

Issues and Strategies in Latin American Telecommunications: The Global E-economy

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Although Latin America lags behind the developed world in telecommunications, forecasts for the region are rosy. Its teledensity averages only 10 percent, far below that of the United States' 70 percent, but it is growing.¹ Similarly, cellular telephony is booming in the region. According to IDC (International Data Corp.), Internet penetration in Latin America is about half the worldwide average, but the number of Internet users in Latin America should grow at a compound annual rate of 32 percent through 2003, a rate unmatched anywhere else in the world.² Brazil is projected to consistently make up about a third of Latin American Internet users. IDC also forecasts that Latin American e-business will grow by 117 percent annually over the next three years. Three-fourths of Latin American e-business will be business-to-business commerce.

If realized, this projected growth in telecommunications and e-business will benefit Latin American countries, erasing the accidents of geography that have separated Latin America from the developed world. Participation in the global e-economy creates opportunities for economic growth, improved educational and health services for citizens, and expanded access to social and cultural experiences. Businesses worldwide can also benefit by providing the hardware, software, education, and trade that are essential for the growth of Latin American economies. Clearly, business-to-business (B2B) Internet usage for bidding, access to customized inputs, and the introduction of new services offers opportunities for cost containment.

Whether Latin America lives up to its growth projections depends on government implementation of telecommunications market reform, including further privatization initiatives and opening markets to competition. Such policies are essential for rapid entry into the global e-economy, as are programs for educating youth and training adults so the new technologies do not widen the gap between the rich and the poor. The sustainability of policies that stimulate digital telecommunications growth depends on diffusion of

¹ Teledensity is number of telephone main lines per 100 people.

² IDC, *Latin America's 1999 Internet and eCommerce Strategies*, 1999.

benefits through all segments of the population. Any "digital divide" will exacerbate concerns about income distribution.

Latin America's Telecommunications Past

In the 1980s, no one would have predicted the explosion that has occurred in telecommunications market reform in Latin America. Decades earlier, telecommunications had been largely provided by the private sector. But regulation of the sector was subject to the political pressures of the day, and governments generally forced the private sector to keep prices below profitable levels. As a result, the private sector refused to invest in network expansion and maintenance, which resulted in a steady decline in the quality and availability of service. The governments then nationalized the telecommunications companies and made some of the investment necessary to improve service.

Eventually, the same political pressures that led to poor performance in the private sector came to bear on the state-owned operators. Governments were unable to charge prices for domestic services that were adequate to cover costs and provide cash flows for new investment. Fiscal pressures on countries' general budgets caused governments to look to telecommunications as a source of funds that could be used for other government projects. The result was a general decline in new investment and extensive cross-subsidies from international services to domestic services.³

Chile was the first Latin American country to recognize the failure of the state ownership model. It allowed competition in the telecommunications sector in 1978 and privatized its state-owned companies in 1988. Mexico and Argentina soon followed, establishing a general trend toward market liberalization, privatization, and regulation in the region.

Some Latin American countries both privatized and liberalized their markets; some did neither. Some countries liberalized their markets but did not privatize them. Others privatized but did not liberalize; that is, entry was not encouraged, so the sector

³ Michael Klein and Neil Roger, "Back to the Future: The Potential in Infrastructure Privatization," in *Finance and the International Economy*, ed. Richard O'Brien, Oxford University Press, 1994.

lacked competitive pressures. The absence of multiple centers of initiative tends to slow the introduction of mobile telephony and other advanced services.

Latin American countries were evenly split in 1994 between those that had made no reforms and those that had simply privatized state-owned companies. About half of the countries had both privatized and liberalized markets by 2000. Pyramid Research anticipates that only Uruguay will have made no market reforms by 2003 and only Ecuador and Paraguay will have privatized without liberalizing markets. The World Trade Organization's telecommunications process is one factor behind reform. However, the economic advantages are becoming more and more clear as empirical studies and national case studies support reform initiatives.

Gutierrez and Berg tracked the effects of market reforms.⁴ Table 1 shows some of their results, including the annual growth rates for teledensity before and after privatization in countries that had privatized before 1998. The rates for countries that had not privatized are shown for 1981-89 and 1990-97. Growth rates in teledensity increased for almost all Latin American countries during the 1980s and 1990s, but the increases were greater for countries that had privatized their telecommunications. According to Gutierrez and Berg, the development of sound regulatory systems had a lot to do with this increase in growth. Similarly, in a study of energy, telecommunications, and water reforms in Ghana, India, Korea, Mexico, Philippines, and Senegal, Shirley and Xu show that privatization improves operator performance because private ownership provides more effective financial incentives for managers than does state ownership.⁵

⁴ Luis H. Gutierrez and Sanford Berg, "Telecommunications Liberalization and Regulatory Governance: Lessons From Latin America," *Telecommunications Policy* 24 (10), 2000.

Table 1. Comparisons of Pre- and Post- Privatization Reform

Countries that privatized their former state-owned operators			
	Year of Privatization*	% Annual Growth Prior to Privatization	% Annual Growth after Privatization
Trinidad & Tobago	1990	15.0	5.0
Belize	1988	12.1	9.5
Barbados	1989	6.7	6.4
Chile	1987	5.7	13.7
Argentina	1990	5.2	8.2
Mexico	1991	5.1	5.6
Jamaica	1989	5.0	16.6
Peru	1994	4.2	23.7
Venezuela	1991	3.8	6.8
Bolivia	1995	2.4	29.0
Guyana	1991	-2.4	24.1
Simple Average		5.7	13.5
Countries that did <i>not</i> privatize their former state-owned operators			
	% Annual Average Growth Rate		
	1981-1989	1990-1997	
Honduras	8.5	10.6	
Suriname	8.3	6.9	
Colombia	5.8	10.6	
Uruguay	5.5	8.4	
Ecuador	5.5	6.6	
Paraguay	5.1	7.3	
El Salvador	5.1	12.0	
Brazil	4.7	7.1	
Guatemala	4.5	11.3	
Costa Rica	3.3	7.9	
Panama	3.1	4.5	
Nicaragua	1.8	11.1	
Simple Average	5.1	8.7	

*The year when control of the state's major stake was transferred to private hands
 Source: ITU Database Indicators (1997a) and author compilation.

Latin America's Telecommunications Present

Latin America's continued success in its market reforms will depend largely on countries' ability to establish communications policies that do not repeat the mistakes of the past. This means that countries need to maintain their commitment to competitive markets, to regulation that encourages investment, and to policies that keep pace with the rapidly changing industry.

⁵ Mary M. Shirley and Lixin Colin Xu, "Information, Incentives, and Commitment: An Empirical Analysis of Contracts Between Government and State Enterprises," *Journal of Law, Economics, & Organization* 14(2): 358-78.

Maintaining commitment to competitive markets requires countries to develop and enforce policies that favor neither incumbent operators nor new entrants. A critical factor is the independence of the regulatory agency. Independence, or autonomy, means that operators and regulators are completely separate from one another and that the regulator is able to operate independently of the political process. Independence from the operator is generally achieved by privatization, but may also be achieved by corporatizing a state-owned enterprise and having it operate independently from the government. Independence from the political process involves giving the regulatory agency statutory responsibilities and authority and its own budget. Fixed terms in office for regulators and terms that do not coincide with presidential and parliamentary terms are also needed. Court, rather than ministerial, review of regulatory decisions and clear guidelines for removing regulators from office are recommended.

Independence needs to be accomplished in fact and not just on paper. Some countries with independent regulatory agencies are still seen as favoring incumbent operators. For example, Cofetel in Mexico is frequently viewed as unwilling to enforce regulatory rules because of intense pressure from Telmex and nationalist legislators. OSIPTEL in Peru is seen as adopting high prices for local interconnection to deter potentially competitive local exchange carriers from entering the market.⁶

Legitimacy, credibility, efficiency, and transparency are also key to the success of Latin America's new and newly forming regulatory agencies (regulatory design issues identified in Figure 1). Legitimacy involves the consumers' view of the regulatory agency and is a gauge of its strength; i.e., whether it is able to meet its responsibilities or unable to rein in profit-seeking investors and operators. Credibility is the investors' view of the regulatory agency and measures whether it can ensure that the government will keep its commitments set out in laws or license agreements. Efficiency reflects the predictability and proficiency of the regulatory processes as decisions are reached on time and with minimal resources. Transparency refers to the information that is available to stakeholders on license application procedures, fees, current licensees, and regulatory decisions.

⁶ Pyramid Research, *Telecoms Strategies in Latin America: Database Qualitative Review*, 4th Quarter 1998.

According to Pyramid Research, Latin American countries score high in autonomy and low in efficiency. Chile has the highest scores in the region, followed closely by Brazil. Uruguay, which has no market reforms, and Argentina score the lowest, followed closely by Venezuela and Ecuador.

Table 2 is an institutional scorecard developed by Gutierrez.⁷ The autonomy of the regulatory agencies is graded in terms of funding and potential for removal from office. Agencies are also scored according to clarity of authority, in terms of their responsibility for regulating prices and assessing fines, and their accountability, in terms of review of their decisions. The column labeled "ITU" shows the independence of the regulator from the operator, while the column marked "Legal Frame" grades the legal framework for the country according to criteria developed by Levy and Spiller.⁸ The last column offers some estimate for the 1997 telecommunications regulatory framework index (RFI). Testing the index against telecommunications development in the region, Gutierrez found that it has strong predictive powers for identifying which countries will have the highest teledensities.

⁷ Luis Gutierrez, *An Index of Regulatory Frameworks in the Context of Privatization and Competition*, 1999, Tables 2.6 and 2.7, unpublished working paper.

⁸ Brian Levy and Pablo T. Spiller, "Regulation, Institutions, and Commitment in Telecommunications: A Comparative Analysis of Five Country Studies," in *Proceedings of the World Bank Annual Conference on Development Economics, 1993: Supplement to The World Bank Economic Review and The World Bank Research Observer*, eds. Michael Bruno and Boris Pleskovic, Washington, D.C.: World Bank, 1994, pp. 215-52.

Table 2. Regulatory Framework Index (RFI) for 1997

Country	Autonomy (1)		Clarity of Roles (2)		Accountability (3)	Average	ITU	Legal Frame	RFI
	Funding	Removal	Prices	Fines	Appeal				
ARG	1	0	1	1	1	0.8	1	0.5	.81
BAR	0	0	1	1	0	0.4	1	0.5	.48
BEL	0	0	1	1	1	0.6	1	1	.72
BOL	1	1	1	1	1	1.0	1	1	1.0
BRA	1	1	1	1	1	1.0	1	1	1.0
CHI	0	0	1	1	1	0.6	1	1	.60
COL	1	1	1	1	1	1.0	1	1	1.0
COS	1	1	1	1	1	1.0	1	1	1.0
ECU	1	1	1	1	0	0.8	1	1	.86
ESAL	1	0	0	0	1	0.4	1	1	.58
GUA	1	0	1	1	1	0.8	1	1	.86
GUY	0	1	1	1	1	0.8	1	1	.86
HON	1	1	1	1	1	1.0	1	1	1.0
JAM	0	0	1	1	1	0.6	1	1	.72
MEX	0	1	1	1	1	0.8	1	0.5	.81
NIC	0	1	1	1	1	0.8	1	1	.86
PAN	1	0	1	1	1	0.8	1	1	.86
PAR	0	0	1	1	1	0.6	1	1	.72
PER	1	1	1	1	1	1.0	1	1	1.0
RDOM	0	0	1	1	1	0.6	1	1	.72
SUR	0	0	1	0	0	0.2	0	0.5	.14
TRIT	1	0	1	1	1	0.8	1	1	.86
URU	1	0	1	1	1	0.8	1	0.5	.76
VEN	0	0	1	1	1	0.6	1	0.5	.67

The countries are Argentina, Barbados, Belize, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, México, Nicaragua, Panama, Paraguay, Perú, the Dominican Republic, Suriname, Trinidad and Tobago, Uruguay and Venezuela.

Policy Issues in Latin America's Telecommunications

Unforeseen events in Latin American countries can make policies that appeared appropriate when initiated suddenly obsolete. For example, a short time after Colombia licensed long distance service, convergence made voiceover IP technologically feasible and made the long distance licenses unenforceable. In other countries, after wireless licenses for specific services were issued, technological change soon made it desirable for the licensed spectrum to be used for other services.

Working with Nortel Networks and *itFlorida*, the University of Florida's Public Utility Research Center recently held a forum for senior communications policymakers

from Latin America⁹ to explore how Latin American countries can address communications policy issues that will arise in the next few years (depicted under Regulatory Incentives in Figure 1). Several areas were identified as key to continued telecommunications development in the region.

Sustainable Policy

Governments need to develop communications licenses and other policies that are sufficiently general to ensure that countries are not locked into outdated technologies and industry structures. They also need to develop processes that decrease the time required for adapting policies to new technological and market realities, while still providing the consistency and predictability required to maintain credibility for investors.

As part of our work with the *PURC/World Bank International Training Program on Utility Regulation and Strategy*, we have developed a flow diagram that identifies key factors affecting the performance of telecommunications sectors. Figure 1 shows how sector performance (here, innovations associated with the e-economy) depends heavily on basic industry conditions (including availability of bandwidth), market structure (competitive where possible), and corporate behavior (such as pricing strategies and service introductions). The arrows depict the directions of causation, although most feedbacks are omitted to simplify the diagram.

<Insert Figure 1 here>

⁹ *Latin American Forum on Communications*, January 25-28, 2000, <http://bear.cba.ufl.edu/centers/purc/LAFC/lafcmain.html>.

¹⁰ Levy, Brian, and Pablo T. Spiller. 1996. *Regulations, Institutions, and Commitment: Comparative Studies of Telecommunications*. New York: Cambridge University Press.

This paper shows how the institutional structure supporting the creation of new regulatory agencies can promote telecommunications investments that are critical for the development of e-commerce applications. After reviewing Latin America's past and present telecommunications developments, we now identify policy issues that need to be addressed if future initiatives are going to be successful. Developing sound regulatory institutions and promoting market-based initiatives are crucial factors sustaining high performance in the e-economy.

Policy Continuity with Political Change

Because Latin American countries generally have presidential political systems, political change can cause significant policy changes. Yet policy continuity during times of political change is important since policy uncertainty increases risk for investors and so increases the cost of capital, decreases prices that investors are willing to pay for licenses and privatized state-owned enterprises, and reduces private investment.

Policy continuity can be furthered by strengthening court systems, establishing arbitration systems, exploring regional policy coordination among countries, and creating independent regulatory agencies. The political neutrality of the legal system supports its ability to protect private property and to make rulings on contract disputes in a timely and fair manner¹⁰. When expertise and associated institutions are developed for effective arbitration, costly and slow legal proceedings can be avoided.

Regarding regional policy coordination, policymakers can learn from one another and share ideas for common approaches to policy, creating a more predictable environment for private investment. Regulatory authorities with various degrees of autonomy are already established in many Latin American and Caribbean nations. Such institutions can promote credibility for the investment community, legitimacy in the eyes of consumers, and efficiency in the economy.

¹⁰ Levy, Brian, and Pablo T. Spiller. 1996. *Regulations, Institutions, and Commitment: Comparative Studies of Telecommunications*. New York: Cambridge University Press.

Telecommunications Infrastructure for Rural and Poor Areas

State-owned telecommunications enterprises generally failed to develop infrastructure in rural and poor areas in Latin America, and privatization does not necessarily solve this problem. These areas are often unprofitable for private operators who target higher income and lower cost areas to improve cash flows. As a result, governments need to develop policies that motivate private operators to invest in rural and poor areas. Policies that Latin American countries have used include license build-out requirements, competition, and auctions of infrastructure subsidies.

License build out can be part of regulatory settlements. Regarding price caps and quality of service, a monopoly wire line company could be required to expand network access by certain amounts each year. As for competition, there is some evidence that it is more important than ownership in terms of providing incentives for cost containment, low prices, quality improvement, and the introduction of valued new services. The competitive marketplace delivers good performance compared to monopolies¹¹.

Low density, low income, and geographic conditions can make some areas very expensive to serve. Auctions for infrastructure subsidies applicable over a franchise period promote efficiency and transparency by eliminating hidden cross-subsidies. For example, an incumbent for local telephony might estimate high investment costs in a particular region. When put out to bid, the program can end up costing taxpayers far less.

The Balance between Regulation and Deregulation

Telecommunications reform in Guatemala has relied on competition, spectrum ownership, and light-handed regulation, and infrastructure has developed rapidly with this approach. Some observers are concerned that the incumbent has maintained a large market share and that a shared monopoly or tight oligopoly could emerge, but these results are little different from that in countries with much tighter regulatory controls.

In both cases, incumbents' apparent dominant market shares raise concerns that the prospects for competition in telecommunications infrastructure are limited. Yet, open

¹¹ Ros, Agustin J. 1999. "Does Ownership or Competition Matter? The Effects of Telecommunications Reform on Network Expansion and Efficiency," *Journal of Regulatory Economics* 15: 65-92.

entry creates conditions at least resembling contestability, which puts downward pressure on prices.

A related issue is the current global process of industry consolidation. A smaller number of players may adversely affect competition within domestic markets and competition for licenses. However, recent mergers also enable firms to explore economies of scale and scope associated with the digital economy.

Economic Adjustments to Benefit from Globalization and E-business

The development of e-business affects nearly all aspects of an economy: development, trade, taxation, education and workforce development, and communications infrastructure. Contract law, privacy and property rights laws, security laws, computer access, web content, network competition, and capital markets are also relevant.

For Latin American countries, communications infrastructure is the factor that most limits the development of e-business. This constraint applies to both domestic and backbone infrastructure. The region needs to attract private capital and operators to develop an adequate infrastructure.

Tariff (or price) structure is another limiting factor. Tariffs for U.S.-Latin America communications are lower than those for communications within the region. Such relative prices make the United States the hub for regional transactions.

Developing a Common Communications Market in Latin America

The geographic make-up of the countries in Latin America and differences in their approaches to communications reform limit the development of communications infrastructure. Some Latin American countries are smaller than the typical size of a modern network provider. Also, modern network providers are global rather than domestic, which means that their operations and services cross numerous country boundaries. Countries in Latin America lack uniformity in key communications policies, which affects private investment. These policies include what is regulated, the opportunities for competitive entry, and the licensing of radio spectrum. These

differences increase the cost of telecommunications development in Latin America and limit infrastructure development.

Ensuring the Success of Current Market Reforms

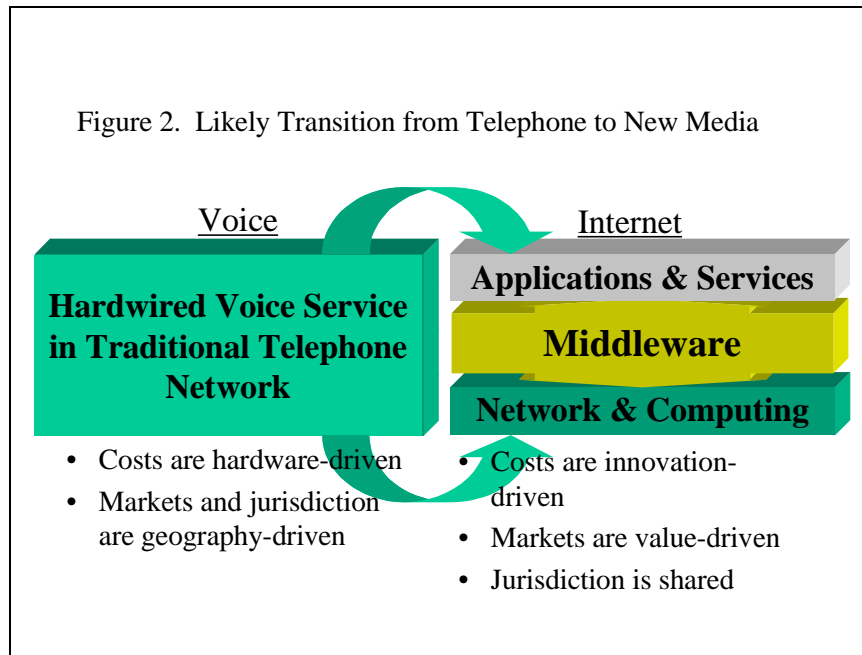
No simple recipe guarantees success. Each country has a different legal, political and institutional environment. Nations must implement anti-corruption policies, appoint credible independent regulators with time horizons that exceed the next general election date, and promote institutional changes that support and sustain reform. Thus, Latin American countries need to develop sustainable regulatory systems that encourage continued private investment, that open markets to competition, that permit deregulation where competition develops and in other instances where regulation is unnecessary, and that maintain commitment in regulating prices and market structure. Such policies depend on a regulatory agency that is independent from the operator, political authorities, and other stakeholders.

Latin America's Telecommunications Future

Latin America's ability to expand its telecommunications infrastructure, especially its Internet and wireless infrastructure, and to build e-skills in its government and population will determine the extent of the region's participation in the global economy. Internet and wireless infrastructure is key because much of the global economic activity will take place on this platform. E-skills ensure that the region's economies can exploit the infrastructure as producers as well as intelligent consumers of e-business.

Figure 2 illustrates the declining importance of voice telephony and the growing importance of data or new media available largely through the Internet. The telephony cube on the left is about the same size as the three Internet cubes on the right combined because approximately half of the telecommunications traffic in the developed world today is data. The arrows represent the movement of telecommunications traffic from traditional telephony to the Internet. This migration will continue as voice service becomes a software application on the Internet, instead of a hardwired service of the telephone network. Voice of IP (Internet Protocol telephony) was the initial step in this migration. Further steps will integrate voice into multimedia services that represent

messaging, entertainment, and education, as well as participation in government and commerce.



Furthermore, e-business is emerging as the normal way of doing business. According to Internet Research Group and SRI Consulting, U.S. firms spent \$153 billion in e-business infrastructure in 1999 and are projected to spend \$349 billion in 2003. U.K. businesses expect that 15 percent of their sales will be electronic by 2002. Latin American e-business is expected to grow at an annual rate of 117 percent between 1998 and 2003, and most of this growth will be in business-to-business transactions (IDC Latin America's *1999 Internet and eCommerce Strategies*).

For the foreseeable future, Latin America will be linked with North America for the development of Internet and e-business. According to Nortel Networks, approximately 75 percent of all Latin American e-sales go outside the region, primarily to the United States,¹² which has the largest concentration of Internet host computers and capacity in the world. Indeed, much of the world's Internet traffic routes through the

¹² Adis Vila, "Can Latin America Take Advantage of Globalization," presentation at the *Latin American Forum on Communications*, January 25-28, 2000, <http://bear.cba.ufl.edu/centers/purc/LAFC/lafcmain.html>.

United States even when both the sender and recipient of the data are located elsewhere. In a compilation of countries with more than 75,000 host computers and 45 megabits per second backbone capacity, Brazil is the only Latin American country with sufficient host computers and backbone capacity to be included.

In the United States, Florida has the strongest tie to Internet and e-business in Latin America, for three reasons. First, many Floridians are ethnically Latin, which creates a strong cultural tie between Florida and Latin America. Second, many companies that do significant volumes of business in Latin America have chosen to locate in Miami, making Miami the world's gateway for trade in Latin America. Lastly, more undersea fiber optic cables going into Latin America connect in South Florida than anywhere else. This makes Florida the electronic highway for Latin American e-business, although Texas and California also have economic and cultural links to the region as well as strong infrastructures.

Wireless technologies are emerging as the dominant ones for Internet communications. According to the International Telecommunications Union, a third of all of the world's telephones will be mobile phones by the year 2002. Nokia projects that by 2003, more Internet transactions in Europe will occur over wireless devices than over PCs. According to Pyramid Research, the expected growth rate is 28 percent per year.

Work in the information economy is essentially mental work, so e-skills and institutions of higher education are crucial for Latin America's growth in e-business. E-skill development includes both basic education and technical training. It also includes the advancement of scientific education in engineering, computer science, and business.

Institutions of higher education play important roles in developing scientists, providing basic research, creating an atmosphere of innovation, and advising businesses and government. Technology clusters in the United States illustrate the importance of scientists, basic research, and innovation. Stanford University is credited with spawning Silicon Valley. The Massachusetts Institute of Technology feeds the information technology cluster around Route 128 near Boston. The University of Texas at Austin is credited with springing the Austin Miracle, the rapid development of high technology industry around Austin, Texas. All of these universities reached their level of effectiveness because of the substantial investments that government and industry made

to attract star faculty, build world-class research centers, and attract top graduate students. Latin America will need to take similar steps to build its universities and create centers of excellence that promote collaboration among businesses, academic institutions, and government agencies.

Universities and think tanks play important roles in advising and educating businesses and governments. Top institutions provide leading-edge thinking, in-depth analysis of problems, and fertile grounds for developing future leaders and policymakers. Top institutions also become part of a worldwide network of intellectuals and innovators. This network helps globalize perspectives and puts the participating countries in the forefront of international trends. It is impossible to consider sector development without recognizing the roles of engineering, critical thinking, creativity, and business skills.

Conclusion

This paper highlights issues and strategies for Latin America's continued progress into the global e-economy. As elsewhere, the further development of market solutions to infrastructure development, of best-practice regulatory institutions, and of world-class centers for education and innovation appear to be critical factors. Indeed, empirical research on economic growth consistently finds that variations in population growth, investment (facilitated by market solutions and sound regulatory systems), and education explain 80 percent of the differences in wealth among countries. Other frequently cited issues, such as the development of inexpensive terminal devices, Internet access and pricing, and tax incentives will play minor roles in advancing Latin America's participation in the global economy.

Developing market solutions and building sound regulatory institutions involve resolving many issues that this paper does not develop. These include erasing lines between wireline and wireless telecommunications, and dropping the policy distinctions between voice and data and between old and new media. Improving domestic capital markets is key to promoting domestic start-up businesses, the primary engines of the new economy. Fighting corruption is important in giving investors confidence that their performance in the marketplace will largely determine their financial success. Trade liberalization and removing tax differences between old and new economies are

important to optimal growth of the information sectors and to ensuring that finance ministries view the new economy in a positive light.

All of these issues revolve around the theme of building an electronic workplace and the human capacity to use it. We are convinced that the framework and strategies outlined here cannot be ignored. Legislators and policymakers who try to micromanage the process will find that they have cost their economies dearly.

Figure 1. The Effect of Institutions on Public Policy and Sector Performances

