innovative program focuses on one of the country's most vulnerable populations, internally displaced people (IDP). Colombia has suffered from one of the longest conflicts in the world. Many IDPs have lost their assets and social networks in the conflict; 98 percent live below the poverty line, and IDPs face unemployment rates much higher than the rest of the population. Even though this group is entitled to benefit from many social programs, about 70 percent of those in the Unique Registry of Displaced People (RUPD) do not claim benefits. Blanco and Vargas (2010) carried out a randomized controlled trial in Bogotá to assess the use of short message services (SMS) to inform

Box 4.1 Going High-Tech: Improving Police Work and Saving Money in Colombia

The Colombian National Police, headquartered in Bogotá, is the national police force of the Republic of Colombia. It employs 150,000 officers, who work in 2,500 permanent sites across the country, from busy urban streets to isolated jungle villages. Until not long ago, the organization used an Internet Protocol (IP) telephony system for voice communications. Many police officers also relied on their personal mobile phones to keep in touch with one another, or used push-to-talk radios in their cars.

The audio quality of the IP telephony system was poor in spots that have lower bandwidth connectivity, such as rural offices and police cars. These technical limitations prevented the police from providing training to officers in remote areas through online audio or video presentations. Moreover, the telephony system was expensive to maintain.

The National Police needed to improve communications across all areas of the force and across a range of functions, including administration, operations, and training/education. They adopted a system that combines instant messaging, face-to-face communication, and Voice over Internet Protocol (VOIP) capabilities with integrated audio and video conferencing into one unified solution. All users of the new system can now determine the status and availability of a colleague, whether that person is in a remote jungle location or in the same office. It is now simple for police officers to place a voice call or send an e-mail message or instant message from their computers. In addition, police officers can easily schedule and conduct audio and video conferences online. "Previously, we had to send a message from headquarters to a regional capital, and then that message would be sent by boat up a river, through a forest, and finally to the officer. That process took an entire day. Now, with the new Communications Server we can communicate with remote officers instantly," says Jairo Gordillo, Colonel, Colombian National Police.

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Lower costs are a major attraction of this innovative solution. Previously, officers in remote areas had to pay out of pocket for long-distance calls to colleagues and family. The Colombian Police also drastically cut back on travel between different regions of the country. Under the new system, "a superior officer no longer has to travel to a remote site to meet with that region's officers to give orders," Gordillo says. "That means no transportation and lodging costs. With the implementation of this new solution, we can now communicate with sites that are a 36-hour drive away—with just a click and an instant message."

Police officers and other users of the new system are more efficient and productive now that they have streamlined communication tools at their fingertips. With the ability to reach people faster, police officers are able to fight crime more effectively. Some officers are equipped with smart phones that have the new communications server so they can locate criminals on the move in real time and apprehend them more effectively as well.

Source: Microsoft (2009).

internal refugees about their eligibility to receive social benefits. SMS have proven to be a powerful tool to empower IDPs in their relation with the government. On average, households receiving SMS know their rights better than households that served as controls; however, apparently awareness varies depending on which benefits they are to receive.

Even though the findings of this study are specific to Colombia, the broader lesson from this intervention is that sending an informative SMS is an inexpensive policy intervention that can broaden the reach of social programs and greatly benefit recipients, provided that almost all of the potential beneficiaries have the means to receive it. Furthermore, this technology can complement other communication strategies quite successfully.

In Argentina, the prison system is monitoring convicts electronically. Prisoners are another vulnerable population, subject to slow judiciary procedures and even claims of human rights abuses. Society pays a high price for incarcerating a large number of people; not only is it expensive, but there is evidence that instead of rehabilitating people, prison only produces tougher criminals. These factors add up to a strong case for considering the use of electronic monitoring of some criminals. In a creative study, Di Tella and Schargrodsky (2009) provided the first causal estimates of the effects of electronic monitoring of convicts on their rates of relapsing into crime (recidivism).

Di Tella and Schargrodsky exploited the fact that the electronic bracelets used for monitoring are in short supply and that prisoners are randomly assigned to judges with different ideologies (priors) to argue that the bracelets are effectively randomly assigned. A sample of former convicts with similar characteristics were either sentenced to serve their time in prison or remained outside but were electronically monitored. Interestingly, the recidivism rate of former prisoners is considerable (22 percent), while that for those "treated" with electronic monitoring is much lower (13 percent). As promising as these low-cost technologies may seem, they are not the silver bullet of government service provision. They can and must be complemented by regular procedures and communications systems and, more importantly, they and other innovations must be continually evaluated.

Calling All Voters

People obtain much of their everyday information from the media. The amount and quality of information disseminated through the media affects the way people perceive reality and how they behave. In the literature, special attention has been paid to the

effects of media exposure on public opinion, social and political participation, government behavior and accountability, and political outcomes.

The impact of the media on electoral processes is of special interest. The media provides the bulk of the information people use in elections, and the informational content of the media affects political behavior. For example, Gentzkow (2006) exploited the fact that television penetration in the United States was gradual to analyze the effects of TV exposure on voter turnout. The findings of this study are surprising: the introduction of television lowered voter turnout. Apparently, television acted as a substitute for the consumption of media with a higher content of political information, such as newspapers and radio, which inspired greater voter turnout by better-informed citizens. Both the information and turnout effects were largest in off-year congressional elections, which receive little or no coverage on television but extensive coverage in newspapers.

The concern about low turnout rates has sparked massive campaigns to encourage people to vote. Nonpartisan organizations in the United States have conducted extensive campaigns to get people to the polls on Election Day. Ha and Karlan (2009) evaluated a variety of telephone communications. They randomly assigned registered voters in North Carolina and Missouri to receive one of three types of live phone calls of varying length and content. Voters received "standard" get-out-the-vote (GOTV) calls, "interactive" calls, or "interactive calls with a request to mobilize neighbors." Which one won? People assigned to the interactive GOTV treatment were more likely to vote, while the effects of both the "get your neighbors to vote" script and the standard script were relatively weak. Along the same lines, Nickerson (2007) evaluated the effectiveness of e-mail as a voter mobilization tool. Curiously, e-mail neither increases registration rates nor boosts voter

turnout; while e-mail is a low-cost form of campaign communication, it does little to boost registration and turnout. However, Dale and Strauss (2009) showed that impersonal, noticeable messages, such as text messages, can increase the likelihood that a registered voter will turn out by reminding the recipient that Election Day is approaching.

In an attempt to compare different types of GOTV interventions, Green and Gerber (2000) reported the results of a randomized field experiment in New Haven, Connecticut. Nonpartisan GOTV messages were conveyed through personal canvassing, direct mail, and telephone calls shortly before the November 1998 election. Voter turnout was increased substantially by personal canvassing, slightly by direct mail, and not at all by telephone calls.

Not only does the effectiveness of the campaigns matter, but so does their cost. Green and Gerber (2008) compared the cost-effectiveness of various GOTV techniques in the United States. They looked at some high-tech campaign tactics, such as voter mobilization through e-mail; some low-tech tactics, such as old-fashioned Election Day festivals; and some high-priced tactics, such as television, radio, and newspaper advertising. Although these strategies are quite different in terms of implementation, they all have an experimental design structure in common. The study found that although e-mail communication can reach a large number of people instantly at a low unit cost, it appears to have negligible effects on voter turnout. Personal canvassing, on the other hand, can increase voter turnout substantially. Results of the randomized field experiment involving registered voters in New Haven revealed that organizing and supervising a canvassing campaign involves significant fixed costs, but even if the effective marginal costs of canvassing were doubled, face-to-face mobilization would

still be cost-effective, proving direct mail and phone calls to be less effective strategies.

In Latin America and the Caribbean, turnout is generally high compared to the United States: around 75 percent, on average. This is mainly because voting is mandatory in many countries in the region, including Argentina, Peru, and Uruguay. The fact that voting is mandatory in the region raises a whole set of new issues. In this case, the concern is not turnout, but the quality of voting and the extent to which votes represent the actual policy preferences of the population. The evidence in the United States related to GOTV campaigns indicates that information dissemination and social pressure have the potential to influence voter behavior. An interesting line of future research would be to see whether these types of campaigns are effective tools in providing voters with useful information and if more informed voters are able to elect representatives who better represent their preferences, thereby increasing the legitimacy of elected officials.

Ultimately, media content and information dissemination do affect political behavior and voting decisions. But do political biases in the news generate biases in the electoral decisions of citizens? To answer this question, DellaVigna and Kaplan (2007) exploited the natural experiment induced by the timing of the entry of a conservative television network in the United States, the Fox News Channel, in local cable markets. Cable companies in neighboring towns adopted Fox News in different years, creating idiosyncratic differences in access. The study compared the change in the Republican vote share between 1996 and 2000 for the counties that adopted Fox News by 2000 with those that did not, and found that a greater amount of news content with a conservative bias had a significant impact on the 2000 elections—an impact that was likely to have been decisive in the close presidential election.

Along the same lines, Gerber, Karlan, and Bergan (2009) focused on the written press and investigated how voter behavior and political opinion are affected by different news content. The authors randomly assigned individuals to receive a free subscription to either the *Washington Post* or the *Washington Times*, or to a control group. The *Washington Post* endorsed the Democratic candidate for governor in Maryland, while the *Washington Times* endorsed the Republican candidate. The study found that those individuals assigned to the *Washington Post* treatment group were 8 percentage points more likely to vote for the Democratic candidate for governor than those assigned to the control group.

Information influences voters; thus, it is important to be aware of how and what information is disseminated, as well as the incentives to influence information dissemination. For example, politicians can satisfy their electoral and policy objectives directly and indirectly by using public opinion to pressure other public officials. Likewise, special interest groups can finance or pressure the media to give more coverage to issues favorable to their cause (Scartascini, 2008).

For the Record

The amount of information that citizens have on hand can positively impact each of the different stages of the policymaking process by providing information to policymakers and voters alike.[3] The media can also act as a watchdog and provide additional tools for enforcing policymakers' promises. In addition, people may be able to put their own situation into perspective by comparing it to the one reported by the media.

Mass media can lead to more accountability by the government, as it helps to inform populations and better monitor the actions

of incumbents (Besley, Burgess, and Prat, 2002). For example, Strömberg (2001) found that the lower the share of informed voters, the greater the share of policies associated with higher rents and corruption. Chong and Yáñez-Pagans (2010) argue that public broadcasting is associated with better institutions because it disseminates information that is not restricted by the commercial interests of advertisers.

ICTs have become powerful tools to disseminate information and knowledge to the public, transforming the way governments interact with citizens, and eventually leading to improvements in transparency and good governance. In this way, ICTs play a crucial role in the organization and coordination of political action, which enables citizens to monitor the actions of incumbents and to use this information in their voting decisions to punish or reward them.

One of the first examples of how information can provide a powerful tool to discipline the government is documented in Sen (1981, 1984). In these classic works, Sen argues that around the globe, there has never been a famine during periods of democracy. The theory is that governments respond to the needs of the citizenry when people are able to punish or reward the behavior of their elected officials with their votes. More importantly, news coverage of famines makes the government respond more quickly and efficiently.

Besley and Burgess (2002) formalize these points, arguing that citizens have imperfect information about government actions. A more informed and politically active electorate increases the incentives of the government to be responsive. Hence, democratic institutions and mass media have an important role in ensuring that voters' preferences are represented in policymaking: it is more likely that citizens will detect government inefficiencies as more and better information is available to the public. Making

information transparent and accessible can therefore enhance the ability of citizens to scrutinize government actions, and lead to government that is more accountable and responsive to the needs of its citizens.

Using the New Deal expenditures of the 1940s in the United States as an example, Strömberg (2004) explored the impact of radio on public spending. The emphasis of the study was on how the introduction of new mass information technology can affect government policies by changing the number of people who are or are not informed. By comparing U.S. counties with more radio listeners to those where radio had not yet arrived or where there were very few listeners, Strömberg found that places where people are more informed received more relief funds during the New Deal.

An interesting question is whether information on a local government's performance impacts voter participation in local election processes and/or a candidate's electoral success. The identification of causal effects is generally a challenge, since information about politicians' performance is seldom provided to voters. Moreover, because information can often be politically manipulated when it is not based on independent and reliable sources, it may be potentially discounted or even ignored by citizens when casting their ballots (Ferraz and Finan, 2008).

Brazil implemented a program to audit local governments and provide voters with information about the corrupt acts of incumbents. Ferraz and Finan (2008) used this natural experiment to study the effects of disclosing information about corruption on electoral accountability and how this information shapes voters' behavior in the presence or absence of media that makes this information available to the public. The main advantage of the Brazilian program is that the federal government selected municipalities to audit at random. The fact that some municipalities

were audited before or after the election allows a clear comparison between two municipalities that have similar levels of corruption—but for one, the audit reports were available before the local elections, while for the other, they were available later in the year. The release of the audit outcomes had a significant impact on the probability of an incumbent's reelection, and these effects were more pronounced in municipalities with local radio stations. Clearly, a more informed electorate makes more informed voting decisions, and the local media plays a major role in enhancing political accountability.

Sometimes, information is so scarce that even the release of information about candidates can have an effect on voters' decisions. In Brazil in 2006, three months before the election, the NGO *Transparência Brasil* released the criminal records of all incumbent federal deputies on their website. Gonçalves (2009) studied the effect of this Internet release on the reelection probabilities and overall electoral performance of incumbents. The econometric analysis suggests that Brazilian voters made use of the information compiled and published by *Transparência Brasil* to significantly punish the incumbent candidates listed with criminal charges.

Going one step further, Chong et al (2010) examined the effects of different types of negative and positive information about incumbents on voter behavior in the 2009 municipal elections in Mexico. The authors randomly assigned electoral precincts in twelve municipalities in the states of Jalisco, Morelos, and Tabasco to one of four groups: the first received information about municipalities' overall spending; the second received information about the distribution of resources to the poor; the third received information about corruption; and the fourth group served as a control group. The distributed information was taken from reports produced by the Mexican Federal Auditor's Office.

Interestingly, information about extensive corruption led to an 11 percent decrease in turnout. This drop was mainly among supporters of the incumbent's party, and their tepid participation translated into a smaller vote share. Conversely, information about overall expenditures rallied voters to the polls and boosted incumbent parties' vote share.

Most of the research relating information and participation in politics assumes that a more informed electorate is more likely to be politically active. Contrary to this assumption, the evidence from the Mexican case shows that in countries where term limits and corruption abound, information and participation do not always move in the same direction. The electoral punishment to corrupt politicians in this case was not the result of voters actively participating in the election. Rather, incumbents lost support because voters manifested their discontent by staying away from the voting booths. On the other hand, the incumbents who performed well in office were rewarded with increased voter participation. These findings suggest that information is an important aspect of good governance.

Another interesting example of how information technologies can improve the transparency of governance was the case of the electronic monitoring of the 2008 presidential elections in Paraguay. For this electoral process, the NGO Saka (which means transparency in Guaraní) trained 4,450 volunteers to report the results from about 70 percent of all the electoral booths in the country in real time. Volunteers who were present at the moment of the vote count reported the results to a central office using SMS. Overall, the system received 22,984 SMS from 9,984 electoral booths that day. These results were immediately entered into the system and published on Saka's website. As a result, the major radio and TV channels were able to report the results of the elections and irregularities as soon as they happened. SMS have also

been used to report electoral irregularities to public media in other countries, such as Burkina Faso, Ghana, and Kenya (see box 4.2). Civil society's oversight of electoral processes can be fostered with these simple and cheap technologies, increasing the transparency and legitimacy of the overall process.

Enhanced civil society involvement in political processes through technologies has also occurred in extremely repressive political environments. For example, in Cuba, blogger Yoani Sanchez has demonstrated the power of the island's emerging blogging community and its use of social media applications. Sanchez's blog, *Generación Y*, has been awarded numerous international writing and journalism honors, including *TIME Magazine's* 25 Best Blogs, the Premio Ortega y Gasset, and Columbia University's Maria Moors Cabot Award. The blogger followers can bring themselves up to date on current political happenings from an independent source, thanks to the anonymity provided by the Internet. Likewise, in Iran in 2009, Twitter networks allowed people to organize to take to the streets and protest against censorship of the media.[4]

ICTs can also provide the population with tools to monitor government actions effectively. Yáñez-Pagans and Machicado Salas (2010) examined inefficiency and bureaucratic delay in the allocation of public works. A field experiment randomly equips municipal governments with a public works tracking system that provides grassroots organizations real-time information on allocations of public works. The objective of the intervention is twofold. The first goal is to involve grassroots organizations in the process of reviewing, tracking, and monitoring public works allocations. The second goal is to explicitly enhance the probability of detecting inefficiencies and bureaucratic delays within municipal governments, and therefore increase the expected cost of engaging in such practices among

Box 4.2 Technology as a Social Mobilization Tool

The rapid adoption of sophisticated communication multimedia by a significant portion of the world's population is giving rise to spontaneous social experiments of varied forms. In the political sphere, the power of persuasion, organization, and coordination have been democratized worldwide by the availability of mobile telephones and text messaging.

Critic and writer Howard Rheingold (2008) has compiled an inventory of events in which mobile communication devices led to some kind of social mobilization. Rheingold stresses that "Smart Mobs"—or groups of people equipped with high-tech communications devices that allow them to act in concert—can lead to stronger democracies, including the empowerment of citizens to demonstrate in protest of events, the capability to inexpensively and publicly monitor elections for fraud, the increased ability for volunteers to coordinate get-out-the-vote activities, and the power to disseminate information that is suppressed by authoritarian regimes and controlled mass media.

In Africa, cell phones have been used in two notable instances to combat election fraud and as political organizing tools. In Ghana, the 2004 elections went considerably more smoothly because cell phones and radio were used to report voting fraud. People at polling places used their mobiles to report fraud accusations to local radio stations, which would then air the accusation. In the 2002 elections in Kenya, mobile phones contributed not only to high voter turnout but also to the legitimacy of the results.

Mobile phones enhanced the transparency of the electoral process, improved the effectiveness of campaigns, and reduced fraud. Kenya's electoral commission and local media used SMS to distribute news about polling, and voters used mobile phones to monitor the voting in more remote areas. Local radio stations even fielded callers who alerted the listening audience to "the level of traffic at polling stations." Reports concerning Sierra Leone elections mimic reports

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from Ghana and Kenya regarding the use of phones as a powerful tool against electoral corruption. During the election that was held in 2002, a U.S.-based organization called Search for Common Ground distributed messages to journalists' cell phones. This allowed the journalists to report hourly the results of local polls. These were then announced publicly on radio stations.

Source: Rheingold (2008).

public officials. The experiment is ongoing, but the results are likely to be informative.

Change: One Person at a Time

Information technologies promote political participation and accountability. However, political involvement is not the only way in which institutions can be changed. As mentioned, social norms are a key component of any institutional system. Information technologies have shown to be an effective way to change social behavior in many aspects.

Consider TV shows, which often reinforce role models and stereotypes. Characters are usually based on urban and modern lifestyles, which TV then transmits to rural areas. Jensen and Oster (2009) documented how gender models can generate changes in gender behavior when they are diffused by the media in India. They estimated the impact of the entry of cable television on subjective measures of female autonomy, school enrollment, and fertility, and found that the entrance of cable TV generated a change in gender attitudes in the Indian population.

In Brazil, La Ferrara, Chong, and Duryea (2008) showed how the rural population mimicked the urban family models portrayed

on soap operas. In the 1970s, a single television channel, *Rede Globo*, had a virtual monopoly in the country, and launched an aggressive expansion of its signal to rural areas. The most popular shows on Brazilian TV were soap operas, or *novelas*, which portrayed small, modern, urban families. The time difference in the entrance of TV signals in the country provided the opportunity to estimate the effect of *novelas* on fertility in Brazil. The finding was that the presence of the *Globo* signal led to significantly lower fertility rates. This effect was stronger for women of low socioeconomic status, and also for women who were in the middle and late phases of their child-bearing life, suggesting that television contributed more to stopping behavior than to delaying first births, consistent with demographic patterns documented for Brazil. These results may be interpreted not only in terms of exposure to television**,** but also of exposure to the particular reality portrayed by Brazilian *novelas*.

Exploiting this same variation in the timing of the availability of the *Rede Globo* signal, Chong and La Ferrara (2009) studied the link between television and divorce in Brazil, finding that the share of women who are separated or divorced has increased significantly since the *Globo* signal became available.

The violent content of modern TV, movies, and other media is a controversial issue. Dahl and DellaVigna (2009) analyzed the effects of violent movies on the incidence of violent crime in the United States. Surprisingly, they found that violent movies significantly decrease the incidence of violent crimes. The authors argue that crime declines because potential criminals are more attracted to these types of movies, and thus are watching them in theaters, rather than committing crimes. To support this argument, they showed that the effects are much larger for the day that movies are released, and even more so during the night hours, but crime picks up the week following the release.

Chong and Vargas (2010) built a similar argument, but put more emphasis on the content of media programs, exploring the relationship between television exposure and violent crime. The authors exploited variation in the time of entry of the three most important broadcasting networks across municipal regions over a twenty-year period in Brazil. They concluded that people living in areas covered by the television signal have significantly lower rates of homicides. The effect was strongest for lower-income men. What accounts for this benefit? One explanation is that viewers remain indoors watching TV, thus reducing the opportunity to commit violent acts. Also, considering the particular content of the commercial *novelas* in Brazil, this relationship may somehow reveal a positive connection between the progressive values and empowerment that are projected in these types of Brazilian *novelas* and the incidence of violent crimes. Finally, the paper provides evidence that the content, rather than the act of watching television in general, may be linked with the observed reduction in violent crime.

The increased information flow resulting from the widespread availability of communication technologies can also deter criminals by making it harder to commit crimes undetected (that is, by reducing the information asymmetries between criminals and potential victims), and by increasing the costs of committing a crime (that is, by increasing the likelihood of being witnessed, caught, or convicted). For example, kidnappings in Colombia were extremely common in the late 1990s. After President Uribe took power, kidnapping (along with other types of violence) began to decline significantly. Pedraza and Montenegro (2010) argued that the security policies of President Uribe were not the only reason for the significant decrease in kidnappings; the expansion of mobile phone coverage played an important role as well. The heightened level of deterrence and higher costs for perpetrating crime have resulted in a virtuous circle: improved security leads

to greater investment in telecommunications around the country, which leads to faster communications between citizens and security forces, which leads to greater security. The magnitude of the effects is sizeable: mobile phones are responsible for a reduction of about 3.6 kidnappings per 100,000 people.

A related deterrent is at work in the United States. Ayres and Levitt (1998) found that the adoption of satellite detection technologies to avoid vehicle theft, known as Lojack, had a positive spillover effect on cars that were not equipped with this technology because thieves were uncertain about which cars had the device. González-Navarro (2007) ran a similar analysis in Mexico, finding that the way in which Lojack was marketed in Mexico completely eliminated the positive spillover effect on cars not equipped with the technology. For cars equipped with Lojack, theft rates fell by over 50 percent. However, the data also suggest that this deterrent effect could have been obtained by installing Lojack in 40 percent or less of the vehicles in which it was installed. Also, theft rates jumped in states where Lojack was not in use but that were close to states where Lojack was being used, at just the time when Lojack went into operation in those neighboring states.

Another way that ICTs can alter social behavior is in fund-raising. Using the Internet to raise funds has had an important impact on the way international aid is delivered. Some organizations now raise money online from private donors; the funds are generally targeted toward frontline projects and individuals in developing nations. The motivations of private donors tend to be primarily humanitarian; unlike official donors, they are less interested in foreign policy and political economy considerations (Desai and Kharas, 2009). In this sense, Internet-based private aid has come to complement, rather than substitute, official development aid.

Economic forecasting is another area in which ICTs have facilitated information sharing and altered social behavior.

Information provided by the government can be used not only to produce aggregate statistics that are helpful to businesses, but also to shape individuals' expectations about economic growth and prices, which in turn can affect their consumption patterns. Carrillo and Emram (2009) exploited a natural experiment provided by a mistake in the software that published the wrong inflation numbers for 14 months in Ecuador to show that households in developing countries rely on public signals to inform themselves about market conditions. The study showed that public signals about prices play an important role in shaping households' price expectations; the effect is stronger for older men and better educated families.

These studies have important policy implications, especially for developing countries. In societies where literacy is relatively low and newspaper circulation limited, television plays a crucial role in circulating ideas. Policymakers can use this channel to transmit important social and economic messages and thus may employ television and radio as a public policy tool.

Only the Beginning

Institutional development is an area in which significant progress is needed in Latin America and the Caribbean. Building proper democratic institutions will allow the countries of the region to grow faster, reduce poverty, and overcome social inequalities. However, traditional policies to tackle institutional failures have not delivered the expected results in the short term.

ICTs can be a useful tool to improve the efficiency of the government; e-government and digital procedures can deliver public services more successfully. These advances can help government reach the targeted population more quickly and effectively, and enhance the power of citizens to monitor government actions.

ICTs complement, rather than substitute for, macro efforts to improve institutional quality. Information diffusion has the power to influence social and political participation, fostering accountability and allowing voters to discipline elected officials. Social preferences are also influenced by the media and the speedier, more widespread dissemination of information facilitated by the ICT revolution: effects have been observed in areas ranging from reproductive practices to violent and criminal behavior.

The experiences documented in this chapter illustrate some examples of the potential of ICTs to promote institutional development. However, the use of these technologies for development is a slow process of trial and error, which can yield lessons about what works and what does not. This learning process can be enhanced only though the rigorous testing of new and creative policies.

For all their advantages, ICTs cannot be considered the silver bullet to solve social and institutional problems in the region. They can be considered an important, sometimes cost-effective, tool to communicate and better integrate the government with their constituencies. However, these tools must be backed up by strong country-level institutional reform.