

PART II. REGIONAL VARIATIONS

**NORTH AMERICA WILL CONTINUE IN THE
VANGUARD OF THE INFORMATION REVOLUTION**

For the foreseeable future, North America (i.e., the United States and Canada)¹ will continue in the vanguard of the information revolution.

**THE NORTH AMERICAN ECONOMY AND SOCIETY ARE
WELL POSITIONED TO MEET THE CHALLENGES OF THE
INFORMATION REVOLUTION**

The economies and societies of the United States and Canada are quite favorably positioned to do well in the information age because of the following:²

- They have well-developed physical infrastructures (electricity, telecommunications, etc.), well-educated populations, a ready supply of trained IT professionals, and ready access to exploitable IT technologies.
- Their economies and societies are generally receptive to change, adept at dealing with the consequences of change, and supportive of risk-taking, with deeply rooted entrepreneurial cultures.
- They have generally market-responsive governments, at all levels, that provide a basic environment hospitable to IT (and other) business developments and then (mostly) stay out of the way.
- They have legal regimes with good intellectual property protections, well-established contract and bankruptcy laws well suited for handling the inevitable business failures that go with any rapidly changing technology, and strong protections for freedom

of expression—all of which allow the North American IT sector to flourish.

- They have innovative and efficient capital markets with well-developed venture capital communities, well attuned to the funding requirements of new IT businesses and concepts.
- They are both nations of immigrants that attract energetic, talented, IT-trained people from all over the world.

These characteristics have placed the United States and Canada in an advantageous position, able to respond well to the challenges posed by the information revolution.^{3,4}

NORTH AMERICA WILL EXPLOIT THESE ADVANTAGES TO CONTINUE IN THE VANGUARD OF THE INFORMATION REVOLUTION

Over the past few decades, the United States and Canada have exploited these advantages to assume leading, pathbreaking roles in most aspects of the information revolution.⁵ Over the next 10 years, these nations should continue in the vanguard of the information revolution, taking leading positions in the development of

- new information-related technologies and devices, going well beyond what exists today⁶
- new products and services enabled by these IT advances, including new “killer applications”⁷
- new business models, further transforming the business and financial worlds.⁸

Selected nations outside North America—particularly in Europe and Asia—will be in the vanguard as well, with leading positions in some aspects of the information revolution, for some periods of time. But North America will be in the vanguard in most aspects of the information revolution, most of the time.⁹

“Creative destruction” will continue to accompany these developments, along with persistent increases in the role of electronic commerce, information work and information workers in the North American economy, and the continued formation of IT-business

clusters in many parts of North America.¹⁰ Also, the North American entertainment industry will continue its leading market position throughout much of the world.

THE DOT-COM CRASH AND TELECOM IMPLOSION MAY SLOW THE PACE OF IT-RELATED DEVELOPMENTS IN NORTH AMERICA, BUT ONLY TEMPORARILY

The dot-com crash, which is largely over now, and the telecom implosion, which is still under way, have muted much of the hype that accompanied the information revolution a few years ago.¹¹ These two events have certainly slowed down the rate of investment in new IT-related businesses in North America and, consequently, the pace of the IT-related developments discussed above.¹²

However, if history is any guide, this slowdown is likely to be only temporary. Similar investment “bubbles” have been a feature of the early stages of other transformational technologies. Once each of these initial bubbles collapsed, a period of restrained activity ensued, followed, in almost all cases, by a resumption of growth in the new technology-driven industries, along more stable and enduring directions.¹³ We expect IT-related industries in North America to follow this same path over the next one to two decades.¹⁴

THE EVENTS OF 9/11 MAY LEAD TO INCREASED GOVERNMENTAL INTERVENTION IN IT DEVELOPMENTS IN NORTH AMERICA

The events of September 11, 2001, are another matter. The results of these events could bring a heightened awareness of cyberspace security issues, as concern regarding future terrorist attacks expands beyond using hijacked aircraft as guided missiles to include a broader range of attack mechanisms and targets, including cyberspace-mediated attacks on business and financial targets and critical infrastructures.¹⁵

This may lead to increased governmental intervention in IT developments—particularly in North America, the region of the world most affected by the events of September 11—to ensure that greater

weight is given to security considerations in the design, implementation, and operation of IT systems and networks.¹⁶

NORTH AMERICA WILL, IN GENERAL, DEAL WELL WITH THE STRESSES GENERATED BY THE INFORMATION REVOLUTION

Changes brought on by the information revolution have generated stresses in North American society and will continue to do so. These stresses include

- increasing economic and social disparities brought about by the “digital divide” between the information-rich and the information-poor
- employment disruptions associated with “creative destruction,” as new IT-enabled products and services drive out older, less-attractive ones and, often, cause the economic eclipse of the companies that were producing the old products and services¹⁷
- challenges to individual privacy, as more and more personal information is transferred into databases accessible over the Internet or available to government agencies, and as sensors surveilling human activity become increasingly prevalent.

In general, North American society has dealt well with these stresses; it will continue to do so, by virtue of

- a culture that readily accepts change and, generally speaking, views it as an opportunity rather than a threat¹⁸
- a labor market that, most of the time, has created new jobs faster than old jobs have disappeared, combined with a work force that accepts frequent changes in employment
- a culture that, for better or worse, accepts wide disparities in income, emphasizing equality of opportunity rather than equality of outcome^{19,20}
- a population that, at least up until now, has been willing to accept some loss in privacy in return for personalized products and services.²¹

NOTES

¹Throughout this report, by “North America” we mean the United States and Canada. We discuss Mexico as part of “Latin America.”

²Friedman (1999, particularly pp. 298–303) elaborates on these advantageous (for the information revolution) characteristics of North America society.

³Canada—with the possible exception of Quebec—is becoming increasingly indistinguishable from the United States in most aspects of life, including its response to the information revolution. Hurtig (2002) documents this increasing Americanization of Canadian life (of which he disapproves) and discusses the forces driving this process. Beatty (2002) reviews the increasing integration of the Canadian and American economies since the Progressive Conservative government of Brian Mulroney came to power in Canada in 1984 and reviews the forces driving further integration.

⁴Along with these strengths, North America has weaknesses as well: for example, its huge legacy communications infrastructure that somewhat slows its adoption of new technology, its tendency sometimes to go it alone regarding standards (e.g., for mobile telephony), etc. These weaknesses will offer opportunities to other IT players outside North America. (The authors thank William Overholt, RAND, for this observation.)

⁵As one measure of this leading position, UNDP (2001, pp. 45–63) creates a “technology achievement index” measuring a country’s achievements in the “network age.” The United States and Canada both fall into the top group of “leaders,” with the United States placing second overall—Finland is first—and Canada eighth, out of 72 countries from all over the world that are quantitatively ranked.

⁶We outline some of the information technology developments that are possible over the next 10 to 20 years in Chapter Two of this report. North America should play a leading role in all of these.

⁷Chapter Two discusses the pivotal role played by “killer applications” in shaping the course of IT developments.

⁸We discuss the general nature of these new business models in Chapter Three of this report.

⁹While North America will continue in the vanguard of the information revolution, not all existing North American companies that are IT leaders today will continue in their leading position throughout the next 10 to 20 years; creative destruction will operate in the future just as it has in the past, so that some of today’s leading IT companies will be overcome by new developments and new competitors.

¹⁰We discuss creative destruction, electronic commerce, information work and information workers, and IT business clusters in Chapter Three of this report.

¹¹*BusinessWeek* (2001) provides an overview of the dot-com crash; *The Economist* (2002b) looks at the business and financial crisis in the global telecommunications industry in recent years.

¹²The monthly “Cash Flow” column in the magazine *Red Herring* tracks the rate of investment, by venture capitalists and others, in new IT-related businesses, both in

the United States and globally. The data presented in this column over time clearly show the marked drawdown in such investments since the venture capital investment peak in 2000.

¹³The railroad boom and bust in the 1870s is a classic example of this phenomenon. In the early 1870s, railroads drove economic expansion in the United States and created wealth much as telecom and Internet investment did in the 1990s. In 1873, railroad stocks collapsed, sinking by a third between the end of 1873 and the middle of 1877. But then things turned around, with railroads again powering an expansion. This resumption of growth in railroad-related industries proved to be stable and enduring, paving the way for several decades of U.S. economic growth. (See endnote 26 in Chapter Three for a longer discussion of the 1870s railroad bubble, its collapse, and the subsequent resumption of long-term technology-driven growth.)

¹⁴*BusinessWeek* (2001) provides a vision of how IT-related industries will recover from their current malaise and continue to transform the business and financial world—in its words, “unevenly and in stages.”

¹⁵The U.S. government has for some time been concerned regarding the cyberspace-related vulnerabilities of critical U.S. infrastructures. (See, for example, PCCIP, 1997). However, because most of these infrastructures are owned and operated by the private sector and therefore outside of direct government control, the government has thus far been unable to affect much of an improvement in their cyber security. (PCIPB, 2002, gives an assessment of the state of critical infrastructure cyber security today.)

¹⁶In response to market forces, up until now functionality has almost always been given much greater weight than security in the design of new IT systems and networks and their subsequent implementation and operation. This has led to a situation where security vulnerabilities are commonplace, security incidents are a frequent occurrence, and the business community—except for the financial services industry—has treated these incidents as a “cost of doing business.” (See PCIPB, 2002, for an overview of the state of cyberspace security today.)

¹⁷Not all new IT-enabled products and services survive and prosper in the marketplace—witness the collapse of many dot-com companies in recent years. This adds to the employment disruptions.

¹⁸Levine (2001) describes the American approach to economic change as emphasizing ambition over security, saying, “For many Americans—particularly the most competent—the hope of getting rich is a more compelling incentive than the fear of becoming poor.”

¹⁹This is somewhat less true today in Canada than in the United States, but, as mentioned earlier, as time goes on, Canada is becoming more and more like the United States.

²⁰This is in contrast to Europe, which we discuss in Chapter Eight of this report.

²¹This issue is discussed in Hundley et al. (2001).