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Brazilian Software Law: Building a Domestic Industry While Opening a Protected Market

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BRAZILIAN SOFTWARE LAW: BUILDING A DOMESTIC INDUSTRY WHILE OPENING A PROTECTED MARKET

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I. INTRODUCTION

The stakes are high in the struggle for control of Brazil's computer industry. Brazil, the world's seventh largest computer market and eighth largest economy outside the former communist bloc,[1] generates approximately $3 billion in sales per year.[2]

After World War II, Brazil sought to enhance the development of its economy and technological base by adopting protectionist, import substitution economic policies.[3] From the late 1970s,[4] Brazil actively restricted foreign participation in informatics—the Brazilian term for computers and high-technology electronics.[5] Brazil attempted to spur domestic development by limiting to Brazilian-owned firms the right to manufacture and sell certain high-technology products.[6] This strategy is known as the "market reserve." In 1984, the Brazilian government formalized and extended the market reserve with the passage of an Informatics Law.[7] Software became subject to regulation as part of the market reserve and as a result, became very difficult to import.

Brazil achieved only limited success in building its domestic

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1. *Brazil—Computers and Peripherals*, 1992 National Trade Data Bank: Market Reports, Mar. 6, 1992, *available in* LEXIS, NSAMER Library, Brazil File.

2. *Id.*

3. Michael Schwimmer, *A Brave New World for Informatics in Brazil*, COMPUTER LAW., Dec. 1990, at 24 [hereinafter Schwimmer, *Brave New World*].

4. Anne Piorkowski, *Brazilian Computer Import Restrictions: Technological Independence and Commercial Reality*, 17 LAW & POL'Y INT'L BUS. 619, 619 (1985); *see also infra* notes 31-37 and accompanying text.

5. The Portuguese word *informática* denotes the gamut of high technology and information technology, including telecommunications, computer hardware, computer software, and data processing. *See* Mary S. White, *Navigating Unchartered Waters: The Opening of Brazil's Software Market to Foreign Enterprise*, 25 STAN. J. INT'L L. 575, 575 n.1 (1989).

6. *See Brazil's Informatics Policy Draws Fire from U.S. Industry*, 33 Pat. Trademark & Copyright J. (BNA) 531, 531 (Mar. 26, 1987) [hereinafter *Brazil's Informatics Policy*].

7. Law No. 7,232 of Oct. 29, 1984, art. 8(VI), 48 LEX COLETÂNEA DE LEGISLAÇÃO E JURISPRUDÊNCIA [LEX] 534, 537 (1984) [hereinafter 1984 Informatics Law], *translated in* KEITH S. ROSENN, FOREIGN INVESTMENT IN BRAZIL app. X at 347, 351-52 (1991).

software industry under this import-limiting policy. Although domestic firms developed technical expertise and were profitable for several years, the worldwide rapid pace of technical innovation in the computer industry, combined with diseconomies of scale, impeded the effectiveness of this market reserve system.[8]

By the late 1980s, foreign technology, and not local technology, evolved as the industry standard in Brazil. Because the market reserve was still in effect at this time,[9] those Brazilians who wanted foreign technology had to illicitly obtain it, through either smuggling, unlicensed appropriation, or gray market transactions.[10] Both foreign firms and domestic users were discontent. Foreign firms wanted an open market for their products, and users rebelled against the high cost and inconvenience of obtaining software.[11]

Brazilian policymakers wanted a new regime that would balance technological realities, user demands, and foreign pressures with the need to create a sophisticated domestic computer industry that could "add value" to foreign technology. Policymakers were further concerned with cushioning the domestic computer industry from the impact of a restructuring. The result was an industry that openly used foreign technology, but also included measures to insure that domestic research, consulting, and development activities flourished.[12] Brazil first implemented this strategy in its software industry under the 1987 Software Law.[13] While the 1984 Informatics Law dealt with computers generally, it did not regulate software in detail.[14]

Part II of this article provides a brief background of the early development of Brazil's informatics policy and the application of this policy to imported software. It analyzes how Brazil treated software prior to the 1987 Software Law, and it provides a brief study of Brazil's denial of Microsoft's request to license MS-DOS

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8. *See* discussion *infra* notes 253-56.

9. On February 27, 1991, Brazil instituted an industrial competitiveness program designed to modernize Brazil's industries through investment in the industrial sector. As part of this program, Brazil's market reserve for software ended. *Brazilian President Proposes Program to Modernize Industries, Investment*, 8 Int'l Trade Rep. (BNA) 363 (Mar. 6, 1991) [hereinafter *Brazilian President Proposes*].

10. *See infra* part IV.A.1.

11. *See, e.g.*, White, *supra* note 5, at 582 n.29.

12. *See infra* notes 226, 236.

13. Law No. 7,646 of December 18, 1987, 51 LEX 904 [hereinafter 1987 Software Law], *translated in* ROSENN, *supra* note 7, app. XI at 361.

14. DAVID BENDER, COMPUTER LAW: SOFTWARE PROTECTION § 3B.04, at 3 (1990).

and the threat of U.S. trade sanctions against Brazil that followed. Part III describes the 1987 Software Law and analyzes its application over the last five years. Part III also addresses proposed amendments to the 1987 Software Law now awaiting action before Brazil's Congress, and it concludes that the fears of software vendors, U.S. government officials, and legal commentators that the 1987 Software Law would be a protectionist, nationalistic, and bureaucratic nightmare for foreign firms were exaggerated. Part III argues that the law in fact opened the market and protected the interests of foreign software firms. The 1987 Software Law's copyright section[15] has functioned smoothly. Furthermore, under the law's marketing provisions,[16] after some conflict, Brazil has allowed the marketing of virtually every program offered for posting.

Part IV focuses on the copyright and market reserve provisions of the 1987 Software Law, as well as on the proposed amendment to eliminate the similarity and posting requirements. Part IV also addresses some of the reasons for the 1987 Software Law's success and the implications of this success for the liberalization of Brazil's strict limitations on the importation of hardware and its local production requirements. Finally, Part V concludes that as a result of the 1987 Software Law, Brazil's software industry is more open and stable, and foreign vendors have a greater opportunity to market their products.

II. BACKGROUND

A. *Development of Brazil's Informatics Policy*

Brazil's advocacy of local development and control of the high-technology industries through market protection historically has had a broad base of support. Brazil's informatics policy is consistent with legislation enacted since World War II to independently develop Brazil's strategic industries without the control of more developed countries. In the 1950s, Brazil granted the state a monopoly over the exploitation and refining of petroleum.[17] Petrobrás, the state oil company, developed under the banner "The

15. 1987 Software Law, *supra* note 13, arts. 3-7, 51 LEX at 905-06, *translated in* ROSENN, *supra* note 7, app. XI at 361-63.

16. 1987 Software Law, *supra* note 13, arts. 20-29, 51 LEX at 908-10, *translated in* ROSENN, *supra* note 7, app. XI at 365-66.

17. PETER EVANS, DEPENDENT DEVELOPMENT: THE ALLIANCE OF MULTINATIONAL, STATE, AND LOCAL CAPITAL IN BRAZIL 91 (1979).

Oil is Ours!"[18] In the late 1950s and early 1960s, Brazil nationalized foreign utility companies,[19] which expanded rapidly under state control.[20] In the late 1960s and early 1970s, Brazil's "economic miracle" encouraged import substitution by imposing high tariffs on imports.[21] Support for Brazil's control over its economic destiny continued and even grew as the boom of the "miracle" years faded into the energy and debt crises of the 1970s and 1980s, symbols of the continuation of foreign dominance.[22]

Contrary to what might be expected, liberals were not the only ones expressing such nationalistic sentiment. Although military governments and conservative political groups generally supported foreign investment and foreign enterprise,[23] they also favored national independence and a strong government involvement in strategic sectors like oil,[24] utilities,[25] mining,[26] and aircraft produc-

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18. *Id.* at 90-92. THOMAS E. SKIDMORE, POLITICS IN BRAZIL, 1930-1964: AN EXPERIMENT IN DEMOCRACY 97-99 (1967) [hereinafter SKIDMORE, POLITICS IN BRAZIL]. After World War II and again during the 1950s and early 1960s, there were intense debates over controlling the key sectors of the Brazilian economy. Economic liberals, mostly on the right of the political spectrum, favored private solutions, including foreign ownership and investment. The political left favored statist solutions, including forming government corporations and nationalizing foreign investments. In the oil industry, a coalition in favor of state investment and ultimately the creation of a state monopoly, Petrobrás, coalesced after foreign firms failed to respond to Brazil's request for bids on long-term oil supply contracts and contracts for the expansion of Brazil's refinery capacity. EVANS, *supra* note 17, at 90-92.

19. EVANS, *supra* note 17, at 92-93; SKIDMORE, POLITICS IN BRAZIL, *supra* note 18, at 132, 244-45. When foreign concession holders were unwilling to make the massive investments necessary to expand Brazil's generating utilities, the state expropriated the foreign-owned companies. EVANS, *supra* note 17, at 90-92.

20. EVANS, *supra* note 17, at 218.

21. *Id.* at 67-74.

22. Brazil's energy dependence had economic and political ramifications. Economically, Brazil's need to import expensive oil fuelled its foreign debt. Politically, problems arose when the United States attempted to limit Brazil's efforts to create a nuclear power industry. Though the U.S. government was concerned that Brazil would use the civilian program as a step toward nuclear weapons development, Brazil viewed the program as a step in achieving energy independence. THOMAS E. SKIDMORE, THE POLITICS OF MILITARY RULE IN BRAZIL, 1964-85, at 192-97 (1988) [hereinafter SKIDMORE, POLITICS OF MILITARY RULE]. Brazil still has the world's largest foreign debt. Balancing debt repayment with domestic needs is a constant source of debate for Brazil. *See id.* at 274-310 (discussing how these tensions played out in the years immediately after the return to democratic rule in 1985).

23. *Id.* at 216-17.

24. *See supra* note 18 and accompanying text.

25. *See supra* note 19 and accompanying text.

26. EVANS, *supra* note 17, at 219, 223, 249-54. The Brazilian company, Companhia do Vale do Rio Doce, is the largest exporter of iron ore in the world. It has also branched into exporting other minerals (including aluminum) and natural resources (including wood pulp). *Id.* at 250.

tion.[27] During the twenty years of military government after 1964, policymakers wanted to guarantee themselves some degree of autonomy from overseas suppliers.[28] Control over modern weapons technology often created low-level conflict between Brazil and its suppliers, especially the United States.[29] Brazilian informatics professionals trace the initiation of the market reserve of high technology products to Brazil's purchase of attack boats with computerized guidance systems designed in the 1970s by the British defense contractor Ferranti. When the British government vetoed the Brazilian Navy's request to modify the systems and the Navy was unable to find a Brazilian contractor that could duplicate or modify the systems, the military began to insist upon protectionist measures similar to the market reserve system.[30]

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27. *Id.* at 219, 326. Embraer, a successful exporter, produces light aircraft, including the Tucano military pilot trainer. Embraer is a source of national pride, especially in military circles. Because of its strong national identity, the United States chose Embraer as a potential target for retaliatory action under section 301. For a discussion of the section 301 investigatory action, see *infra* notes 63-64 and accompanying text.

28. The European embargo on sales of computer parts to Argentina during the Falklands War made the Brazilian military leaders cautious. *Brazil Says "No Thanks" to Foreign Computers*, INT'L MGMT., Sept. 1984, at 83, 87. Products like aircraft, jet engines, sophisticated military equipment, and computers could similarly be embargoed by the United States or by European nations.

29. For example, concerns over nuclear proliferation and Brazil's human rights record led the United States to interfere in Brazil's nuclear policy. *See supra* note 22. The U.S. Congress explicitly linked human rights and military assistance by requiring the State Department to publish human rights evaluations of all countries receiving military assistance. SKIDMORE, POLITICS OF MILITARY RULE, *supra* note 22, at 196. An unfavorable report in 1977 caused Brazil to break off military aid agreements. *Id.* at 197.

30. Interview with Eduardo Carvalho, Managing Director of MultiSoluções Informática, in São Paulo, Braz. (Aug. 1991); interview with Fernando José Fernandes, Jr., Attorney with Fernando José Fernandes, Advogados, in São Paulo, Braz. (Aug. 1991) [hereinafter São Paulo interview with Fernando José Fernandes, Jr.]; interview with Georges Fischer, Attorney with Fischer & Forster, in São Paulo, Braz. (Aug. 1991); *see also* Jackson Diehl, *Competing with the Giants*, WASH. POST, July 13, 1983, at A1.

MultiSoluções, which Eduardo Carvalho directs, had modest beginnings as a distributor of foreign graphics software. In 1990, it had sales of over $2 million and had approximately one hundred employees. It distributes foreign-made printers, plans and installs networks and complex systems for businesses, operates a graphics service bureau, and is a value-adding reseller of Apple computers and peripherals. The company also distributes software including products by Microsoft, Aldus, Bitstream, HDC, Micrografix, and Haute Tension. Before founding Multisoluções, Carvalho worked as a programmer for several major firms and also spent a year working in the United States with Microsoft, customizing products for export to Brazil.

Fernandes and Fischer are leading software attorneys in Brazil. Fernando José Fernandes is a Director of the Brazilian Association of Informatics Law (*Associação Brasileiro de Direito de Informatica*, ABDI). Before starting his own practice, Fernandes was an attorney with firms including Itautec, DuPont of Brazil, and VASP, then Brazil's largest domestic airline. He represents a number of U.S. and Brazilian informatics companies, including

Beginning in the mid-1970s, the Brazilian government denied foreign manufacturers permission to build minicomputers in Brazil.[31] In 1977, Brazil officially restricted the manufacture and sale of both minicomputers and personal computers to national firms.[32] The 1984 Informatics Law and subsequent administrative regulations allocated slices of the market to domestic firms. Although the regulations allowed these firms to import foreign technology initially, they also required the firms to develop 100% national hardware and operating systems by 1983.[33]

The one significant area where the government continues to allow foreign corporations to manufacture is in the area of mainframes. IBM, for example, continues to produce and sell mainframe computers in Brazil,[34] but most other foreign firms in this field have either left the country, usually selling-out to national firms at a loss, or have managed to stay in Brazil by shifting production to lower technology goods.[35]

ADP, the international payroll processing firm. Georges Fischer is President of the ABDI and has represented numerous international informatics firms, including Arthur Andersen, AT&T International, Claris, Digital Equipment Corporation, General Electric, Honeywell, Lotus, Microsoft, NCR, Olivetti, Price Waterhouse, Prime Computer, Sprint, Texas Instrument, and WordPerfect.

31. In 1976, the Brazilian government prohibited IBM from manufacturing a minicomputer, which ultimately the company built in Japan and marketed as the Model 36. *O Lixo da Reserva de Mercado* [*The Trash of the Market Reserve*], VEJA, June 19, 1991, at 36, 37 (São Paulo) [hereinafter *The Trash of the Market Reserve*]. Later examples of foreign computer ventures that the government discouraged or prohibited include Hewlett-Packard's plans to produce minicomputers (which were ultimately produced in Mexico) and NCR's efforts to upgrade the electronic components of its cash registers. *Id.* In 1983, Brazil forced Philco, a consumer electronics subsidiary of Ford Motor company, to sell off a semi-conductor plant at a significant loss. Piorkowski, *supra* note 4, at 635-36. Similarly, the government required Racal Milgo, Inc., to sell off its minority interest in Brazil's largest modem manufacturer. *Id.* at 636.

32. *See* David Vidal, *Brazil Declares Computer Independence*, N.Y. TIMES, Feb. 19, 1978, § 3, at 3. The 1984 Informatics Law codified these administrative restrictions. 1984 Informatics Law, *supra* note 7, art. 12, 48 LEX at 538, *translated in* ROSENN, *supra* note 7, app. X at 353.

The 1984 Informatics Law defines national firms as those whose decision-making and technological control is held permanently, exclusively, and unconditionally by persons residing and domiciled in Brazil and at least 70% of the company's capital and voting stock is held and effectively controlled by persons residing and domiciled in Brazil. *Id.*

33. Piorkowski, *supra* note 4, at 621 n.14.

34. In 1989, IBM had sales of over $1 billion in Brazil. *How Business Will Cash in on Liberalization of Brazil Informatics Law*, GLOBAL FIN. MARKETS, May 9, 1991, *available in* Westlaw, BUS-INTL Database [hereinafter *Liberalization of Brazil Informatics Law*]. In 1991, its sales totalled $1.5 billion. *Brazil—Informatics Market Profile*, 1992 National Trade Data Bank: Market Reports, Aug. 18, 1992, *available in* LEXIS, NSAMER Library, Brazil File.

35. Piorkowski, *supra* note 4, at 635-36; *The Trash of the Market Reserve*, *supra* note

The Brazilian government built a substantial apparatus to regulate informatics. In 1979, the government created[36] the Special Informatics Secretariat (SEI).[37] Between 1979 and 1984, the SEI had policy-making authority, and through the 1980s, it performed the day-to-day supervision of informatics, earning a reputation as an extremely aggressive advocate of developing national technology.[38] After the enactment of the 1984 Informatics Law,[39] the National Informatics and Automation Council (CONIN)[40] became the key policy-making body for informatics, and thus, it directs the activities of the SEI.[41] The National Institute for Industrial Property (INPI)[42] approves all technology transfer agreements in the informatics area. The Foreign Commerce Board of the Bank of Brazil (CACEX),[43] also peripherally involved in informatics, authorizes the release of foreign exchange payments.

31, at 37.

36. Decree No. 84,067 of Oct. 8, 1979, 43 LEX 780 (1979). The SEI succeeded the Commission for the Coordination of Electronic Processing activities (CAPRE). *Id.*; *see* Leigh E. Thomas, Comment, *Brazil's Informatics Bargaining Chip: Playing the Third-World Card*, 19 U. MIAMI INTER-AM. L. REV. 413, 420 (1987-88). Though SEI and CAPRE have similar objectives, CAPRE is more limited in its administrative authority. *Id.* at 420 n.37.

37. The Brazilian title is *Secretaria Especial de Informática.* The SEI is Brazil's "watchdog agency," Thomas, *supra* note 36, at 420, and was headed by Army and Navy engineers to administer the military's informatics policy. Piorkowski, *supra* note 4, at 621-22.

38. Criticism of the SEI is almost universal among informatics professionals. *See, e.g.*, *The Trash of the Market Reserve*, *supra* note 31, at 40 (comparing the SEI to the Gestapo); *Brazil Approves Joint Venture Allowing IBM to Import First Foreign Personal Computers*, Int'l Trade Daily (BNA), Feb. 7, 1991, *available in* LEXIS, BNA Library, BNA-ITD File (SEI "largely reflected nationalistic concerns and supported government measures to protect local companies").

In late 1990, the Brazilian government reduced the stature of the SEI from a secretariat to a department, and it is now known as DEPIN, Department of Informatics and Automation Policy. Interview with Fernando José Fernandes, Jr., Attorney with Fernando José Fernandes, Advogados, in Boston, Mass. (Nov. 8, 1992) [hereinafter Boston interview with Fernando José Fernandes, Jr.]; Georges Charles Fischer, *Derradeiro Tributo ao Passado [Final Tribute to the Past]*, O ESTADO DE SÃO PAULO, Oct. 16, 1990; *Brazil—Computer Software Market*, 1992 National Trade Data Bank: Market Reports, Mar. 31, 1992, *available in* LEXIS, NSAMER Library, Brazil File.

39. 1984 Informatics Law, *supra* note 7, art. 8(VI), 48 LEX at 537, *translated in* ROSENN, *supra* note 7, app. X at 351-52.

40. The Brazilian title is *Conselho Nacional de Informática e Automação.*

41. 1984 Informatics Law, *supra* note 7, arts. 1, 6-8, 48 LEX at 534, 536-37, *translated in* ROSENN, *supra* note 7, app. X at 347, 349-52.

42. The Brazilian title is *Instituto Nacional de Propriedade Industrial.* For a helpful introduction to the function and purpose of INPI and the Carteira de Comércio Exterior (CACEX), see Keith S. Rosenn, *Regulation of Foreign Investment in Brazil: A Critical Analysis*, 15 LAW. AM. 307 (1983).

43. The Brazilian title is *Carteira de Comércio Exterior.*

The 1984 Informatics Law codified Brazil's informatics policy.[44] The law established CONIN as the policy-making authority in informatics, and required it to report directly to the President of the Republic.[45] CONIN's functions also include directing the SEI,[46] coordinating the efforts of other government agencies involved in informatics,[47] and creating national informatics plans.[48] CONIN has wielded enormous power since its inception because the Informatics Law gave the organization great discretion in controlling market entry, regulating the entry of foreign firms,[49] and disbursing tax concessions and research and development funds.[50]

The 1984 Informatics Law created an eight year market reserve for national firms.[51] The law permitted only firms with capital, technology, and ownership under Brazilian control to produce informatics goods.[52] The law additionally limited hardware production to a few firms in each market segment.[53] Foreign firms could market products in Brazil, but only with CONIN's approval and only where no similar national product existed; even then, the foreign firms had to undertake research and development activity in Brazil, and they had to export some of their production.[54]

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44. 1984 Informatics Law, *supra* note 7, 48 LEX at 534, *translated in* ROSENN, *supra* note 7, app. X at 347.

45. *Id.* arts. 5-7, 48 LEX at 536-37, *translated in* ROSENN, *supra* note 7, app. X at 349-51.

46. *Id.* art. 8, 48 LEX at 537, *translated in* ROSENN, *supra* note 7, app. X at 351-52.

47. *Id.* art. 7(III-VI), 48 LEX at 536-37, *translated in* ROSENN, *supra* note 7, app. X at 350.

48. *Id.* art. 7(II), 48 LEX at 536, *translated in* ROSENN, *supra* note 7, app. X at 350.

49. *Id.* arts. 12, 22, 48 LEX at 538, 540-41, *translated in* ROSENN, *supra* note 7, app. X at 353, 356.

50. *Id.* arts. 7(VI, XVI), 13-17, 21, 31-32, 35, 48 LEX at 536-37, 539-40, 542-43, *translated in* ROSENN, *supra* note 7, app. X at 350-51, 353-55, 358-59.

51. *Id.* arts. 12, 22, 48 LEX at 538, 540-41, *translated in* ROSENN, *supra* note 7, app. X at 353, 356.

52. *Id.*

53. In some areas, like in the manufacturing of PCs, the plans were revised to allow other entrants.

54. 1984 Informatics Law, *supra* note 7, art. 22(I), 48 LEX at 540, *translated in* ROSENN, *supra* note 7, app. X at 356. A number of firms, most notably IBM, have done this successfully. *See supra* note 34. Brazilian informatics industry executives give IBM high praise for its business savvy and its ability to "operate like a national company." Interview with Eduardo Carvalho, *supra* note 30; interview with Antonio Lapa Silveira, Managing Director of MultiSoluções Informática, in São Paulo, Braz. (Aug. 1991). For information about Carvalho and MultiSoluções, see *supra* note 30. Before founding MultiSoluções, Lapa developed mainframe programs for VASP, Brazil's largest domestic airline, and PC programs for Compucenter, a large software distributor. For a brief profile of Compucenter, see *infra* note 227.

B. Regulation and Marketing of Software Before the 1987 Software Law

Until the passage of the 1987 Software Law, Brazil did not explicitly provide copyright protection to software.[55] Brazil treated licensing contracts as technology transfer agreements under its Industrial Property Code.[56] Many of the terms required under the Code were unpalatable to foreign software firms. For example, the SEI and the INPI had to review the contracts, the initial registration period was only for two years, and the registration renewal process was unclear. Additionally, payments to the licensor were limited to 5% of the net price of each unit sold. Licensing agreements could not limit the right of Brazilian firms to improve or modify the software, nor could they prohibit Brazilian firms from reselling the product in Brazil or overseas.[57] Further, in many cases the producing firm had to deposit the source code[58] with the licensee.[59]

Because of the Code's harshness, purchasers and producers engaged in a number of practices to circumvent the law. For example, Brazilian subsidiaries of foreign firms received software directly from their parent companies, and therefore could avoid application of the Code because such a transfer was not a purchase.[60] Further, because the government did not require authorization for copyright payments for books distributed in Brazil, many companies received software under the guise of purchasing manuals.[61] Other firms smuggled overseas software into the country or purchased unauthorized copies.[62]

Eventually, the pressure to create a more viable regime for protecting the rights of software authors increased. Specifically,

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55. *See* Law No. 5,772 of Dec. 21, 1971, 35 LEX 1740 (1971) [hereinafter 1971 Industrial Property Code].

56. *Id.*

57. *Id.* art. 29, 35 LEX at 1745; *see also* Schwimmer, *Brave New World*, *supra* note 3, at 27.

58. The source code contains the program as written in any of several programming languages. The source code is then converted into machine langauge, also known as object code, which the computer can understand. The source code reveals more of the logic of the programmer than does the object code. Thus, authors are reluctant to reveal the source code because another programmer could easily duplicate the function of the software without actually copying it line by line. White, *supra* note 5, at 583.

59. *Id.*

60. *Id.* at 582 n.29.

61. *Id.*

62. *See, e.g.*, *id.* at 588-89.

the rigors of the technology transfer regime and the inconvenience of circumventing the requirements made foreign firms reluctant to market software in Brazil. Even firms that circumvented these requirements did not want to place long-term reliance on measures like smuggling and characterizing the purchase as one for manuals rather than software. Both foreign software suppliers and Brazilian software users argued for fewer restrictions on the importation of software. Additionally, concerns in the United States over inadequate intellectual property protection for software prompted the U.S. Trade Representative to initiate a section 301[63] investigatory action against Brazil in September 1985.[64]

On a more general, worldwide level, there was much confusion in the mid-1980s over which regime was the most appropriate intellectual property protection for software—patent, copyright, or industrial property laws. While the consensus favored copyright protection, Brazil was one of a number of countries in the early 1980s to have reservations about making software subject to copyright.[65] Aside from the proposals of developing countries for a "new information order"[66] and aside from the malign neglect of countries where software piracy was an important industry, developed countries, such as Japan, France, and Canada, seriously considered proposals that would limit the protection of software to much shorter periods than for other copyrighted materials.[67] Developed countries also considered proposals that required the dis-

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63. 1974 Trade Act § 301, 19 U.S.C. § 2411 (1982).

64. White, *supra* note 5, at 584-86. Section 301 of the 1974 Trade Act allows the United States Trade Representative (USTR) to investigate and attempt to resolve difficulties with protective trade practices of other countries. 1974 Trade Act § 301, 19 U.S.C. § 2411 (1982). Between 1985 and 1989 the USTR investigated Brazil's informatics policy. For a thorough description of the section 301 investigation from its inception through the passage of the 1987 Software Law, see White, *supra* note 5, at 584-86; *see also* M. Jean Anderson et al., *Intellectual Property Protection in the Americas: The Barriers Are Being Removed*, J. PROPRIETARY RTS., Apr. 1992, at 2, 7.

Section 301 proceedings give U.S. businesses and interest groups with complaints about protectionist regulations a sympathetic forum for aggressively pursuing their complaints. These actions are effective because most trading nations fear U.S. trade sanctions.

65. *See* Raymond T. Nimmer & Patricia Krauthaus, *Classification of Computer Software for Legal Protection: International Perspectives*, 21 INT'L LAW. 733, 737-38 (1987); *see also* Jean-François Bellis & Peter L'Ecluse, *The Meaning of Competition Law for Information Technology in Europe*, *in* THE LAW OF INFORMATION TECHNOLOGY IN EUROPE 1992: A COMPARISON WITH THE USA 69 (Alfred P. Meijboom & Corien Prins eds., 1991).

66. Joel R. Reidenberg, Note, *U.S. Software Protection: Problems of Trade Secret Estoppel Under International and Brazilian Technology Transfer Regimes*, 23 COLUM. J. TRANSNAT'L L. 679 (1985).

67. Nimmer & Krauthaus, *supra* note 65, at 751-53.

closure of an outline of how the program functioned and that compelled the licensing of the software.[68] Although these countries ultimately rejected most of these provisions,[69] they illustrate some of the inherent problems associated with trying to protect both authors and users of software.

The 1984 Informatics Law indicated that software and its documentation would be the subject of a separate law.[70] Shortly after the passage of the 1984 Informatics Law, the lame duck military government proposed a software law with a ten year protection period and mandatory disclosure of the source code.[71] The proposal, however, languished in the Brazilian Congress.[72]

In May 1986, the Supreme Court of São Paulo, the leading state in the Brazilian economy, held that Brazilian copyright law applied to software.[73] Later that year, CONIN issued an administrative opinion protecting the rights of software authors under copyright law.[74]

In December 1986, Brazilian President José Sarney presented Congress with a draft software law extending copyright protection to software, but restricting the marketing of foreign software.[75] The draft law required all software to be sold through Brazilian distributors and limited the sale of foreign software to situations where there was no Brazilian equivalent. The proposal of the bill and its progress through Congress intertwined with: 1) the government's review of several Brazilian personal computer (PC) manufacturers' requests to license MS-DOS, Microsoft's personal computer operating system; and 2) pressure from the U.S. Trade

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68. *Id.*

69. *Id.* The most notable exception is France's twenty-five year limit on copyright protection for software. *Id.* The French limit is found in Law No. 85-660 of July 3, 1985, La Semaine Juridique (Juris-Classeur Périodique) [J.C.P.] III, No. 57,400 (1985) [hereinafter French Copyright Law].

70. 1984 Informatics Law, *supra* note 7, art. 43, 48 LEX at 543, *translated in* ROSENN, *supra* note 7, app. X at 360.

71. Piorkowski, *supra* note 4, at 629 n.69; *see also* Michael W. Miller, *U.S. Software Firms Try to Protect Big American Share of World Market*, WALL ST. J., Apr. 18, 1985, at 34 [hereinafter *U.S. Software Firms*].

72. Piorkowski, *supra* note 4, at 629 n.69; *U.S. Software Firms*, *supra* note 71, at 34.

73. Judgment of May 27, 1986, TJSP, No. 68-945-1 (Braz.). Although the court found that copyright law applied to software, it distinguished the particular facts of the case at hand, deciding that ROM was hardware. *See* White, *supra* note 5, at 585 n.41; *see also* Michael S. Keplinger, *International Protection for Computer Programs*, 4 SOFTWARE L.J. 15, 21-23 (1990).

74. *See* White, *supra* note 5, at 586 n.43.

75. Draft Law No. 8,551 of Dec. 9, 1986 (on file with author).

Representative via the section 301 trade investigation.

President Sarney presented Congress with the draft software law shortly before a review deadline on the section 301 complaint of the U.S. Trade Representative. The United States postponed retaliatory action for six months based on the copyright protection offered by the bill.[76] One week before the six month deadline, the Chamber of Deputies approved the bill and forwarded it to the Senate.[77] Consequently, action on the relevant part of the section 301 complaint was again put on hold.[78]

C. The Microsoft MS-DOS Case and Passage of the 1987 Software Law

On September 22, 1987, the SEI, in a decision that jarred foreign software vendors, refused MS-DOS's licensing request, basing its decision on the rule that limits the licensing of foreign products to those situations where no similar Brazilian products exist.[79] While the SEI's refusal to license MS-DOS is not representative of its later application of the rule, the refusal reveals the conflicts in the area of informatics in Brazil. The backlash from the refusal also set the trend for pragmatic approvals in the few contested cases that subsequently arose.

Although the Brazilian companies manufacturing and selling personal computers were supposed to create operating systems for their machines,[80] financial and commercial pressures hindered the development of Brazilian operating systems and pushed the national manufacturers to adapt their computers to MS-DOS.[81] From the start, the government's expectations for development were out of proportion to the resources it committed to the effort. The government did not provide enough subsidies for the development efforts.[82] Although some firms received financial assistance, the gov-

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76. *Brazil's Informatics Policy*, *supra* note 6, at 531.

77. Anne Charters & Stewart Fleming, *Brazil Legislature Approves Software Protection Bill*, FIN. TIMES (London), June 26, 1987, at 5.

78. *Id.*

79. BENDER, *supra* note 14, § 3B.04, at 4.

80. For example, Scopus, one of the leading Brazilian computer manufacturers, abandoned its own personal computer operating system after investing several years of work and $30 million. *The Trash of the Market Reserve*, *supra* note 31, at 40. Scopus replaced its operating system with a U.S. system which it licensed for $250,000. *Id.*

81. *Id.*

82. Interview with Felipe Gomez Pérez, President of Monydata Teleinformática Ltd. (a hardware manufacturer), in São Paulo, Braz. (Aug. 1991). Monydata controls approximately

ernment intended the profits generated from the reserved market to be the main engine of the industry's growth. Firms desire to maximize their profits and therefore have no incentive to invest in the development of new software when they can easily copy existing operating software.[83] MS-DOS's emergence as the worldwide standard for PC software and the Brazilian government's decision to open its PC market to all national firms, rather than limiting entry to two or three firms as originally intended, further intensified the pressure to copy.[84]

Because MS-DOS is the worldwide standard for personal computers, there is much software already written for it. To be commercially viable, Brazilian PC operating systems have to be MS-DOS compatible. The division of the market among more firms lessened the likelihood of any manufacturer operating on a large enough scale to defray the programming costs of the operating system. Developing new operating systems requires writing, testing, and debugging. Because MS-DOS was already operational, Brazilian manufacturers could achieve enormous financial and marketing jumps on their competitors by copying MS-DOS.

In 1986, Microsoft discovered that at least five Brazilian computer manufacturers were using MS-DOS or clones as their operating system without Microsoft's permission.[85] Microsoft approached these firms and convinced them to seek the SEI's permission to license MS-DOS from Microsoft.[86] Three Brazilian firms opposed the licensing request, claiming they had developed similar operating systems.[87] The most important of these systems, SISNE, was developed by Scopus Technologia, one of Brazil's most technologically sophisticated and politically favored high-technology companies.[88] SISNE was operational and compatible with MS-DOS.

20% of the PC market in Brazil. It produces high-end PCs, including laptops, using Intel's advanced 486 processor. It also has a technology transfer agreement with NCR. *Liberalization of Brazil Informatics Law*, *supra* note 34.

83. Interview with Felipe Gomez Pérez, *supra* note 82.

84. Piorkowski, *supra* note 4, at 638.

85. White, *supra* note 5, at 588-89. The five firms were: Itautec Informática, Microtec Sistemas, Polymax Informática, Sid Informática, and Labo Eletrônica. *Id.* Itautec, Microtec, and Sid are the industry leaders. *Id.*

86. *Id.*

87. The systems were: 1) SISNE, by Scopus Technologia; 2) TK MULTIDOS, by Microdigital; and 3) SSDDO-SA, by Empresa SSD. *Id.* at 589. Scopus and Microdigital are market leaders. *Id.*

88. The news magazine *Veja* called Scopus "the apple of the ideologues of the market reserve's eye" ["*a menina dos olhos dos ideólogos da reserva*"]. *The Trash of the Market*

The SEI decision was highly political. The SEI reviewed MS-DOS's licensing request for ten months before rejecting it. That the software in question was fully operational and that the "winning" side's software would eventually be installed in most of Brazil's PCs raised the stakes. Both Microsoft and Scopus were competent, aggressive, high profile firms. Microsoft had the support of both the U.S. government and those Brazilians who argued for an open market, but supporters of the nationalist market reserve rallied around Scopus. The section 301 action and the Brazilian Congress's consideration of the 1987 Software Law were underway simultaneously.[89] The SEI also knew that its use of the similarity test would likely set a precedent for future determinations under the 1987 Software Law.

Shortly before the SEI issued its decision, Microsoft, Scopus and the manufacturers petitioning for approval of the license reached a tentative agreement.[90] Scopus and the five other manufacturers agreed to license MS-DOS from Microsoft, and Microsoft agreed to drop its infringement claims against them.[91] However, the SEI's denial of the licensing request effectively destroyed the agreement.[92]

In the wake of the SEI decision, the United States reactivated the section 301 action.[93] Further, on November 13, 1987, the Reagan administration imposed $105 million in retaliatory tariffs upon Brazil.[94] The Reagan administration delayed its decision as to which sectors, other than computers, it would impose tariffs. Brazilian congressional factions threatened to invoke counter-sanctions against the United States should it actually impose retaliatory tariffs against Brazil.[95] The delay of the Reagan

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Reserve, *supra* note 31, at 40. The magazine also stated that Scopus received $60 million in long-term, low-interest loans. *Id.* at 39.

89. 1987 Software Law, *supra* note 13, art. 8, § 2, 51 LEX at 906-07, *translated in* ROSENN, *supra* note 7, app. XI at 363.

90. São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30. Fernandes was one of Itautec's attorneys at the time.

91. *Id.* Microsoft had a potential infringement claim against Scopus because some of the code for SISNE had been copied from MS-DOS.

92. White, *supra* note 5, at 588-89.

93. Ivo Dawnay, *Sarney May Retaliate Over US Trade Bar*, FIN. TIMES (London), Nov. 16, 1987, at 2. Brazil is a major exporting country and runs a large trade surplus with the United States.

94. *Id.*

95. *Brazil to Consider Retaliatory Measures Following U.S. Announcement of Sanctions*, Int'l Trade Daily (BNA) (Nov. 19, 1987). The targeted areas included wheat, coal, fertilizers, and sulphur. *Id.*

administration, however, allowed Brazilian exporters time to lobby their government for a swift, amicable resolution of the dispute.[96]

Brazil's Senate passed the 1987 software bill.[97] As a result of less rigorous similarity test definitions, foreign software companies could obtain licenses more easily.[98] The House approved the Senate's version,[99] and in mid-December, 1987, President Sarney approved the law, but selectively vetoed several provisions which the United States had criticized.[100]

Microsoft appealed the SEI's license denial to CONIN.[101] As CONIN most likely influenced the SEI's decision, the review provided a chance for the Brazilian government to change its position. Faced with U.S. retaliations and a nationalist position somewhat undermined by the discovery that SISNE had copied portions of the MS-DOS code, CONIN opted for a compromise solution.[102] It found that while MS-DOS 3.0 and SISNE were similar, and hence MS-DOS 3.0 could not be licensed, CONIN found that MS-DOS 3.3 had no Brazilian equivalent.[103] CONIN's decision to license MS-DOS 3.3 was essentially a victory for Microsoft. Once licensed, MS-DOS rapidly became the market standard for PC operating

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96. *Embraer Starts Fight to Avert Trade War with US*, FIN. TIMES (London), Nov. 19, 1987, at 3. Believing that they were the most likely targets for retaliation, several politically well-connected industries (most notably aircraft) tried to resolve the dispute quickly on terms palatable to the United States.

97. *Brazilian Informatics Council Meetings May Overturn Microsoft License Denial Decision*, 4 Int'l Trade Rep. (BNA) 1451 (Nov. 25, 1987). Pursuant to the change, the Senate would grant licenses to foreign software not functionally equivalent to domestic programs but otherwise similar. The Senate first imposed, but later vetoed, a 200% tariff on such foreign software. *See Brazil Legislators Vote to Ease Curbs on Software Sales*, WALL ST. J., Dec. 7, 1987, at 20 [hereinafter *Brazil Legislators Vote*].

98. *Brazil Legislators Vote*, *supra* note 97, at 20.

99. *Id.*

100. *Brazil's President Vetoes Part of Bill on Software Sales*, WALL ST. J., Dec. 24, 1987, at 12 [hereinafter *Brazil's President Vetoes*]. President Sarney vetoed provisions for a 200% levy on foreign software which is not functionally equivalent to a domestic program, but which is otherwise similar. For example, any foreign spreadsheet would be subject to the tax as soon as a Brazilian spreadsheet was posted. This provision would have added 200% to the cost of virtually all foreign software in Brazil. The money raised from the levy was to be applied to a host of informatics developmental and educational activities. For a list of the vetoed articles, see 1987 Software Law, *supra* note 13, arts. 16-22, 51 LEX at 908, *translated in* ROSENN, *supra* note 7, app. XI at 364-65.

101. White, *supra* note 5, at 589-90.

102. *Id.* at 590.

103. *Id.* The President of Scopus described the decision: "In practice, this means the end of the market reserve policy in the area of software." Alan Riding, *Brazil Accepts One U.S. Software Product*, N.Y. TIMES, Jan. 25, 1988, at D8 (quoting the President of Scopus).

software in Brazil.[104]

Permitting the licensing of MS-DOS 3.3, along with the passage of the 1987 Software Law, eased tensions between the United States and Brazil. Although initially uncertain as to whether the MS-DOS decision and the software bill went far enough,[105] the United States announced on February 29, 1988, that it would again postpone sanctions against Brazil.[106]

III. THE 1987 SOFTWARE LAW

The 1987 Software Law[107] defines the rights of software authors and provides software copyright protection for foreign firms if the firm's home country provides reciprocal protection for Brazilian firms.[108] It also regulates the marketing of software in Brazil. Brazil's adoption of the 1987 Software Law was due in part to the U.S. threat of trade sanctions against Brazil and U.S. dissatisfaction with the market reserve.[109]

A. Copyright

Title II of the 1987 Software Law, entitled "Protection of Copyright,"[110] establishes a twenty-five year period for copyright protection, effective upon the introduction of the software anywhere in the world.[111] A foreign author whose country grants recip-

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104. It is difficult to find Brazilian IBM PC-compatible operating software in Brazil today. Foreign software dominates the market with an 85% market share, and Brazilian software is concentrated in application functions like accounting, payroll, taxes, and cash flow control. BRAZIL—COMPUTER SOFTWARE MARKET, *supra* note 38.

105. *Brazil Tries Compromise to End Dispute with US*, FIN. TIMES (London), Jan. 21, 1988, at 4.

106. *Citing Progress in Brazil's Software Policy, Administration Puts Import Sanctions on Hold*, Int'l Trade Daily (BNA) (Mar. 2, 1988), *available in* Westlaw, BNA-BTD Database [hereinafter *Citing Progress*].

107. 1987 Software Law, *supra* note 13, 51 LEX at 904, *translated in* ROSENN, *supra* note 7, app. XI at 361.

108. ROSENN, *supra* note 7, at 114.

109. *Id.*

110. 1987 Software Law, *supra* note 13, arts. 3-7, 51 LEX at 905-06, *translated in* ROSENN, *supra* note 7, app. XI at 361-63.

111. *Id.* art. 3, 51 LEX at 905, *translated in* ROSENN, *supra* note 7, app. XI at 361. The twenty-five year time period is patterned after French law. French Copyright Law, *supra* note 69. This is far longer than the commercial life of most software packages, but shorter than the fifty years granted in other major countries. Michael Vivant, *Copyrightability of Computer Programs in Europe*, *in* THE LAW OF INFORMATION TECHNOLOGY IN EUROPE 1992: A COMPARISON WITH THE USA, *supra* note 65, at 103, 113-14.

rocal treatment to Brazilian authors has the same rights as Brazilian authors.[112]

Copyright protection under the 1987 Software Law may be obtained without registering a copy of the software or attempting to market it in Brazil.[113] If authors wish to register their software, however, the law provides for registration with the National Author's Rights Council (CDNA). The registration procedure requires the author to outline the program.[114] This outline will remain confidential and does not require the author to reveal the source code.[115]

The law grants employers the rights to any software created in an employment relationship,[116] limiting the programmers' compensation to their salaries, unless the parties contract otherwise.[117] However, employees retain the rights to any software developed independently.[118]

The title of the law dealing with copyright concludes with a list of uses which do not give rise to claims of infringement.[119] These uses include: 1) making necessary backup copies to ensure

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112. 1987 Software Law, *supra* note 13, art. 3, § 2, 51 LEX at 905, *translated in* ROSENN, *supra* note 7, app. XI at 361. This would include most countries, as Brazil is a member of the Universal Copyright Convention and the Berne Convention. *See* Universal Copyright Convention, *revised at* Paris, July 24, 1972, 25 U.S.T. 1343, 943 U.N.T.S. 178; Berne Convention for the Protection of Literary and Artistic Works, *revised at* Paris July 24, 1971, S. TREATY Doc. No. 27, 99th Cong., 2d Sess. 40 (1986).

113. 1987 Software Law, *supra* note 13, art. 3, § 1, 51 LEX at 905, *translated in* ROSENN, *supra* note 7, app. XI at 361. This contrasts with most patent regimes which require registration before protection is extended. *See, e.g.*, 1971 Industrial Property Code, *supra* note 55, art. 33, 35 LEX at 1746. It is beneficial to foreign software authors to not have to register their programs at the time of creation to ensure their protection.

114. 1987 Software Law, *supra* note 13, art. 4, 51 LEX at 905, *translated in* ROSENN, *supra* note 7, app. XI at 361-62. Registration procedures, which create legal records of authorship, are common in Latin America. Keplinger, *supra* note 73, at 21.

115. 1987 Software Law, *supra* note 13, art. 4, 51 LEX at 905, *translated in* ROSENN, *supra* note 7, app. XI at 361-62. The information can be revealed only by judicial order or at the request of the copyright holder. *Id.* art. 4, § 3, 51 LEX at 905, *translated in* ROSENN, *supra* note 7, app. XI at 361-62. The clearest need for judicial disclosure would occur in a dispute concerning authorship or plagiarism. A court could limit disclosure to *in camera* proceedings, while authors wishing to avoid disclosure could prove authorship in many other ways (e.g., publication in their home country). Boston interview with Fernando José Fernandes, Jr., *supra* note 38.

116. 1987 Software Law, *supra* note 13, arts. 5-6, 51 LEX at 905-06, *translated in* ROSENN, *supra* note 7, app. XI at 362.

117. *Id.* art. 5, § 1, 51 LEX at 905, *translated in* ROSENN, *supra* note 7, app. XI at 362.

118. *Id.* art. 5, § 2, 51 LEX at 905-06, *translated in* ROSENN, *supra* note 7, app. XI at 362.

119. *Id.* art. 7, 51 LEX at 906, *translated in* ROSENN, *supra* note 7, app. XI at 362-63.

efficient use of the program;[120] 2) partial citation of the program code for educational purposes, so long as the author and title of the program are cited;[121] 3) development of similar code where legal requirements or technical norms limit alternative forms for expression;[122] and 4) use of a program within a larger program, so long as the new program is for the use of the user alone, and the essential characteristics of the original program are maintained.[123]

The first two limitations on copyright—for backups and academic citation—are commonplace.[124] The latter provisions, however, are more unusual. The provision allowing for the development or use of a similar code where technical or legal considerations limit alternatives is quite logical on its face. If a function can only be programmed in a limited number of ways, then an author could conceivably copyright all possible alternatives and could achieve a complete monopoly on the function. Such a monopoly is undesirable, and therefore, the law makes exceptions for such functions. The provision could conceivably affect litigation in Brazil over the use of basic, common-sense software features, such as the look and feel of graphic user interfaces.[125]

The 1987 Software Law contains an authors' rights provision that may be confusing to an American reader. Brazil[126] and many European countries incorporate the concept of moral rights into their laws to allow authors to limit changes to their work by users and to allow authors to withdraw their work from the market

120. *Id.* art. 7(I), 51 LEX at 906, *translated in* ROSENN, *supra* note 7, app. XI at 362.

121. *Id.* art. 7(2), 51 LEX at 906, *translated in* ROSENN, *supra* note 7, app. XI at 362.

122. *Id.* art. 7(3), 51 LEX at 906, *translated in* ROSENN, *supra* note 7, app. XI at 362.

123. *Id.* art. 7(4), 51 LEX at 906, *translated in* ROSENN, *supra* note 7, app. XI at 362-63.

124. The United States, Japan, France, and Australia include provisions for making backups. Nimmer & Krauthaus, *supra* note 65, at 753.

125. An obvious qualifying point here is that these issues will probably have been resolved in the United States before they arise in Brazil, and the stakes of a Brazilian court or agency coming to a different conclusion from an American court are so high that Brazil will probably fall in line with the American decision regardless of whether the American decision makes great legal sense or is consistent with this provision. There has been controversy in the United States about the quality of the press coverage, pleadings, and rulings in suits for infringement of graphical user interfaces. *See, e.g.*, Vivant, *supra* note 111, at 135-36.

126. Law No. 5,988, of Dec. 14, 1973, 37 LEX 1917 (1973). The moral rights provisions are found in arts. 25-28. 37 LEX at 1921. They include the author's rights to be cited as the author, to control modifications to the work, and to withdraw the work from circulation. *Id.* art. 25, 37 LEX at 1921. An author might want to exercise the withdrawal right, often called the right of repentance or retraction, when the author has undergone a religious or political conversion and wishes to withdraw former "heretical" writings from circulation. The law, however, requires that parties who suffer damage as a result of the withdrawal be indemnified. *Id.*

under certain circumstances.[127] Brazil's 1987 Software Law recognizes moral rights of authors, but attempts to make the concept more compatible with the needs of software users. Users do not lose their licenses to their software if they modify it or if the author decides to "repent" and withdraw the work from the marketplace.

B. Market Reserve Provisions: The Similarity Test and National Distributor Requirement

The Software Law's marketing provisions require firms to register foreign software or to post it for SEI review before marketing the programs.[128] A prohibition on marketing foreign products that are similar to domestic products protects locally-authored software.[129] Further, Brazilian distributors can only sell foreign software to end-users on a non-exclusive basis, and clauses in agreements between parties that establish exclusivity are null and void.[130]

Firms must deposit all software with the SEI for posting[131] before they can be commercially marketed.[132] The law conditions the posting of foreign software on "the non-existence of a similar computer program, developed in the country by a national company."[133] Therefore, if similar national software exists, the SEI de-

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127. France's software law presumes that authors assign their rights to control modifications and to retract when they sell or license their software, unless they specifically retain these rights. French Copyright Law, *supra* note 69, arts. 45-46. The law provides that employers retain the copyrights for software created by their employees, but there is some doubt as to whether the employer retains all the moral rights to these works as well. *Id.*; Vivant, *supra* note 111, at 117.

In Spain, the authors or translators of a program retain most moral rights to their works, yielding only the right of adaptation to licensees or assignees. *See also* Michael S. Mensik, *Software Localization: Hidden Issues That Arise When Software Is Translated Abroad*, COMPUTER LAW., May 1991, at 3-5 (discussing how Spain retains the moral rights of program authors and translators).

128. 1987 Software Law, *supra* note 13, art. 8, 51 LEX at 906-07, *translated in* ROSENN, *supra* note 7, app. XI at 363.

129. *Id.* art. 8, § 2, 51 LEX at 906, *translated in* ROSENN, *supra* note 7, app. XI at 363.

130. *Id.* art. 27, 51 LEX at 909, *translated in* ROSENN, *supra* note 7, app. XI at 365.

131. The posting process is called *cadastramento* in Portuguese. This Article uses the word "posted" to distinguish the SEI process from the copyright registration process. The SEI process is independent of the registration process for copyright.

132. 1987 Software Law, *supra* note 13, art. 8, 51 LEX at 906-07, *translated in* ROSENN, *supra* note 7, app. XI at 363.

133. *Id.* art. 8, § 2, 51 LEX at 906, *translated in* ROSENN, *supra* note 7, app. XI at 363.

nies foreign software posting.[134] The law considers national software to be similar if it is independently developed and original, has substantially the same performance characteristics, and performs substantially the same functions.[135] The SEI has 120 days from receiving the software program to accept or reject it for posting,[136] and a firm can appeal a denial of posting to CONIN.[137]

Though the initial posting is valid for three years,[138] firms can renew posting for additional three year periods.[139] Foreign exchange payments for software are authorized only after the software has been posted.[140]

The law makes an exception to the requirement of software posting when an entity is importing a single copy of a computer program that is specifically designated for the use of the importing party.[141] This exception is of great value to firms or individuals who need unusual or specialized programs or rapid access to a program. For example, multinational firms that want their Brazilian subsidiaries to adopt existing customized software can now do so without going through the posting process.[142]

The law contains a number of provisions outlining the rights of users. For example, firms must license software for a fixed price, not to exceed the worldwide average price for the product.[143] The

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134. 1987 Software Law, *supra* note 13, art. 10(a), (d), 51 LEX at 907, *translated in* ROSENN, *supra* note 7, app. XI at 363-64.

135. *Id.*

136. *Id.* art. 11, 51 LEX at 907, *translated in* ROSENN, *supra* note 7, app. XI at 364.

137. *Id.* art. 9, 51 LEX at 907, *translated in* ROSENN, *supra* note 7, app. XI at 363.

138. *Id.*

139. *Id.*

140. *Id.* art. 8, § 3, 51 LEX at 906-07, *translated in* ROSENN, *supra* note 7, app. XI at 363. This provision is an obvious incentive for foreign authors who want to be paid in hard currency to post their software. It also aids Brazil's foreign exchange regulators in determining whether a requested payment is for a legitimate program.

141. *Id.* art. 30, 51 LEX at 910, *translated in* ROSENN, *supra* note 7, app. XI at 366.

142. Interview with Mario Fleck, Managing Partner with Andersen Consulting, in São Paulo, Braz. (Aug. 1991). Andersen Consulting is probably the world's largest computer systems and management consulting organization. It is part of Arthur Andersen & Co. SC, which also owns the eponymous international public accounting firm. Rhys David, *Profile: Andersen Consulting; Forward Thinking*, FIN. TIMES (London), Oct. 21, 1992, § IV at III.

143. 1987 Software Law, *supra* note 13, art. 29, 51 LEX at 909-10, *translated in* ROSENN, *supra* note 7, app. XI at 366. This provision and the limitation on user profits and production contracts are aimed as much at restricting remittance fraud as they are at granting "user rights." There was concern that free pricing and wide liberty in drafting contract provisions would allow payment for software to be used as a front for making unrelated remittances. São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30; interview with Georges Fischer, *supra* note 30. Brazil's concerns about tax evasion by multinational

law also prohibits contracts based on the user's profitability or production.[144] Software distributors are required to offer technical support and error correction for as long as the posting is valid.[145] The law prohibits software licensees from indemnifying either the author or the distributor of the software for damages arising from "imperfections, defects or violation of copyright."[146]

The law in most circumstances prohibits foreign firms from directly distributing their software. Except where the software is designed for use on imported computers (normally mainframes),[147] Brazilian entities must handle the distribution.[148] The law does not allow exclusive distributorships or agreements limiting software marketing.[149]

The law requires government agencies to purchase domestic software over foreign software when the quality of the software is otherwise equal.[150] However, the law does not provide guidelines for determining when software is of equal quality.

The law provides for severe penalties: six months to two years imprisonment plus a fine for copyright violators;[151] and one to four years imprisonment and a fine for importers of unposted foreign software.[152] The law empowers judges to authorize searches and to issue injunctions for halting the distribution of illegal software, and it provides for both criminal and civil actions against violators.[153]

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firms are not new. Rosenn, *supra* note 42, at 360.

144. 1987 Software Law, *supra* note 13, art. 29, 51 LEX at 909-10, *translated in* ROSENN, *supra* note 7, app. XI at 366.

145. 1987 Software Law, *supra* note 13, art. 27, para. (c), 51 LEX at 909, *translated in* ROSENN, *supra* note 7, app. XI at 365.

146. *Id.*

147. *Id.* art. 12, 51 LEX at 907, *translated in* ROSENN, *supra* note 7, app. XI at 364.

148. *Id.* art. 28, 51 LEX at 909, *translated in* ROSENN, *supra* note 7, app. XI at 365-66.

149. *Id.* art. 27, paras. (a), (b), 51 LEX at 909, *translated in* ROSENN, *supra* note 7, app. XI at 365.

150. *Id.* art. 32, § 2, 51 LEX at 910, *translated in* ROSENN, *supra* note 7, app. XI at 366-67.

151. *Id.* art. 35, 51 LEX at 911, *translated in* ROSENN, *supra* note 7, app. XI at 367.

152. *Id.* art. 37, 51 LEX at 911, *translated in* ROSENN, *supra* note 7, app. XI at 367.

153. *Id.* arts. 38-39, 51 LEX at 911, *translated in* ROSENN, *supra* note 7, app. XI at 367-68.

IV. Analysis: Evaluating the 1987 Software Law and Its Administration

A. *Copyright*

The 1987 Software Law took effect immediately,[154] improving the ability of copyright holders to protect their software. Illegal copying by distributors and corporations has diminished significantly since the 1987 Software Law was enacted.[155] But the new law is only partly responsible. Changes in foreign exchange remittance rules and the development of a wider, more sophisticated, lower-priced software market have also contributed to the decrease.[156]

1. The Software Market Before the 1987 Software Law

Prior to passage of 1987 Software Law, software distributors and large corporate users extensively pirated software.[157] Even multinational corporations pirated software in Brazil.[158] Such conduct reflects the fact that firms and distributors could not easily obtain and legally pay for foreign software.[159] Many foreign software vendors were reluctant to either participate in the existing "technology transfer for royalty payments" regime or make the substantial investments of time and effort necessary to win special approval from the SEI for licensing agreements.[160] To cir-

154. *Id.* art. 42, 51 Lex at 912, *translated in* Rosenn, *supra* note 7, app. XI at 367-68.

155. *See infra* part IV.A.2-3.

156. *See infra* part IV.A.3-4.

157. A report by the U.S. Consulate in São Paulo estimates that 60% of the software used in 1992 was pirated and that before passage of the 1987 Software Law, 90% of the software in use in Brazil was pirated. *Brazil—Computer Software Market*, *supra* note 38; *see also*, *Brazil's Informatics Policy*, *supra* note 6, at 533 (Software Publishers Association finds "substantial" piracy).

Piracy is also widespread in Europe and North America. Alan Cane, *Pirates Hold Software to Ransom*, Fin. Times (London), Dec. 13, 1990 at 8. A British survey estimates that 55% of senior managers copy software illegally. *Id.* The article estimates losses from piracy at $439 million in the UK, $1.4 billion in Germany, $792 million in Spain, $768 million in Italy, and $635 million in France. *Id.* All estimates of the extent and value of piracy are "soft" numbers, more useful as an indication of the relative magnitude of the problem than as precise estimates of software use or revenue losses.

158. *See infra* notes 165-67 and accompanying text.

159. *See supra* notes 55-64 and accompanying text.

160. *See supra* notes 60-62 and accompanying text. Being paid an annual royalty for software, having to deposit the source code, and being scrutinized by both the SEI and INPI, rather than being paid cash and going through the generally painless SEI posting procedure, was unattractive to software vendors.

cumvent the restrictions, Brazilian purchasers bought software overseas and brought it into Brazil without SEI approval; received software under the guise of purchasing manuals, which could be imported and paid for with foreign exchange without special approval; or just copied it.[161] All these alternatives were either illegal or existed in a gray area under the law, and the first two, which software vendors obviously preferred, involved fairly elaborate maneuvering of financial paperwork.

Concomitant with the practical difficulties of purchasing and paying for legal software was a business climate that accepted, or at least failed to discourage, copying. Though many business people and attorneys condemned piracy in principle,[162] they gave two explanations for this attitude. First, the stress of surviving in the Brazilian economy led to a "wide-open" business climate where ethical corners must be cut to stay competitive with others who have already cut corners. Second, software is essential to building an economy, and since vendors were reaping extensive profits in the United States, Japan, and Europe, Brazilians felt that it was alright to steal some of the software.

Regardless of motivation, the unlikelihood of punishment and the understanding that copying was so widespread that firms not engaging in it would be at a competitive disadvantage acted as further incentives to engage in unauthorized copying.

2. Influence of the Law's Copyright Section

The 1987 Software Law's copyright section provided a legal framework for combatting piracy. Brazil has brought a large number of actions and has successfully resolved many of them.[163] Although many cases settled quietly, a series of raids in April 1989, on behalf of Ashton-Tate,[164] garnered substantial publicity. Ashton-Tate decided to make an example of a large industrial firm that was illegally copying its software, so that other corporate users

161. *See, e.g.*, White, *supra* note 5, at 582 n.29.

162. São Paulo interview with Eduardo Carvalho, *supra* note 30; São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30; interview with Georges Fischer, *supra* note 30.

163. No decisions have been reported in these cases because the cases are settled before or during trial. São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30; interview with Georges Fischer, *supra* note 30.

164. Ashton-Tate was a large American software firm, best known for its database software. It has since been purchased by another American software firm, Borland.

would purchase rather than copy their software.[165] Ashton-Tate's Brazilian attorneys created a hotline for leads on piracy.[166] To avoid nationalistic backlash, Ashton-Tate targeted Black and Decker, a multinational firm.[167]

The raid received much publicity[168] and resulted in a 200% to 300% increase in sales of packaged software.[169] Subsequent raids organized by the firm and sponsored by Ashton-Tate and the Brazilian Software Companies Association (ABES)[170] resulted in noticeable but less dramatic upswings in sales.[171]

3. Resolution of Foreign Exchange Remittance Problems

Although the 1987 Software Law immediately affected copyright protection, software importation, and software pricing, Central Bank restrictions on foreign exchange remittance created a significant roadblock to transactions in the software market during the first year and a half after the 1987 Software Law's passage. Simply put, foreign software firms could safely market their product but they risked delays in payment because the Central Bank refused to authorize payment in foreign currency.[172]

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165. Interview with Manoel J. Pereira dos Santos, Attorney with Santos Remor e Santana, in São Paulo, Braz. (Aug. 1991). Santos is a leading software attorney. He represented Ashton-Tate and has other Brazilian and foreign informatics clients, including Aldus and ABES, the Brazilian Software Industry Association. He was the first president of ABDI, the Brazilian Informatics Law Association.

166. *Id.*

167. *Id.*

168. *See, e.g., ABES inicia a fase prática de sua ofensiva contra piratas de software [ABES starts the practical phase of its software anti-piracy offensive]*, FOLHA DE SÃO PAULO, Apr. 26, 1989, at G3.

169. *U.S. Software Companies Hope Raids in Brazil Will Help Increase Legal Sales of Programs*, 7 Int'l Trade Reporter (BNA) 697 (May 16, 1990). Reinaldo Caccãos, director of Ashton-Tate's Brazilian distributor, estimated the value of pirated software in the Brazilian market at $120 million in 1989, versus $80 million actually purchased. *Id.*; *see also Access to Brazil's Software Market Is Said to Be Improved Under New Law*, 38 Pat. Trademark & Copyright J. (BNA) 391, 392-93 (Aug. 17, 1989) [hereinafter *Access to Brazil's Software Market*] (describing the effect of the raids and estimating the value of piracy at $167 million in 1988). The same article describes how Autodesk, an American engineering software company, sold seven thousand copies of a Portuguese language manual for its AutoCad software before the software was even marketed in Brazil (suggesting massive piracy). *Access to Brazil's Software Market*, at 392.

170. The Brazilian title is *Associação Brasileira de Empresas de Software.*

171. Interview with Manoel J. Pereira dos Santos, *supra* note 165.

172. Brazil does not have an open currency exchange market. *See* Michael Schwimmer, *New Legislation on Import Duties and Payment for Foreign Software in Brazil*, 4 INT'L COMPUTER L. ADVISER 5, 6 (1989) [hereinafter Schwimmer, *New Legislation*]. In an effort to minimize the outflow of hard currency, requests for remittance of foreign exchange are re-

The 1987 Software Law authorizes remittance of foreign exchange to overseas software vendors as long as the price of the software does not exceed the average world price for the product and the purchaser can produce an official receipt issued by the owner of the corresponding rights for the software.[173] However, CACEX, which must authorize all official rate foreign exchange remittances, decided that this measure was insufficient to forestall foreign exchange fraud and generally refused to approve foreign exchange remittances from Brazilian software distributors to overseas software vendors. During this period there was a large gap ranging from 60% to 100% between the official Brazilian exchange rate and that of other organizations,[174] creating pressure on CACEX to take a hard-nosed attitude toward remittances which might be a front for laundering funds at the advantageous official exchange rate.[175]

Because CACEX refused to approve remittances, distributors were unable to pay for their software through officially sanctioned channels. CACEX had been trying to make foreign software more costly, and it reinstated a veto provision. The alternative of sending money overseas through parallel black market channels was expensive because of the substantial spread between the official Brazilian exchange rate and the parallel foreign exchange rate. Distributors who faced being cut off by their suppliers for lack of payment were left with unappealing alternatives: remit through parallel market channels at high market exchange rates; plead with vendors to wait while they lobbied CACEX to either approve remittances on a case-by-case basis or establish an approval system for software remittances; or meet software demand by illegally copying software, thus eliminating the need for software shipments from abroad.[176] Most distributors pursued a combination of strategies. It is difficult to estimate the scale of illegal copying, but it is generally felt that it was not uncommon, given the convergence of

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viewed individually by the Central Bank. *Id.* If they are approved, exchanges are made at the official rate. *Id.* Otherwise, transactions must take place at the higher tourist rate or at the still higher parallel market rate. The parallel market is a black market that operates on a large scale. *Id.* It is tolerated because it provides an important safety valve as an alternate source of foreign exchange for both meeting business needs and controlling inflation.

173. 1987 Software Law, *supra* note 13, art. 29, 51 LEX at 909-10, *translated in* ROSENN, *supra* note 7, app. XI at 366.

174. Schwimmer, *New Legislation*, *supra* note 172, at 6.

175. *See id.*

176. São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30; interview with Antonio Lapa Silveira, *supra* note 54.

necessity, market confusion, and financial secrecy.[177] Until a stable system for remittances could be adopted, any attempt to introduce more control over copying software was practically impossible.

In September 1989, the Central Bank allowed remittances for the sale of software based on the tourist rate of exchange,[178] thus chartering a way out of this cycle. The Central Bank created the tourist rate of exchange[179] in December 1988 as a currency exchange for tourism and other non-essential services.[180] It is determined on a market supply and demand basis rather than fixed on a daily basis by the Central Bank.[181] The tourist rate closely tracks the parallel or "black market" exchange rate, which is usually 60% to 100% higher than the official rate.[182]

The benefits of this regime vastly outweigh its drawbacks. It created a simple, relatively stable, above-board mechanism for remittances. Foreign software vendors received payments in a regular manner, and were better able to monitor the activities of their distributors.[183] The principal drawback of the new system was its use of the higher tourist rate, which effectively made foreign software more expensive in Brazilian currency. However, this drawback was mitigated in several ways. First, because the official rate was foreclosed to all market participants, no firm, or group of firms, gained a relative advantage. Second, the Brazilian govern-

177. São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30; interview with Antonio Lapa Silveira, *supra* note 54; interview with Eduardo Carvalho, *supra* note 30; interview with Zeke Wimert, President of Oracle Brazil, in São Paulo, Braz. (Aug. 1991). One story depicts an American software sales representative marvelling at the duplication capacity of his Brazilian distributor and then being rebuffed when asked if the quantity of software being duplicated bore any resemblance to the copies being paid for. This volume copying died out after mechanisms for legal payment allowed software vendors to police sales and reimbursement more closely. São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30; interview with Antonio Lapa Silveira, *supra* note 54; interview with Eduardo Carvalho, *supra* note 30; interview with Zeke Wimert, *supra*.

Oracle Brazil is a leading national developer of software that extracts information from mainframe, minicomputer, and personal computer databases. Oracle's President, Zeke Wimert, is a director of the American Chamber of Commerce for Brazil-São Paulo and was formerly Managing Director of Motorola's Brazilian affiliate.

178. *See* Schwimmer, *New Legislation*, *supra* note 172, at 5.

179. The tourist rate of exchange is also known as the floating rate of exchange. *Id.* at 6.

180. *Id.*

181. *Id.*

182. *Id.*

183. It was difficult for software vendors to monitor the prevailing chaotic situation because often software payments were disguised as payments for manuals, services, or know-how transfers, each at different rates of exchange. It is much easier to audit a system where all transactions are booked as software sales at a common exchange rate. *See id.*

ment tried to minimize the spread in values between the official and parallel (black) market rates. While the spread in August 1990 was under 20%, the spread in August 1991 was about 10%.[184] Even if there were a way around paying at the tourist rate, it probably would not have been cost effective. After the remittance rules allowed for payment at the tourist rate, piracy by distributors and corporate users dropped dramatically.[185]

4. Increasing Sophistication of the Brazilian Software Market

Since the passage of the 1987 Software Law and the resolution of the foreign exchange remittance problems, the software market in Brazil has expanded and become more competitive. Virtually all the leading PC software programs are sold in Brazil. Pricing is highly competitive,[186] and while market penetration does not compare with that in major industrialized countries,[187] it is expanding rapidly.[188] Not every secretary in Brazil has a computer, but com-

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184. On August 8, 1990 the spread between the official rate and the parallel rate was 18.88%. On August 8, 1991 it was 11.55%. *August Rate Tables*, *Veja*, Aug. 1991 (São Paulo). The spread between the official rate and the tourist rate tends to be slightly less.

185. São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30; interview with Antonio Lapa Silveira, *supra* note 54; interview with Eduardo Carvalho, *supra* note 30; interview with Zeke Wimert, *supra* note 177.

186. A review of numerous advertisements in the *Informática* sections of the major São Paulo newspapers shows that all the major word processing, spreadsheet, database, graphics, and presentation programs are available at prices that approach actual U.S. retail prices.

187. *See The Trash of the Market Reserve*, *supra* note 31, at 37. The *Veja* article surveyed computer use in five fields in Brazil and four developed countries. The fields were: percentage of automobile production movements automated; percentage of small and medium businesses using computers for production; percentage of large businesses using computers for production; percentage of hospitals using computers in patient care; and percentage of elementary school classrooms with computers in the classroom. The data were compiled from SUCESU (the Brazilian Telecommunications and Informatics Users Association), the Massachusetts Institute of Technology, the German Federation of Industries, Club Informatique of France, and MITI (the Japanese Ministry of Industry and Technology).

	Brazil	Japan	Germany	France	U.S.
Auto Industry	4%	38%	30%	30%	31%
Small-Medium Businesses	10%	44%	90%	76%	75%
Large Businesses	12%	91%	98%	90%	90%
Hospitals	4%	100%	100%	75%	98%
Elementary School	.5%	64%	100%	80%	96%

Id.

188. It is hard to estimate the real size of the Brazilian computer industry because of the prevalence of software pirating and computer smuggling. Based on the sales of computer

puters are no longer exclusively the province of engineers and data processing departments. Lower prices, combined with an expanding class of lay users who want support services, have reduced the attraction of illegal copying. In a corporate setting it is probably cheaper in the long run to spend $300 or less for legitimate, upgradeable, supported copies of Microsoft Word or WordPerfect than to use illicit copies. When a company illegally copies a program, it must test for viruses, copy or produce alternative documentation, and provide its own support; for similar reasons upgrading is very expensive.[189]

5. Proposed Amendment to the Copyright Provisions of the Law

The proposed revision of the 1987 Software Law now awaiting approval by Brazil's Congress eliminates those provisions guaranteeing authors' moral rights.[190] Although it appears that no author has exercised these rights since the passage of the 1987 Software Law, eliminating them would provide extra security to users in that they will not be inconvenienced should an author decide to remove the software from the market for moral reasons. This change would likely appeal to American software vendors and their attorneys who are unfamiliar or uncomfortable with the civil law tradition of protecting authors' moral rights.[191]

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cabinets and monitors—which by far exceeded the sales of computers—Felipe Pérez, President of Monydata, estimated that the volume of smuggled computers equals 160% of the volume sold legally. *Venda ilegal pode somar 130 mil unidades (Illegal Sales Could Surpass 130,000 Units)*, FOLHA DE SÃO PAULO, June 16, 1991, § 1 at 6.

However, there is agreement that the market has grown rapidly. ABICOMP, the Brazilian computer hardware manufacturers association (*Associação Brasileira das Industrias de Computadores e Periféricos*), estimates that legal sales in the hardware market grew from $1.8 billion in 1984, to $3.4 billion in 1986, to $5.1 billion in 1988, and to $7.4 billion in 1990, with sales by domestic firms amounting to about 55% of the total. *See Faturamento da indústria de informática na decada de 80 (Growth of the Informatics Industry during the Eighties)*, FOLHA DE SÃO PAULO, June 16, 1991, § 1 at 6.

189. Interview with Zeke Wimert, *supra* note 177. In the United States, an analogous situation exists with shareware, software which can be copied or downloaded from on-line services and paid for only after the user has sampled it. Clay Andres, *Shareware: It's a Good Find*, MACWEEK, Nov. 9, 1992, at 73. Despite its low price, many large corporations refuse to use it, feeling that the cost of providing support, documentation, and virus protection outweighs the value of the software. *Id.* at 73-74.

190. Draft Law No. 997 of May 21, 1991, art. 2 [hereinafter 1991 Draft Software Law] (on file with author).

191. This change will likely produce scholarly debate in Brazil as to whether it is an isolated concession to the realities of the software market or part of a broader movement away from the civil law system's view of authors' rights.

B. Market Reserve Provisions: The Similarity Test and National Distributor Requirement

While most software vendors and foreign commentators welcomed the copyright provisions of the software law, they reacted negatively to the market reserve provisions, especially the similarity test.[192] There were widespread fears that the absence of a detailed definition of similarity[193] would be used to exclude foreign software from the market.

These fears have not materialized. Foreign software has flooded into Brazil,[194] and the SEI's application of the similarity test has generated real controversy in only two cases.[195] While the posting process has been a modest bureaucratic impediment to foreign firms and their local distributors, it has not substantively affected the market. Similarly, although the local distributor requirement has been inconvenient for some foreign firms, particularly those with very sophisticated products designed for integrating PCs with mainframes, it has not visibly hindered expansion of the software market as a whole.[196] Furthermore, in the area of distribution, Brazil has largely met the legislative goal of enhancing domestic competence in the informatics fields. Many domestic distributors are now strong enough to compete successfully with foreign firms in the open market.[197]

1. The Similarity Test

a. Fears of Software Vendors

The MS-DOS controversy and the similarity requirement in the software law led to fears that foreign software would be excluded from the market, or at least included only after an arduous case-by-case fight.[198] In an attempt to defuse these concerns, the

192. *See Brazil Legislators Vote*, *supra* note 97, at 20 (quoting a Reagan administration trade official who described the software law as "still too vague and untransparent"); White, *supra* note 5, at 602-03; BENDER, *supra* note 14, § 3B.04, at 4 ("The bill seems to embody some unusual and ambiguous provisions."); *Brazil's President Vetoes*, *supra* note 100, at 12.

193. Ivo Dawnay, *Pressure Grows on Brazil to Lift Computer Curbs*, FIN. TIMES (London), June 16, 1988, at 5.

194. *Brazil—Computer Software Market*, *supra* note 38.

195. *See Access to Brazil's Software Market*, *supra* note 169, at 392.

196. *See supra* note 227 and accompanying text.

197. *See id.*; *see also supra* note 30.

198. Some observers thought that the SEI would not permit foreign software into the

Brazilian government arranged a series of meetings in early 1988 between Brazilian and American businesses and Brazilian government officials.[199]

b. Administration of the Similarity Test

Despite concerns over potential problems in the administration of the law, foreign software firms submitted many applications for posting programs with the SEI and virtually all of them were accepted without incident.[200] Since the law was inaugurated, the SEI has denied posting to very few of the foreign programs.[201]

During the first years using the similarity test, the SEI rejected two programs that are worth discussing: Novell's Netware and Ashton-Tate's DBase III.[202] The SEI rejected Novell's application for posting Netware based on its similarity to Ampliware 2.0, a Brazilian networking product. Novell claimed that its Netware

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country. Even after CONIN's decision to overturn the SEI's disapproval of posting for MS-DOS, some thought that the SEI was waiting for an opportunity to reject software vendors who, unlike Microsoft, could not count on the constant, aggressive support of the U.S. government. White, *supra* note 5, at 591; *see also*, Julia Michaels & Roger Cohen, *Brazil's Shift on Electronics Imports Sparks Interest of Foreign Companies*, WALL ST. J., Apr. 13, 1989, at A19 ("a more rigid approach could still return").

199. *Citing Progress*, *supra* note 106. "Brazilian Ambassador Marcilio Marques Moreira said Feb. 6 in Atlanta that he was confident that recent meetings . . . could produce a solution to the informatics [section 301] case 'within the next few days, if not hours.'" *Id.*

200. *See also* Michaels & Cohen, *supra* note 198, at A19.

201. As of October 1989, only 23 of 2,700 programs had been denied posting. Some of the rejections were subsequently reversed by CONIN. *Access to Brazil's Software Market*, *supra* note 169, at 392-93. The pattern of overwhelming approvals has continued. *Brazilian President Proposes*, *supra* note 9, at 373. The American Consulate in São Paulo describes market access as "relatively barrier free. . . . The great majority of foreign software . . . subject to the similarity test [has] been approved for distribution in the country." *Brazil—Computer Software Market*, *supra* note 38.

202. *Access to Brazil's Software Market*, *supra* note 169, at 392. AT&T's UNIX operating system was kept off the market until 1989 by disputes related to the informatics law. UNIX is distinguished from most other operating systems in that it is "open," a sort of cooperative effort among its sponsors. In contrast to proprietary operating systems, where manufacturers are free to modify operating system software so it will operate exclusively on their machines, AT&T's technology transfer agreement for UNIX requires manufacturers and developers to release enhancements they make to the system back to AT&T. The result is that all UNIX work stations made by all manufacturers worldwide should be able to run the same software, in contrast to the situation in other operating environments, where for example, software for a Data General computer will not operate on a Digital Equipment or IBM computer. The requirement to license back improvements, however, conflicted with provisions of the informatics law which deny licensors the right to restrict adaptation or marketing of transferred technology by licensees. São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30. A discussion of this problem (using Spain as a case study) is found at Mensik, *supra* note 127, at 8-10.

was a far more sophisticated product than Ampliware. It argued that the SEI's testing of the product was tainted[203] and that the comparison with Ampliware was unfair because Ampliware had not been posted.[204]

Less than six months later, however, the SEI approved a subsequent version of Netware for posting. Eduardo Strazzieri, Operations Director of one of Novell's Brazilian distributors, attributed the approval to Novell's improved preparation for the testing procedure and to a general improvement in the political climate for free trade brought about by the election of Brazilian President, Fernando Collor de Mello: "This time we used the right sort of machines, the right sort of environment. . . . Collor was . . . good . . . for us, because he [stressed] day by day that he is absolutely against the market reserve."[205]

The other program that the SEI refused to post was a database program by Ashton-Tate. After the 1987 Software Law passed, Ashton-Tate successfully applied for several programs to be posted in Brazil, including the latest release of its flagship database program, DBase IV. In the wake of DBase IV's relative lack of commercial success worldwide, and the continuing brisk sales of its predecessor, DBase III, Ashton-Tate applied for posting for DBase III.[206] The SEI rejected the application in a curious, apparently political decision. Although the initial notes prepared by the SEI's testing lab accepted the product after finding it dissimilar to existing national software, the SEI reversed the evaluation and denied the program posting.[207] CONIN upheld the decision.[208]

Apparently Ashton-Tate unintentionally stumbled onto one of the chief fears of the proponents of Brazil's market reserve: that foreign companies would "dump" antiquated products in Brazil. Although Ashton-Tate's motivation for launching DBase III in Brazil does not fit the stereotype of a multinational firm dumping an outdated program on a developing country, the SEI's treatment

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203. The SEI's engineers were unable to make Netware perform to specification because of equipment incompatibilities. Similarly, the SEI tested Novell's product on "unfamiliar and unapproved computer equipment, which produced substandard performance of the software." *Access to Brazil's Software Market*, *supra* note 195, at 392.

204. *Id.* at 391.

205. *Brazilian Informatics Agency Authorizes Sales of U.S. Novell Networking Software*, 7 Int'l Trade Rep. (BNA) 270 (Feb. 21, 1990).

206. Interview with Manoel J. Pereira dos Santos, *supra* note 165.

207. São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30.

208. Interview with Manoel J. Pereira dos Santos, *supra* note 165.

of the firm served as an example to other firms in the informatics sector.[209] The political nature of the decision is reinforced by the fact that the SEI subsequently permitted Ashton-Tate to post a program functionally equivalent to DBase III without incident.[210]

Even taking these rejections into account, it is safe to say that the fear that the similarity test would be a significant barrier to the introduction of foreign software did not materialize. Although the posting system delays the introduction of software into the market for several months, approval in most cases is routine. Even in exceptional cases where there is local opposition, as there was against Netware, firms attuned to Brazilian informatics policy can expect approval. Likewise, concerns that the three year posting period would serve as an invitation for Brazilian firms to copy American software and then corner the market by having renewal of the American product blocked[211] have not materialized because in Brazil's computer and software marketplace, major products are upgraded annually or semi-annually and are competitively priced.[212]

American commentary, both journalistic and legal, exhibited what seems in retrospect to be excessive concerns over these provisions. For example, one law review article written a year after the passage of the 1987 Software Law concedes that the SEI construed the similarity provisions liberally, but then depicts a range of scenarios where the SEI might backtrack and administer the law inequitably.[213] The article points to the three year posting period as one of these opportunities.[214] While the government of Brazil is capable of arbitrary behavior and of reversing its administrative decisions,[215] the assumption that it will do so has proven to be incorrect.

The twenty-five year copyright limit and three year posting period of the 1987 Software Law could have only a marginal influ-

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209. São Paulo interview with Fernando José Fernandes, Jr., *supra* note 30; interview with Georges Fischer, *supra* note 30.

210. Interview with Manoel J. Pereira dos Santos, *supra* note 165.

211. *See, e.g.*, Reidenberg, *supra* note 66, at 699, arguing for a minimum period of five to ten years.

212. Louise Kehoe, *Big Blue Decides Small is Beautiful*, FIN. TIMES (London), Oct. 23, 1992, at 23. IBM's vice-president and General Manager of Personal Systems, James Cannavino, cites PC product cycles of "six to eight months" as one of the motivating factors for IBM's decision to spin off its personal computer operations to an independent subsidiary. *Id.*

213. White, *supra* note 5, at 591, 601-03.

214. *Id.* at 603.

215. Examples include domestic economic shocks and international debt moratoria.

ence in a field where products are updated on a regular basis. Although the time limits can be regarded as symbolic of hidden agendas, their practical significance is low.

Likewise, the possibility of the SEI "increas[ing] its political strength"[216] and reversing its practice of approving foreign software will remain low unless there is a very marked change in the business and political landscape. Because Brazilian firms have incorporated significant amounts of foreign software into their systems, they have a strong interest in maintaining an open, stable market in foreign software. A policy reversal would significantly inconvenience local users of foreign software, whose numbers are growing rapidly. Because technological and price developments are so rapid in the informatics market, an open market is desirable. It is hard to see where the pressure necessary to force such a reversal would come from.[217]

Although generalizations are difficult, there is a perception in the United States that Brazil is a sort of "chief of the banana republics," recklessly engaging in economic shocks and protectionist maneuvers. This perception may lead to overly broad predictions of administrative arbitrariness. In the case of informatics at least, when foreign firms are discriminated against, it is not simply a matter of general principle, but rather a result of rational, if not always palatable, factors.[218]

While this Article and most commentary on the 1987 Software Law have focused on potential problems with the law from the perspective of software vendors and free market advocates,[219] it is worth noting that the similarity test has not directly benefited Brazilian software authors. Consequently, no foreign software has been barred, and therefore the goal of the market reserve to develop a national software industry has proved to be illusory.[220]

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216. White, *supra* note 5, at 603.

217. This is particularly true in software. Brazilian software firms seem largely to have acquiesced to liberal administration of the law. Software firms are not as potent political forces as are hardware manufacturers.

218. *See supra* part IV.C (contrasting important factors in opening software markets with hardware markets, which remained closed for several years).

219. American business is most concerned with the impact of Brazilian law on American exporters, and there is little discussion in the American literature about the development of the Brazilian informatics industry.

220. For example, the financial support, educational assistance, and training centers which article 15 of the 1987 Software Law envisions were largely a dead letter when articles 16 to 22—the 200% levy on foreign software that would have funded them—were vetoed by President Sarney. 1987 Software Law, *supra* note 13, arts. 15-20, 51 LEX at 908, *translated*

This result has not gone entirely unnoticed in Brazil, as proposals to institute a 200% tax on certain foreign software are periodically reintroduced in Congress. To date, the proposals have not made progress, and they seem unlikely to do so in the near future.

Though the 1987 Software Law has had limited success in developing successful Brazilian software packages, the law has been more successful in developing an infrastructure of programmers and support personnel. In today's market, software is not a magical, stand alone product. Because users often demand support and require customized programming, programmers who had started writing programs with the intent of pre-empting foreign software were able to adjust their plans to individualized customer requirements with less dislocation than hardware manufacturers could when faced with the import flood.

c. Proposed Amendment Eliminating the Similarity Test and Posting Requirement

The draft amendment to the 1987 Software Law now before the Brazilian Congress would eliminate both the similarity test and the posting requirement for foreign software.[221]

Although no serious opposition to the law has emerged, the draft law has languished in Congress. This is probably more the result of disharmony and poor relations between the Brazilian executive and legislative branches than any likelihood that there will be backward movement in the informatics area. Since 1991, Brazilian politics has reflected the conflict between that country's fractious legislative branch and its authoritarian President who suffered from an unsuccessful economic program,[222] ethical problems, and impeachment.[223] For significant periods of time, this conflict has left non-essential legislation at a virtual standstill.[224]

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in ROSENN, *supra* note 7, app. XI at 364-65.

221. 1991 Draft Software Law, *supra* note 190, art. 12.

222. Regarding early friction between Collor and Congress, see Sam Dillon, *Inflation Fighter Changes His Tune*, MIAMI HERALD, Mar. 15, 1991, at C1, C3; Gary Marx, *Economic Grip Eludes Brazil Chief*, CHI. TRIB., Dec. 17, 1991, § 3, at 1.

223. Collor resigned on December 29, 1992, at the beginning of his impeachment trial for charges stemming from an influence-peddling scandal. Christina Lamb, *Brazil's Beached Playboy Bows Out*, FIN. TIMES (London), Dec. 30, 1992, at 2.

224. On the day of Collor's resignation, Brazil's then Foreign Minister, Fernando Henrique Cardoso, commented, "This will now allow us to get on with governing the country." Bill Hinchberger, *Collor Resigns as Senate Starts Key Session in Impeachment Trial*, FIN. TIMES (London), Dec. 30, 1992, at 10.

Despite President Collor's shortcomings and this generally unproductive political and economic climate, Collor led a broad initiative to liberalize Brazil's trade policy. Brazilian and foreign commentators have cited this as his lasting contribution to the nation and feel that this trend will not be reversed. This trend was marked in informatics, where many joint ventures have been approved[225] and the hardware market reserve was softened.[226] All these changes bode well for passage of the amendment when political tensions subside.

2. National Distributor Requirement

a. Impact of the Requirement

The requirement that foreign software vendors market their products only through Brazilian distributors has had only limited negative effects on vendors. Further, the requirement has created a class of sophisticated Brazilian firms.[227]

The negative effects of the requirement have been limited to a few areas. Most notably, the requirement makes it difficult to provide support for very sophisticated software or for software that integrates with mainframe programs.[228] Because the distributors

225. Foreign hardware firms announcing joint ventures or cooperative agreements with Brazilian firms in 1991 included IBM, NCR, Hewlett Packard, Bull, and Digital Equipment Co. *Liberalization of Brazil Informatics Law*, *supra* note 34. This trend continued into 1992. A 1992 list of hardware joint ventures with foreign firms compiled by the U.S. Consulate in São Paulo fills two single-spaced pages. *Brazil—Informatics Market Profile*, 1992 National Trade Data Bank: Market Reports, Aug. 18, 1992, *available in* LEXIS, NSAMER Library, Brazil File.

226. Law No. 8,248, of Oct. 23, 1991, 55 LEX 695 (1991) [hereinafter 1991 Informatics law]. The new informatics legislation limited the market reserve starting October 29, 1992. It allows for the importation of minicomputers and PCs and eases joint venture rules. As long as 5% of sales are invested in Brazil for research and development, foreign partners may hold up to 49% of voting capital in a joint venture company. *Id.* arts. 1, 11, 55 LEX at 695, 697.

227. Compucenter and MultiSoluções represent examples of large and medium sized software distributors. Compucenter sells the most popular lines of software to the general business market. It was the first distributor for Microsoft in Brazil, and it also represents WordPerfect, Borland, Oracle and Novell. Compucenter has over two hundred employees, distributes mainframe and PC products, and has significant training, systems planning, and installation divisions. Boston interview with Fernando José Fernandes, Jr., *supra* note 38. As of 1990, Compucenter had sales of $23 million and 190 employees. 1991 SÃO PAULO YEARBOOK (American Chamber of Commerce for Brazil-São Paulo) 172.

MultiSoluções Informática is representative of the mid-sized distributors who concentrate on market niches—in this case, graphics and publishing. *See supra* note 30.

228. Interview with Zeke Wimert, *supra* note 177.

are non-exclusive, they frequently lack both an in-depth knowledge of their programs and a compelling interest in the long-term success of the product. They are less inclined to make the substantial initial investment necessary to adequately support a complex product. The situation for mainframe-PC integrated programs is particularly awkward. A mainframe manufacturer can market mainframe software, but must sell the complementary package for PCs through a national distributor.[229] Although these problems have had a modest impact thus far, they may cause more serious difficulties as Brazilian computing grows more sophisticated.[230]

One reason the law has generated relatively little controversy is that consulting firms and the big six international public accounting firms have circumvented the limitations on foreign firm distribution and marketing by setting up Brazilian affiliate companies for software marketing and support.[231] This is significant because most of the big six firms have a significant presence in software sales, programming, and integration in Brazil.[232]

In general, vendor-distributor relationships have been productive, and using domestic distributors has helped firms adapt to some of the challenges of doing business in Brazil. Given Brazil's complex and rapidly changing economic climate and politicized informatics regulatory environment, use of local distributors makes economic sense for all but the largest and most sophisticated foreign companies. Other factors like language and distance from home markets also encourage the use of local distributors.[233]

From the Brazilian point of view, the distributor provisions of the law have been extremely successful. Not only have distributors made money, but they appear well-established both commercially and technically.[234] Many have incorporated "value-adding" skills like program development and system integration. These skills are

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229. *Id.*

230. *Id.* In an effort to circumvent these problems several large American software firms, including Microsoft, Lotus, WordPerfect, and Oracle, set up service and consulting offices in São Paulo. *Brazil—Computer Software Market*, *supra* note 38.

231. Interview with Mario Fleck, *supra* note 142.

232. *Id.*

233. These factors are discussed in *U.S. Firm Profits From Computer Openings in South America*, GLOBAL FIN. MARKETS, Oct. 21, 1991, *available in* Westlaw, BUS-INTL Database, which profiles the success of Aldus, the American publisher of the popular publishing programs Pagemaker and Freehand, in marketing its software in Latin America. MultiSoluções distributes Aldus's products in Brazil. *See supra* note 30.

234. *See supra* notes 30, 227.

beneficial to the development of informatics generally and position the firms for continued prosperity despite the fact that the market for selling off-the-shelf software has become more competitive and margins have dropped.[235]

b. Proposed Amendment to the National Distributor Provisions of the Law

The proposed amendment to the software law would eliminate the national distributor provisions.[236] Foreign firms would be free to distribute their products in Brazil and sell directly to end users. Merchants would also be free to import software for sale without having a distribution agreement with the manufacturer. Under the present law, a distribution agreement approved by the SEI is a prerequisite to the sale of software.[237]

Although this amendment would appear to adversely affect Brazilian distributors, it has not been actively opposed. Brazilian informatics professionals feel that the change will not lead to significant changes in the present relationships between local distributors and foreign software vendors.[238] Although vendors of specialized programs and a few firms with very high volume business may find it preferable to set up their own distribution and support systems, most firms will not want to make the effort to adapt to Brazil's complex business climate.[239] In the few cases where business volume might justify a vendor setting up its own distribution network, margins have dropped to the point where distributors are now less averse to losing the business.[240] Additionally, because many distributors have now branched into higher value-adding activities, they are less dependent on volume sales of off-the-shelf products.[241]

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235. Interview with Antonio Lapa Silveira, *supra* note 54; interview with Eduardo Carvalho, *supra* note 30.

236. 1991 Draft Software Law, *supra* note 190, art. 12.

237. 1987 Software Law, *supra* note 13, art. 8, 51 LEX at 906-07, *translated in* ROSENN, *supra* note 7, app. XI at 363.

238. Interview with Antonio Lapa Silveira, *supra* note 54; interview with Eduardo Carvalho; *supra* note 30; interview with Zeke Wimert, *supra* note 177; interview with Mario Fleck, *supra* note 142.

239. Interview with Antonio Lapa Silveira, *supra* note 54; interview with Eduardo Carvalho, *supra* note 30.

240. *Id.* This is especially true for word processing and spreadsheet software.

241. *See supra* note 30 and text accompanying note 227.

C. Application of the Software Market Experience to the Hardware Market Reserve

Several factors contributed to the opening of the software market: foreign political pressure; a constant demand for foreign software; structural problems associated with maintaining a closed market; and the acceptance of a liberal interpretation of the law by organized parts of the informatics industry.

The aggressive advocacy of the United States for an open software market obviously influenced the passage of the 1987 Software Law, as well as its subsequent application.[242] The timing of the introduction and passage of the 1987 Software Law and of CONIN's reconsideration of the SEI's rejection of Microsoft's MS-DOS license agreement were closely connected to developments in the section 301 action. Given the close temporal relation of these events, it would be foolish not to acknowledge the impact of U.S. pressure. Fears of retaliation also played a part in the approval of subsequent contested programs.

It is important, however, not to over-emphasize the role of the United States in the law's passage. The section 301 action had twin goals: opening both the software and hardware markets of Brazil. Despite the vigor with which the United States pursued the action, Brazil was able to sidestep changes to the hardware market reserve until 1991.[243]

Pressure by users who needed foreign software for their businesses also contributed to the opening of the market. In a real sense, users voted with their feet. Even before the market was opened by legislative and official action, the use of foreign software was widespread. Opening the market was partially a *fait accompli*, with the law reflecting these changes.

Software is difficult to place within a market reserve. Software

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242. *See supra* text accompanying notes 76-106.

243. In 1990 and 1991, the situation began to change because Brazilian hardware manufacturers sustained massive losses after years of profits. As the smuggling of hardware increased and PC product development cycles dropped from five or more years to as little as six months, leading Brazilian hardware firms felt that they had more to gain from joint venture agreements. Such agreements enable them to incorporate up-to-date technology as it is introduced in the United States and Japan.

The system of joint ventures, brokered by the government and nourished with tax incentives, is reminiscent of the development of other sectors in Brazil in the late sixties and seventies by a triple alliance of government capital, private local capital, and multinational firms. EVANS, *supra* note 17, at 11-12, 52-54, 236-49.

is not a single product, but hundreds of diverse programs. It is easily copied and smuggled. Because using "market standard" software yields dramatic advantages by allowing communication between programs and reducing training time, a world market in software has emerged. If a multinational firm uses Micrsoft Word, WordPerfect, Lotus, and Microsoft Excel, it has a strong incentive to use them in Brazil as well. For a national product to be competitive in a business setting, it must offer competitive features and near total compatibility to the world market standards.

Although some national or regional programs have succeeded in making this leap, they have had the advantage of large domestic markets, or greater financial support from either a parent company, or the government.[244] The premise that with a market reserve Brazilian software developers could overcome all the handicaps necessary to compete with IBM, DEC, UNISYS, and Computer Associates (for mainframe computer software), and Microsoft, Lotus, WordPerfect, Ashton-Tate and Apple (for PCs) was unsound—regardless of how much control the SEI could exert on the reserve.[245]

While both market participants and users pressured for opening the market, there was relatively little pressure to close the market to foreign products as envisioned by the 1987 Software Law. Even if the most restrictive draft of the software law had actually become law, the software market reserve would still have been more liberal than the hardware reserve. Although foreign software

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244. Possible examples include the systems software market in Japan—the one market where MS-DOS is not the dominant operating system for PCs—and the market for the integrated spreadsheet, word-processing, and page layout program for the Macintosh, Ragtime, which is a market leader in Europe, but almost unknown in the United States. In both cases the regional markets are bigger and more affluent than those in Brazil. In Japan, the dominant hardware manufacturer supporting the alternate operating system, NEC, operates on a scale that dwarfs every industrial company in Brazil except Petrobrás.

245. With the possible exception of the United States, no country or computer manufacturer has been able to "go it alone" in software development. Software is an international industry which has transcended national or corporate control. Even well-placed market leaders like IBM and Apple have lost humiliating public showdowns with software suppliers. IBM's effort to co-develop OS-2 with Microsoft as the successor to MS-DOS has been largely derailed by Microsoft's unilateral development and marketing of its Windows operating system. T.R. Reid & Brit Hume, *Microsoft Still Prospers Despite Industry's Woes*, CHI. TRIBUNE, Mar. 8, 1992, § 7, at 4.

Similarly, Apple tried to reign in Adobe Systems, developers of the PostScript page description language, by developing the rival TrueType system with Microsoft, only to back down in the face of user resistance. Ken Siegmann, *Challengers End Bid to Unseat Adobe Technology*, SAN FRANCISCO CHRONICLE, Aug. 21, 1991, at C1.

in the same category as Brazilian software, but not functionally equivalent to it, would have been taxed at a high rate, it would have been allowed on the market.[246] With hardware this is not the case. For example, once production of Brazilian IBM PC clones was authorized, all PCs—including MacIntoshes and functionally superior PCs using the more sophisticated 386 chip—were banned from the general market.[247]

The relative weakness of domestic opposition toward the introduction of foreign software has several possible explanations. One is the idea, discussed above, that the arrival of foreign software was inevitable, and therefore not worthy of vigorous opposition. A second explanation is that relatively little previous investment by Brazilian entrepreneurs was jeopardized by letting foreign software into Brazil. A third explanation is that although software may be economically more important and productive than computer hardware, it is popularly perceived as a less dramatic or less important product, and therefore, less worthy of "defense." Finally, the idea of limiting distribution of software to national firms provided a profitable, inexpensive point of entry to the informatics market for Brazilian entrepreneurs.[248]

The contrast with the hardware market was marked on nearly every point. Computers signify modernization, progress, technical sophistication, and power. Brazilian computer makers were well-organized and included some of the country's most powerful business and industrial groups.[249] They frequently made substantial investments in facilities and engineering.[250] Opinion in the industry and in Congress was completely opposed to cooperating with foreign hardware makers. Except for a few diehard free market advocates, there was a strong consensus for developing national technology. This understanding is demonstrated by the 1984 Informatics Law's prohibition on licensing of foreign technology.[251] Although as a practical matter there were breaches, like the copy-

246. *See supra* note 100. In its final form, the 1987 Software Law did not even impose this extra tax on foreign software. *Id.*

247. 1984 Informatics Law, *supra* note 7, art. 22, 48 LEX at 540-41, *translated in* ROSENN, *supra* note 7, app. XI at 356.

248. This would tend to lessen nationalist or entrepreneurial hostility to the law as it provided easy entry to the industry.

249. The most obvious example is Itautec, which is affiliated with Brazil's second largest—and most influential—private bank holding company.

250. *See, e.g.*, *supra* notes 80, 88.

251. 1984 Informatics Law, *supra* note 7, 48 LEX at 540-41, *translated in* ROSENN, *supra* note 7, app. XI at 356.

ing of MS-DOS,[252] the idea that Brazil should have hardware development capability was for many a political and business article of faith.[253]

The initial success of the opening of the software market created pressure for maintaining that openness and for liberalizing the hardware market reserve. The rapid expansion of the software market and the profitability of Brazilian distributors led many to favor a free market in foreign software and hardware. Software distributors are dependent not only on software vendors, but also on hardware manufacturers because purchases of new software are closely tied to purchases of new computers. As a result, software distributors are among the most ardent advocates for dismantling the hardware market reserve. Likewise, users who have experienced the benefits of world-standard software are interested in obtaining up-to-date hardware products. Because Brazilian hardware is expensive,[254] and most Brazilian computers utilize technology introduced in the United States several product generations earlier, the sale of up-to-date computers at competitive prices would likely cause a corresponding explosion in sales of high-end software programs to allow users to take full advantage of the high-technology hardware.

The success of software distributors demonstrated that coop-

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252. *See supra* text accompanying note 76-106.

253. This situation has only changed relatively recently. In the last couple of years the profitability of Brazilian computer manufacturers has plunged as sales have suffered from a combination of recession, heightened competition, and user revolt at paying inflated prices for obsolete computers (prices typically run 2.5 to 4 times U.S. prices). The leaders in the market are looking for a solution which will give them access to better technology and a leg up on their smaller competitors.

Support for protected, local development resurfaced briefly during the debate on Law No. 8,248 of Oct. 21, 1991, the 1991 Informatics Law, when Luis Henrique, a leader of the largest party in Congress (PMDB) and head of the House Science and Technology Committee, proposed restrictive amendments to the law. They would have denied foreign firms informatics tax deductions and the ability to bid on government contracts and would have required foreign firms to export 50% of their production and invest 8% of their profits in research and development activities. Orestes Quercia, head of the PMDB, former Governor of São Paulo, cracked the whip and reversed the party's position, enabling the law to clear the House. Christina Lamb, *Collor Wins Victory on Information Technology*, FIN. TIMES (London), June 27, 1991, at 6.

254. *"Computador nacional é gato por lebre" reclama indústria (Industry Complains Brazilian Computers are Cats not Leopards)*, FOLHA DE SÃO PAULO, June 23, 1991, § 1 at 13 ("obsolete and twice as expensive as imports"); Christina Lamb, *A Protectionist Virus in Brazil's Computer Plans*, FIN. TIMES (London), July 23, 1991, at 3 (science Minister says that prices are three times those of imports and that Brazil is a generation behind in technology).

eration in informatics was fruitful. Since early 1991, joint ventures between foreign and Brazilian firms have dominated the market.[255] The dominant world-wide computer manufacturers provide current technology, while local computer firms provide manufacturing facilities, hire staff, and market the products in Brazil. As a result, foreign firms enter Brazil with an established market share and an established sales force.[256] In exchange, Brazilian firms get a sure-fire product and access to world-class technology. The joint ventures should be profitable in the short term and Brazil's economy will benefit from the technological upgrade. Both sides have the ability to position themselves for the future. The international firms will increase their market penetration and have a chance to campaign for the free importation of computers from their more efficient production centers.[257] Brazilian firms can opt to drop development activities completely and earn profits from distributing a respected nameplate, or use their access to better technology to develop a niche in designing and manufacturing high-end machines for export or for sale to more sophisticated domestic customers.[258]

V. CONCLUSION

Brazil's software market has become more open and more stable since the passage of the 1987 Software Law. Although the law incorporates some bureaucratic obstacles and requires the use of Brazilian distributors—to the modest disadvantage of vendors of foreign software[259]—these drawbacks are far outweighed by the gains generated by the law. Market opportunities for foreign

255. Several critical joint ventures were announced in the spring and summer of 1991. After passage of the 1991 Informatics Law, the trickle became a deluge. *See supra* note 225.

256. The larger, politically well-connected Brazilian firms have already tied up the most prominent foreign partners. *See supra* note 225. The announcement of the joint venture between IBM and SID Electronica to make PCs illustrates this clout. The deal was announced with considerable fanfare by then President Collor at SID's behest long before IBM had agreed to it. It took several months to actually work out an agreement to consecrate the shotgun marriage. Interview with Zeke Wimert, *supra* note 177.

257. Consolidation of manufacturing sites is an important trend in computer manufacturing. Most computer makers are consolidating their manufacturing to one or a few large, highly automated plants worldwide. It is an open question whether Brazilian satellite plants can be competitive over the long term. Except for PCs, volumes produced will be low.

258. Interview with Felipe Gomez Pérez, *supra* note 82. A number of firms in Taiwan (Acer, for example) and Korea have taken the "high end" route. Acer is particularly apt for Brazilian firms because it has specialized in niche markets in developing countries, including South America. Luisetta Mudie, *Profile: Acer Keyed Up for the World Stage*, FIN. TIMES (London), Oct. 9, 1992, at 27.

259. *See supra* part III.B.

software vendors have expanded dramatically and the copyright protection the law affords has proven to be adequate for firms seeking to prevent piracy. "Gray area" transactions—illegal copying by distributors or corporate users, off-the-books transactions, and parallel market remittances—are the exception today. Furthermore, the revisions to the software law now before the Brazilian Congress would remove those provisions which are most objectionable to foreign firms.

The law's market reserve provisions have provided few benefits to Brazilian software authors. This, however, has caused only a very modest reaction, probably because the rapid expansion of the overall informatics market has opened greater work opportunities for programmers. At the same time, the law's requirement that software be distributed by Brazilian firms has fostered the growth of companies which are not only profitable, but also technically sophisticated. These firms form a constituency in favor of an open informatics market and serve as an illustration that less drastic forms of market reserve can be beneficial for Brazilian informatics companies.