

# Information Services in the Dominican Republic

Barney Warf

*Department of Geography  
Florida State University  
Tallahassee, FL 32306-2050*

**Abstract** The last two decades have witnessed a dramatic growth in information services worldwide, an aftershock of the microelectronics revolution and the merger of computer and telecommunications technologies. The Dominican government has recently actively encouraged the growth of these activities in an attempt to decrease its reliance upon agricultural products, notably sugar, as a major source of foreign revenues. Based on field interviews, this paper examines three specific information services industries (telecommunications, computer services, and back offices) in that nation, their geographical linkages and market structures, labor practices, and international distribution, and points to some significant obstacles to their growth. Finally, it assesses the degree to which such services can substitute for traditional foci of economic development.

While the late twentieth century has ushered in a dramatic wave of internationalization, with profound consequences for national and regional economies (Dicken 1992), relatively little has been said about the role of services in this regard. Compared to the voluminous literature on manufacturing, for example, studies of global trade in services are relatively infrequent (Kakabadse 1987; Noyelle and Dutka 1988). Information services—the group of industries concerned exclusively with the creation, collection, processing and transmission of data in various forms—have played an instrumental role in this process.

The growth of information services has been propelled by a convergence of several factors, including cost declines in information processing technologies induced by the microelectronics revolution (Hepworth 1990; Langdale 1991), national and worldwide deregulation of many service industries, including the Uruguay Round of GATT negotiations, and the rounds of vertical disintegration that constitute a fundamental part of the emergence of post-Fordist production regimes around the world (Wood 1991). The continuing debate over the potential of producer services, of which information services are a key component, to stimulate regional economic growth reflects the uncertainty, even suspicion, with which services are generally viewed in the economic development literature (Coffey and Polese 1989; O'Farrell and Hitchens 1990). Frequently, services are viewed as mere adjuncts to manufacturing, incapable of generating extralocal revenues or meaningful employment. In part, this bias stems from the fact that services involve the production of intangibles. Marxists, too, such as (Harvey 1989), view information services such as telecommunications as little more than vehicles for the empty recycling of "fictitious capital."

To make matters worse, the literature on information services has largely confined itself to the industrialized world, neglecting their impacts (actual or potential) in Third World contexts. This omission is, to a large extent, attributable to the lingering effects of the Fisher-Clark thesis, in which economic development is theorized to proceed in a series of "stages" from agriculture to industry to services. Viewed from this perspective, services are unlikely to offer much potential to stimulate Third World economies. However, as the experiences of Singapore and Bahrain (finance), India (software), Brazil (engineering), or South Korea (construction) [end p. 13] make clear, services do indeed allow for significant generation of employment and foreign revenues (Lanvin 1991).

As part of the effort to fill this void, this analysis examines the recent growth of information services in the Dominican Republic. The second most populous nation of the Caribbean (1992 pop. 7.2 million), and one of the poorer members of the western hemisphere, the Dominican Republic also differs substantially from the smaller nations of the Windward and Leeward islands. It serves as a particularly useful case study of information services because the national government there has aggressively encouraged their growth, along with tourism and traditional forms of foreign direct investment, to counteract price declines in its traditional agricultural exports, particularly sugar, and to relieve it of an increasingly burdensome foreign debt.

The paper opens with a brief review of the historical context of the Dominican Republic within which the recent round of information services growth has occurred, proceeds to examine three specific information services industries (telecommunications, computer services, and back offices), points to some significant obstacles faced by information services firms in that region, and concludes with some lessons drawn from this case study and their implications for the analysis of the recent global division of labor. Much of the empirical data and case studies are drawn from lengthy interviews with corporate and government personnel, a valuable source of information in economic geography (Schoenburger 1991), supplemented when possible by data from secondary sources.

## **THE REGIONAL CONTEXT OF INFORMATION-SERVICES GROWTH IN THE DOMINICAN REPUBLIC**

The current round of growth in information services in the Dominican Republic must be assessed with in the context of that nation's historical trajectory, which includes long periods of economic stagnation and a pronounced reliance upon foreign investment as the motor of national economic growth (Black 1986; Kryzaneck 1988), a phenomenon characteristic of much of the

Spanish Caribbean (Cripps 1979). Its poverty, relative lack of economic growth, reliance upon foreign investment, and susceptibility to exogenous political and economic trends make the Dominican Republic a classic example of dependent development (Marcotte and Coughenour 1987; Moreno 1975, 1986).

Several features of the Dominican Republic's economy have made it increasingly attractive to foreign investors in recent decades. After the 1961 assassination of the dictator Rafael Trujillo and the following period of upheaval culminating in U.S. military intervention in 1965, the nation has been relatively democratic and politically stable as the landed aristocracy and the state identified their interests with foreign investors (Moreno 1975). As with many Latin American nations, the Dominican Republic has a large supply of cheap labor: unemployment in the late 1980s and early 1990s has hovered around 38 percent, forming a ready reserve army of labor. With a literacy rate of approximately 65 percent, the workforce is predominantly unskilled and low wage.

The Dominican government has made strenuous attempts to establish a business climate conducive to foreign capital. In the mid-1980s, under relentless pressure from the International Monetary Fund (the "Baker Plan"), the government devalued the Dominican peso, lowering the costs of foreign investment there, reduced subsidies for many household staples, and concomitantly pursued a stringent monetary policy to reduce an annual inflation rate exceeding 100 percent. It also introduced CEPODEX, a policy specifically designed to develop nontraditional exports, particularly tourism, which has become the nation's largest source of foreign revenues (Meyer-Arendt et al. 1992), and other services (Hill coat and Quenan 1991). As a result of these circumstances, the nation's balance of payments position improved significantly, although many imports became prohibitively expensive (U.S. Embassy to the Dominican Republic, 1991). Lurking behind the government's fiscal and economic policy was a \$4.2 billion foreign debt (1992), largely owed to the U.S. and several bilateral lenders, the interest payments of which commanded a sizable share of the nation's foreign earnings.

An important force contributing to the growth of Caribbean nations has been the Caribbean Basin Economic Recovery Act, popularly known as the Caribbean Basin Initiative (CBI), instituted by the [end p. 14] Reagan Administration in 1983 (Posthuma 1987). The CBI provides tax incentives and guaranteed access to the U.S. market under preferential tariffs. Probably no Caribbean nation has benefited more from the CBI than the Dominican Republic, where it has encouraged numerous assembly functions, primarily of U.S. firms, to relocate (particularly in the textiles, shoes, jewelry, and electronics industries), generating more than 140,000 jobs (American Chamber of Commerce of the Dominican Republic 1991).

As part of a broader initiative to take advantage of the CBI, the Dominican government (like many Caribbean nations) established a series of Free Trade Zones (FTZs). Firms located with FTZs enjoy tax exempt status and a freedom from import duties. As of 1992, 25 FTZs existed, with six more planned (including the largest, Hong Kong del Caribe near the Haitian border) (Figure 1). The location of the FTZs is central to the comprehension of the Dominican Republic's contemporary economic geography, representing as they do the intersection of state policy and global capital. FTZs also play a significant role in the location of the nation's information services, particularly the Itabo and San Isidro zones located in and near Santo Domingo, respectively. Thus, the label FTZ should not be equated with manufacturing-led export processing, as is commonly the case, when the production of intangibles is also an important activity.



Figure 1. Map of Dominican Free Trade Zones, 1992.

By law, firms in FTZs must derive 80 percent of their revenues from overseas sales (domestic sales greater than 20 percent require special permission). Firms that have established operations in the FTZs tend to be concentrated in manufacturing, although a large data processing company and a tele-communications firm have also established facilities in the San Isidro FTZ near Santo Domingo. Critics of FTZs—generally competitors located outside them—argue that they offer their tenants an unfair [end p. 15] advantage. Additionally, the Dominican government has promoted joint ventures, loans and credits, banking and technical feasibility studies, and offered to minimize bureaucratic obstacles to corporate registration through its Foreign Industrial Advisory Group.

The Dominican government has actively encouraged the growth of information services as part of a broader strategy to reduce the country's reliance upon agricultural exports, particularly sugar, by fostering the growth of services, including tourism and information services, heretofore a largely untapped source of foreign earnings. Officially, the government has three objectives in regard to information services: 1) to introduce telephones to every home in the nation by the year 2000; 2) to maximize the nation's international communications linkages, and 3) to encourage the growth of high value-added services, particularly computer services and related data processing activities.<sup>1</sup> These efforts succeeded in creating a fertile ground for the growth of information services. For a small, relatively impoverished nation, the Dominican Republic possesses a well endowed information services infrastructure, including 3,000 satellite earth stations, 261 radio stations (166 AM, 95 FM), six national television companies, and six cable television firms.

This paper examines three inter-related forms of information services in the Dominican Republic: telecommunications, computer services, and back offices. It explores the role of key firms in each sector, their locational tendencies and labor market practices, relations to government policy, and growth over time. The aim is to connect broader discussions of internationalization with the specifics of individual firms, using each to shed light on the other, and to discover the degree to which such activities affect the economic landscape of that nation.

## TELECOMMUNICATIONS

An integral dimension in the emergence of an international services economy has been an integrated network of telecommunications systems (Langdale 1989, 1991; Warf 1989). The commercial application of a variety of communication technologies, ranging from copper cables commonly used by telephone companies to high capacity satellite and fiber optics lines, has contributed to a marked increase in international trade in services, particularly among financial firms, where they led to the formation of electronic funds transfer systems (Hepworth 1990). However, the increasing reliance of business services as well as numerous multinational manufacturing firms upon telecommunications to relay massive volumes of information through international networks has made telecommunications a fundamental part of regional and national attempts to generate a comparative advantage in the information sector (Gillispie and Williams 1988). The rapid deployment of such technologies reflects: the increasingly information intensive nature of commodity production in general (necessitating volumes of technical data and related inputs on financing, design and engineering, marketing and so forth); the spatial separation of production activities in different nations through globalized subcontracting networks; decreases in price and the price-elastic demand for communications; the birth of new electronic information services (e.g., on-line data bases, teletext, and electronic mail); and the high levels of uncertainty that accompany the international markets of the late twentieth century (to which the analysis of large volumes of data is a strategic response).

The consensus among most observers is that such telecommunications systems have markedly enhanced the competitive position of metropolitan areas such as New York within the global market, allowing multinational corporations to centralize information-intensive headquarters activities in cities with abundant supplies of skilled labor, ancillary services, and face-to-face contacts, while simultaneously dispersing low skilled, low wage service jobs to peripheral regions (Moss 1987; Castells 1989). In this respect, the globalization of services closely resembles the previous bifurcation between headquarters and branch plants widely found in manufacturing. However, as shall soon be seen, this stereotype has its limitations and is not a universally applicable model of the global division of labor. It is also vital to note that, contrary to early, simplistic expectations that telecommunications would "eliminate space," rendering geography meaningless through the effortless conquest of distance, such systems in fact produce new rounds of unevenness, forming new geographies that are imposed upon the relics of the past (see Massey 1984). [end p. 16]

Telecommunications are one of the most dynamic sectors of the Dominican economy and are fundamental to the nation's recent attempts to diversify its economic base. The giant of Dominican telecommunications, overshadowing all competitors, is Codetel (Compañía Dominicana de Teléfonos). Originally a Canadian firm that produced telecommunications equipment, Codetel was bought by GTE in the 1970s and expanded into a multiservice information conglomerate regulated by the Dominican General Directorate for Telecommunications.<sup>2</sup> Today, Codetel employs 7,000 people and dominates more than 90 percent of the Dominican Republic's telecommunications market, including more than 500,000 telephone lines, forming a virtual monopoly comparable to ATT in the U.S. before deregulation in 1984. Universal telephone access, the policy goal in most nations (Newton 1991), is a stated objective of the Dominican government, although it has yet to be realized in many rural areas; indeed, most telecommunications facilities are highly concentrated in urban areas, particularly Santo Domingo.

Codetel has successively expanded and improved its operations in a series of steps that have given the Dominican Republic the most sophisticated telecommunications system in the Caribbean.<sup>3</sup> In 1981, it initiated direct international dialling, a phenomenon that has yet to diffuse to some rural areas and small towns, as well as toll-free "800" numbers, WATS lines, and high speed data transmission services. In 1985, it began to phase in digital switching equipment with the aim of replacing all of its analogue systems. The Dominican Republic is a member of the International Telecommunications Satellite Organization (Intelsat), and Codetel operates two commercial satellite earth stations (in Alameda, a suburb of Santo Domingo, and in Santiago, the Dominican Republic's second largest city). It has integrated 7,000 radio-cellular telephones into the national phone system, the only Latin American nation to do so, and possesses microwave networks to all neighboring nations except Cuba. Codetel also sells a variety of high value-added services such as electronic mail and databases, telex, remote terminals, facsimile services, Spanish-English translations, and leased lines. Additionally, Q-tel, a Codetel subsidiary, runs a factory that builds telephones in the Itabo Free Trade Zone, producing 50,000 monthly; the operation has attracted growing interest from U.S. firms seeking to offshore semi-skilled assembly functions to offshore sites.

Codetel serves as the Dominican Republic's primary conduit for international telecommunications traffic. A submarine telephone line extends to the Virgin Islands, and fiber optics cables in 1989 joined Santo Domingo to Puerto Rico and Jamaica (20 percent of which are owned by a competitor, All American Cable). It acts as the international telephone transit center for Haiti, the government of which pays Codetel a user fee. Codetel has established cooperative agreements with Sprint and MCI to gain direct access to the United States; the Dominican Republic is the sixth largest destination for international telephone calls emanating from the U.S., a reflection of the sizable numbers of Dominicans living in New York City and Miami. Similarly, Codetel has working agreements with Teleglobe to access Canada, and with a variety of other firms to gain direct access to Western Europe, East Asia, and Latin America. The Dominican Republic finds itself in the curious position of possessing excellent international ties and a limited domestic network, and well exemplifies Langdale's (1991, p. 196) comment that "a

problem for many Third World countries is that there is better telecommunications access from their major cities to New York and London than there is from these cities to rural villages only several hundred kilometers away."

Codetel faces two competitors in the Dominican Republic's telecommunications market, and its relations with these firms differ markedly. With the All American Cable and Radio Company it has established a cooperative agreement in which the latter is allowed comprehensive access to Codetel's telephone and fiber optic lines, paying Codetel seven percent of its net revenues in return.<sup>4</sup> However, with Codetel's other competitor, Tri-Com, privately owned by the powerful Pellerano family, a major legal dispute exists concerning the latter's demand that it have access to the Codetel network without paying user's fees, charging that Codetel enjoys a monopoly position and practices "unfair business practices." The dispute currently awaits arbitration in court. [end p. 17]

## COMPUTER SERVICES

Computer services comprise the core of new information service technologies and what Castells (1989) labels the hallmark of the "informational mode of production." Digitization proved to be the innovation that allowed the full force of the microelectronics revolution to unfold, generating new demands for the electronic processing of information in numerous fields. Computer services subsume a variety of functions, including computer design, installation, and maintenance, consulting, training, debugging, batch services, and the sale of computer software (Howells 1987). Each of these domains involves a wide variety of specialized producers and market niches, with a great diversity of software languages, operating systems, and interface protocols. Increasingly, as data have been converted from analogue to digital forms, computer services have merged with telecommunications (Hepworth 1990), becoming a tradeable commodity in their own right.

Within the computer services industry, sales of micro- and mini-computers have increased much more rapidly than mainframes, and sales of software (at least in the industrialized world) have generally increased more rapidly than hardware. While the production of computer equipment itself is highly oligopolized, with IBM by far the world's largest producer, the software is market generally much more competitively structured among numerous small firms, although certain giants such as Microsoft have begun to establish a considerable market share.

In the 1970s and 1980s, the computer services industry was a hopeful beacon in the otherwise de-industrialized landscapes of North America. Increasingly, however, it has become redistributed on a global basis (Dicken 1992). Although certain assembly functions within the sector have decentralized to Third World nations, primarily in East Asia, they remain highly concentrated within the industrialized world. Thus, users of computer equipment in the Dominican Republic, which lacks a domestic computer services industry, must import their hardware and virtually all software from abroad, a common result stemming from the growth of producer services in the Third World (Noyelle 1991).

The giant of Dominican computer sales is IBM, which came to the Dominican Republic in 1964 and today commands roughly 75 percent of the nation's computer equipment market, primarily mainframe-computers and personal computers. Thus, the Dominican computer hardware market is relatively oligopolized. IBM's sales in the Dominican Republic (\$14-17 million annually) have grown roughly 15 percent annually for the last decade, serving a large variety of clients.<sup>5</sup> The Santo Domingo office employs roughly 40 workers (a smaller one is located in Santiago), primarily university graduates with engineering degrees. Workers targeted for rapid career advancement are sent for further training in the U.S. IBM in the Dominican Republic engages in a complex, worldwide system of subcontracting with its subsidiaries, purchasing, for example, printers from Argentina, disk drives from Brazil, CPUs from the U.S. or Brazil, and software, written primarily in Canada, the U.S., and Denmark, through its distributor in Mexico (IBM, 1992). For electronic mail with the U.S., IBM leases a 56 kb fiber optic line and a private satellite system to relay messages to the U.S. network through an earth station in New Jersey.

IBM's principal competitors in the computer hardware market are Unisys, Motorola, Apple, Texas Instruments, and a series of East Asian clones. While IBM's managers in the Dominican Republic complained of paying stiff import taxes ranging up to 35 percent (arguing that smaller firms avoid these fines by undervaluing their imports, but that IBM was required to pay them to maintain its "good citizen" image),<sup>6</sup> its competitors commonly argued that Dominican government policy discriminated against smaller firms, both in the allocation of government contracts and by discouraging small firms from locating in Free Trade Zones.

In the markedly less oligopolized software market, numerous small vendors (generally less than 15 employees) vie for market share. Generally, such firms began as data entry companies in the early 1980s and, as other firms acquired the ability to perform this function in-house, switched to higher value added services such as consulting, repair, desktop publishing, and tailoring accounting and payroll programs to clients' specific needs.<sup>7</sup> On-line service is often provided through dedicated telephone lines, although several complained that Codetel service was expensive and slow to deal with repairs. [end p. 18]

A common characteristic of computer services in the Third World is the growth of a black market, as there is frequently little

regard for established conventions of copyright laws and intellectual property rights. Illegally distributed software in the Dominican Republic includes numerous versions of operating systems, word processing and graphics programs, and games. However, the wide prevalence of computer viruses has also served to limit the appeal of the black market in software.<sup>8</sup> Nonetheless, the ready availability of illegal software has dampened sales in that sector to the extent that, in contrast to the U.S., where software sales have significantly surpassed those of equipment, in the Dominican Republic sales of hardware have grown more rapidly.

A very important and exceptional case of Dominican computer services is Infotel (formerly Codetel Computer Graphics), a subsidiary of GTE and the telecommunications giant, Codetel (which own 90 and 10 percent of the firm, respectively). Located in a building that by itself comprises a Free Trade Zone in Itabo, a suburb of Santo Domingo, Infotel enjoys freedom from many of the import and export problems that other firms face, including duties and tax exemptions.<sup>9</sup> Managed by an American, Infotel performs a variety of computer related functions for both domestic and international clients, including compilation of telephone directories, photocomposition, data conversion, computerized, on-line sale of advertising images, and desktop publishing.<sup>10</sup> But Infotel's primary source of earnings is digitizing maps; indeed, it is one of the world's largest map-digitizing firms, employing about 350 workers, and claims to be the largest, most sophisticated such operation outside of the U.S.

Infotel's generation of computer maps involves a variety of steps. It prepares records for electronic entry (a step that comprises 75 percent of the total effort), "scrubbing" errors and inconsistencies in the data, then digitizes maps using several generations of Geographic Information Systems. Infotel serves a variety of domestic and foreign clients, including Dominican utilities and municipal governments, and the GTE telephone operating companies, for whom it is digitizing the entire series of U.S. Geological Survey maps. Currently Infotel is digitizing the entire Spanish telephone network. All of its international telecommunications linkages are handled through Codetel, which is part owner. Infotel is a profitable operation: profit rates generally range between 35 and 40 percent, which are 15 to 20 percent higher than in the U. S. Wages at Infotel typically are 20 percent less than for comparable jobs performed in the U. S., and roughly 70 percent of the employees have some proficiency in English. Thus, far from constituting simply low wage, low skilled operations (the commonly encountered image of the electronic sweatshop), the growth of information services in nations such as the Dominican Republic includes relatively high wage, highly skilled, high value added functions.

## **BACK OFFICES**

Back offices perform many routinized clerical functions such as entry of office records, telephone books, library catalogues, magazine subscriptions, payroll and billing data, medical and insurance records, bank checks, and airline tickets. Such functions involve unskilled or semi-skilled labor, primarily women, and frequently operate on a 24 hour per day basis. Back offices have few of the linkages with clients or suppliers associated with headquarters activities and require extensive computer facilities, reliable sources of electricity, and high capacity telecommunications lines.

Historically, back offices have located adjacent to headquarters activities in downtown areas to insure close management supervision and rapid return of information. Beginning in the late 1970s, however, with the flexibility offered by new telecommunications systems (particularly fiber optics and satellites), numerous back offices began to evacuate central city locations, fleeing their high rents and shortages of semi-skilled labor for the lower land costs and frequently better educated labor forces of the suburbs. Most back office relocations, therefore, have been to suburban areas (Moss and Dunau 1986; Nelson 1986). More recently, however, back offices have begun to relocate on a broader regional and international scale, a reflection of the degree to which many clerical functions have become footloose and susceptible to spatial variations in production costs. The expanding spatial scale in which back offices operate has led to the formation of the "global office."

Internationally, this trend has taken the form of the offshore office (Warf 1993). The primary motivation for offshore relocation is lower labor [end p. 19] costs, although other considerations include worker productivity, turnover, and benefits. Notably, many firms with offshore back offices are in industries facing strong competitive pressures to enhance productivity, including insurance, publishing, and aviation. Offshore back office operations remained insignificant until the 1980s, when new telecommunications technologies made possible greater locational flexibility just when the demand for clerical and information processing services grew rapidly. New fiber optics lines, for example, allowed large quantities of information to be transmitted quickly, securely, and virtually error-free. Inputs, usually documents or magnetic tapes, are sent by air to offshore processing facilities; after processing, generally within one week, the results are returned via air couriers, dedicated telephone line, satellite, or fiber optics. Offshore back offices have sprouted up rapidly in various parts of the world. The New York Life Insurance Company, for example, erected offices in Castle Island, Ireland (Lohr 1988).

Offshore back offices have become an increasingly important part of the Caribbean economy. Most such firms in the Caribbean have chosen Anglophonic nations, particularly Jamaica and Barbados, and the bulk of studies of information services in the Caribbean has focused exclusively on Commonwealth nations (e.g., Lyew-Ayee 1991). However, rising wage differentials and increasing locational flexibility have contributed to a rapidly changing pattern of back office employment among the Caribbean

islands.

The first, largest, and most aggressive firm in establishing Caribbean back offices has been American Airlines, which processes ticket coupons through its subsidiary, Caribbean Data Services (CDS), in Barbados, relaying the results via satellite to a data center in Tulsa, Oklahoma (Warf 1993). However, when CDS expanded its operations in the mid-1980s, it did so not in Barbados, where it had paid data entry workers \$2 to \$3 per hour, but in the Dominican Republic, where wages are roughly one-half as high.<sup>11</sup> CDS's Dominican office is located in the Free Trade Zone in San Isidro, a suburb of Santo Domingo. In addition to frequent flier coupons for American Airlines, the CDS office processes medical and dental insurance claims, credit card applications, retail sales inventories, market surveys, and name and address lists. CDS receives documents by air—the San Isidro FTZ (which also doubles as a teleport) is a short drive from the Santo Domingo airport and uses Codetel satellite and fiber optics lines to return files electronically to its clients. Turnaround times range from 12 to 72 hours. When the need arises, the Dominican office can switch work with its counterpart in Barbados during periods of excessive demand.

CDS offers a fascinating glimpse at the labor markets of the global back office. Its Dominican office began in 1987 with 12 employees, and today has 550. Although wages in CDS's Dominican office are lower than competing sites (\$160/month), they are high by Dominican standards. Further, such white collar jobs are located indoors, involve computers, and are relatively prestigious. CDS offers its workers four weeks of basic training in typing and data input, then selects candidates for more specialized positions through a series of competitive tests. Employees generally learn to process documents in English with a few months of experience. Errors are minimized through a dual entry system, and employees are offered incentives if they keep their individual error rates below 1.5 percent.

### **OBSTACLES FACING DOMINICAN INFORMATION SERVICES**

Information services in the Dominican Republic must overcome several important predicaments to operate successfully. Three of these—the lack of English, electrical failures, and government policy—are briefly noted in this section.

An important distinction that separates the Dominican Republic from its Anglophonic neighbors is language. Is the absence of English as a native language a significant handicap when competing in the global service economy? For several reasons the answer would appear to be no. First, most high to mid-level managers in Dominican firms are expected to learn English if they hope to advance their careers, and most become fluent to one degree or another (English is increasingly being taught in Dominican high schools).<sup>12</sup> English is an essential skill in information services; computer installation and repair manuals, for example, are almost exclusively written in English. However, it may also be noted that Dominican managers contacting [end p. 20] suppliers in cities such as Miami or Los Angeles can often simply use Spanish.<sup>13</sup>

A second problem confronted by many information firms in Third World nations is the lack of a reliable supply of electricity. In the Dominican Republic, frequent brownouts and blackouts preclude a stable electrical flow, a critical input for information services. Many service firms have responded to this predicament by installing their own generators, often coupled with UPS (Uninterrupted Power Systems) and backup/recovery software to minimize the loss of data in the event of a power failure.

A third problem concerned the difficulty in obtaining imports. Interviews with several vendors of computer equipment and software revealed numerous complaints about the high tariffs levied against imported hardware. Several commented acridly that the bribes necessary to ensure safe and timely passage through Dominican customs (whose agents exercise "discretionary valuation" over duties) frequently forced them both to demand high asking prices from their clients and to suffer considerable unpredictability in the delivered price of goods. Additionally, exchange rate fluctuations wreak havoc when prices are quoted in U.S. dollars but paid in Dominican pesos. Further, the notoriously slow and unreliable Dominican mail service necessitates the use of expensive private couriers such as American Express.

### **CONCLUDING COMMENTS**

The recent growth of information services in the Dominican Republic simultaneously constitutes a marked departure from the nation's traditional role as a producer of sugar and other agricultural products and continues the long standing story of foreign, particularly American, domination. Through aggressive government policy (e.g., the FTZs) and GTE's sizable investment in Codetel, the Dominican Republic has largely succeeded in making the nation a laboratory in which information services play a key role in economic development. Such activities will likely never form a viable substitute for traditional economic activity, nor is it probable that they will significantly diminish existing social and spatial disparities within the Dominican Republic. Nonetheless, their growth and importance reflect the new international division of labor that began to unfold during the 1980s, which has played such an important role in late twentieth century Caribbean development (Pantin 1987). However, this pattern is more complex than the simple dispersal of low value-added service and manufacturing functions to Third World nations with abundant supplies of cheap labor, a frequent theme of the development literature.

The growth of information services in this context yields some surprises to those who seek to apply the lessons of other nations

to the Dominican Republic or hope to generalize from its experience elsewhere. While some activities (e.g., back offices) conform to the traditional model of economic development conceptualized on the basis of manufacturing, in which unskilled, labor intensive functions seek out low wage sites, others, notably Infotel's map digitizing operation, indicate that the internationalization of information services is considerably more complex than the simple offshoring of manufacturing activities to low wage nations. Indeed, there is no reason to doubt why future competition in the global service economy cannot extend to include highly skilled, high value added services such as computer programming and engineering.

The consequences of the growth of producer services in the Third World include their impacts on employment, technology transfer, inter-industry linkages, and balance of payments (Noyelle 1991). The labor markets generated by the growth of telecommunications, computer services and back offices in the Dominican Republic range from semi-skilled data input positions to highly skilled employment in telecommunications and computer services (e.g., engineering). By importing electronic equipment necessary for the performance of these functions, such firms undoubtedly accelerate the rate of technological change there as well but contribute to the nation's trade deficit. However, most service firms have relatively few local linkages other than services (Noyelle 1991), an observation clearly evident in this case. Such issues will increase in significance as the Dominican Republic seeks out markets in other internationally traded services, such as insurance (Rodriguez 1992).

The structure, behavior, and impacts of information services in the Dominican Republic must hence be viewed as the intersection of the universal process by which firms continually seek out low cost [end p. 21] locations on a worldwide basis and the idiosyncratic circumstances that reflect that nation's historical experience. In this respect, it cannot simply be the case that "the local reflects the global" for the Dominican Republic possesses a complex of information services not readily found in other Third World contexts. Nor is the global a simple aggregate reflection of the local: unlike, say, the inspiring examples of East Asian nations, the experience of the Dominican Republic holds little generalizability for other nations, typified as it is by a unique set of historical characteristics, labor force, infrastructure, and government policy. This observation does not necessarily entail an end to development theory broadly conceived; it does call for analyses sensitive to the individual circumstances of particular places (Lawson 1992).

## NOTES

<sup>1</sup>Rafael Núñez, Communications Director of the Dominican Republic, personal interview, June, 1992, Santo Domingo.

<sup>2</sup> Angela Zanglul, Codetel Director of Communications, personal interview, June, 1992, Santo Domingo

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> Oscar Caria, IBM-DR Personnel Director, personal interview, June, 1992, Santo Domingo.

<sup>6</sup> Ibid.

<sup>7</sup> Gustavo Ricart, owner and CEO of Análisis, a small computer software firm in Santo Domingo, personal interview, June, 1992.

<sup>8</sup> Ibid.

<sup>9</sup> William Abston, Director of Infotel, personal interview, June 1992, Santo Domingo.

<sup>10</sup> Ibid.

<sup>11</sup> Jaime Ortíz, CDS Dominican Republic General Manager, personal interview, June 1992, Santo Domingo.

<sup>12</sup> Ms Angela Zanglul, Codetel Director of Communications, personal interview, June, 1992, Santo Domingo.

<sup>13</sup> Oscar Caria, IBM-DR Personnel Director, personal interview, June, 1992, Santo Domingo.

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## RESUMEN

Durante las últimas dos décadas se ha observado un gran crecimiento a nivel mundial en los servicios de información como resultado de los avances en la microelectrónica y la unión de las tecnologías de computación y telecomunicaciones. Recientemente, el gobierno Dominicano ha fomentado el crecimiento de estas actividades en su esfuerzo de reducir su dependencia en el sector agrícola, principalmente el azúcar, como la mayor fuente de ingresos provenientes del exterior. Este trabajo se basa en entrevistas llevadas a cabo en La República Dominicana y examina tres industrias de servicios de información de ese país: telecomunicaciones, servicios de cómputo, y oficinas descentralizadas ("back offices"). Se examinan sus vínculos geográficos e internacionales, sus estructuras de mercado y sus prácticas en el ámbito laboral. Se identifican obstáculos para su crecimiento y se evalúa el grado hasta el cual puedan convertirse en sustitutos de formas tradicionales de crecimiento económico. [end p. 23]