PART V

The Capacity to Innovate

Summary

With the explosion in information technology in recent years, the importance of technological innovation has come to the fore more than ever. This is particularly true with regard to the Internet, undoubtedly one of the most rapidly adopted inventions in history. The increase in digital communication flows and in Internet sales is changing the way in which business transactions are conducted. This new technology globalizes the geography of markets and deepens the trend toward a world marketplace.

The emergence of the new economy opens new opportunities for Latin America but also poses formidable challenges to it. Chapter 14 will show that the new information technologies bring the promise of increased productivity and growth potential through a variety of channels. They can reduce transaction costs among firms and between firms and customers, increasing the efficiency and the scope of markets. They can speed up information flows, fostering the diffusion of technology and the formation of human capital. Information technologies can make governments more accountable, transparent and efficient, and provide better communication between public entities, firms and customers.

As a latecomer to the Internet revolution, Latin America has a long way to go to catch up. Only 0.5 percent of Latin Americans had access to the Internet in 1999, compared with more than 30 percent in the United States. And there were only three Internet hosts per 10,000 people in Latin America, compared to 173 in the developed countries. The benefit to arriving onto the scene late, of course, is that it conceivably could enable Latin America to catch up at a faster pace and a lower cost. But that will depend on the environment for innovation in the countries of the region—and in that respect, the adoption of the Internet could also prove to be no different than that of other technological changes.

Chapter 15 discusses how the degree of innovativeness in a country helps explain the extent to which new technologies may be more effectively absorbed. In fact, the higher the country is on the innovative ladder, the more effective it will be in terms of achieving technological development and, in particular, adopting the Internet. Not surprisingly, countries such as the United States, Japan and Great Britain appear at the high end of this relationship, while Latin American countries are typically concentrated at the bottom.

What is surprising about this relationship is that it is valid even when isolating the fact that countries with better telephone infrastructure—which, of course, are the richer ones—are also the ones with more Internet hosts. Thus, the capacity to innovate and assimilate new technologies is not just a matter of income or infrastructure endowment. This point is important to economic development, since technological development is a key factor in achieving more competitiveness and, thus, higher rates of growth. If Latin America does not fare well in terms of innovation, it will be difficult for the region to achieve technological depth.

While Costa Rica and Chile are leaders in innovation in Latin America, they are still below the world average, and the region as a whole ranks low with respect to other groups of countries. In contrast, some East Asian countries surpass the world average by a wide margin.

Apart from income levels and infrastructure, a number of economic and institutional channels can have a major influence on the ability of countries to climb the innovative ladder. These include education, access to

credit, the rule of law, and economic openness. Education is clearly vital, since successful innovation and the assimilation of technology hinges to a considerable extent on the skills of the labor force. As was shown in Part III of this book, the conventional wisdom that Latin America's labor force is unskilled is in fact a myth. However, it is also true that the region's human resources do not measure up to the labor force in East Asia, the most successful region of the developing world with respect to technological absorption.

As shown in Part I, access to credit is key to business growth in Latin America. In the case of businesses involved in the new economy, such access is even more important because enterprises are usually small and business start-up costs large.

Public institutions are also important to technological innovation and absorption. The fast pace and rapidly changing environment associated with information technologies mean that institutional problems such as bureaucratic delays, corruption, property rights issues, and a weak rule of law can be costly indeed to the business community.

Finally, economic openness plays a pivotal role in spurring innovation and technological absorption. Imports of machinery and equipment are important channels for transfer of knowledge from developed to developing countries. Absorption in the latter of the latest technological developments and processes typically spurs domestic innovation.

Although a number of variables at the macro level may ultimately determine how much a country innovates, the actual practice of technological innovation takes place within a more specific institutional context or system. This can be the realm for supportive government interventions. Chapter 16 uses a systemic approach to examine systems of innovation in Latin America. It focuses on the interrelated practices and institutions that provide the context for all-important microeconomic decisions regarding investments in technological innovation. These decisions depend not only on narrowly defined microeconomic considerations but also, in a most fundamental way, on the opportunities and constraints that result from the entire series of linkages between firms along the same or related production chains, between firms and research institutions, and between local and foreign companies. They also depend on the system for human resource development, the labor market, and a country's general policy framework. Latin America is found to have underdeveloped innovation-output systems, where human capital is insufficient and underutilized, linkages among firms and between firms and research institutions weak, and knowledge flows limited. It is thus not surprising that Latin American countries are falling behind in the technological race.

The systemic issues raised here are not all directly amenable to policy intervention. Bearing in mind this limitation, the policy discussion centers on the role of government in developing proactive strategies to catch up with the world's technological leaders. The assumption is that implementing such strategies will enable the countries of the region to gradually transform their national innovation systems into more mature and facilitative frameworks. These in turn can support the efforts of businesses to create and apply modern knowledge to the production of higher-quality and lower-cost products.