E-Commerce at the Grass Roots

Implications of a "Wired" Citizenry in Developing Nations

30 June 2000

Prepared for the
National Intelligence Council

BOOZ·ALLEN & HAMILTON
3190 Fairview Park Drive
Falls Church, Virginia 22042

Key Judgments

The widespread availability of Internet access is certain to have significant effects on the developing world, most of them positive. Economics and politics depend completely on the transmission or exchange of information. The introduction of a major new information medium that ultimately reaches almost universally down to the local level will have a profound effect on local economic and political activity. We are seeing this phenomenon now in the developed countries. We will begin soon to see the effects of Internet availability in the developing world as well.

The following are the major effects anticipated on local economic and political activity in developing nations—

General

- It will not be necessary to wait until Internet access is widespread at the local level to begin seeing important effects. The first 5 to 10 percent of Internet "pioneers" in each locality will be the local economic and political leaders, magnifying the Internet's early effects.

- The trend toward "infinite" Internet capability at "zero" cost will make Internet access in developing countries available sooner than commonly projected.

- Although the economic and political effects of Internet introduction will be positive on balance, enhanced Internet communication by itself will not overcome all the problems of the developing countries. Cultural obstacles, oppressive governments, ethnic bitterness, poor nutrition, ill health, and many other factors will still impede economic and political progress.

- Infrastructure limitations will hinder Internet growth in the developing world, keeping countries from realizing its full potential. Significant effects of Internet penetration can be expected nevertheless, even in countries with poor infrastructure services.

- India and China are likely to lead the developing world in the assimilation and application of the Internet at the local level, with urban areas leading the countryside. The major cities in western Russia will adopt the Internet and see its local effects at an early date, but most of Russia will lag behind significantly. South Africa will make relatively rapid Internet progress, while the rest of Sub-

Saharan Africa and the disrupted economies of Latin America will make progress, but at slower rates.

- Economic and political relationships between expatriates and their places of origin will expand, sparking an increased flow of capital and ideas. Emigration to developed countries is likely to slow and in some cases reverse.

Economic Effects

- The ready availability of local pricing information will induce greater market efficiency, reduce consumer prices, increase consumer choice, and increase demand.

- Traditional middlemen will be squeezed, with many being forced out of their present economic roles. They are likely to become the core of a more modern service sector, focusing on transportation, distribution, and finance.

- Entrepreneurs will thrive, often vexing established interests. Local cartels, barriers to entry, and restraint of trade—promoted by both private and governmental interests—will tend to unravel.

- Entrepreneurial access to capital will improve.

- Agricultural markets will develop local commodity exchanges. A market system that sets prices for future product delivery will facilitate farmers' planning while giving them greater access to working capital.

- The role of local governments in the economy will shrink somewhat as private economic activity becomes more difficult to monitor, regulate, tax, or obstruct. Petty bribery will diminish.

- Organized criminal activity will be facilitated by Internet communications. Countries with weak legal structures will be especially susceptible to online crime.

Political Effects

- Increased flows of news and information will make local populations better informed, especially about domestic events and conditions. Public morale and compliance will be affected, the options of local leaders limited.

- Local elections—already democratically contested even in some authoritarian countries—will become livelier. Low-risk avenues for expressing and organizing political opposition will increase.

- Many countries will see an increase in popular feedback to local (and higher) officials, resulting in somewhat greater leadership accountability.

- The activities of nonpolitical voluntary associations—especially religious groups—will be facilitated, with unintended political effects.

- Oppressive governments will have a variety of counter-Internet measures available to them, which will delay and offset positive trends to some degree. Traffic volume, system complexity, technological advancements, and the ready availability of encryption will limit governmental options, especially at the local level.

- Governments are likely to try to use the Internet to their advantage, flooding local Internet channels with supportive news and information. Adroit disinformation to mislead the public and confuse opponents is also likely.

Table of Contents

Scope and Research Note

This paper postulates economic and political effects of widespread Internet availability at the local level in selected countries and regions of the developing world. It addresses the changes in local economic and political activity that are likely or at least possible once large numbers of people obtain Internet access.

Several topics lie *outside* the scope of this paper—

- How soon widespread Internet access is likely to be attained in each area. Its widespread availability is taken as a "given" condition. Timelines clearly will vary greatly from region to region.

- Current and near-term Internet developments in the countries and regions under study, except as they appear to point the way to long-term effects.

- The nature and evolution of Internet technology, except in special cases where it may have a unique impact on the developing world.

- The effects of widespread Internet access in the *developed* countries, except where they may be suggestive of future phenomena in the developing world.

It is, of course, difficult to research the future. The study team found virtually no published material that directly addressed the topics within the paper's scope. Our research plan included the following steps—

- Find information on how local-level economic and political activity takes place today in the countries under study, in the absence of widespread Internet access. This data formed the baseline on which future Internet availability was conceptually overlaid, permitting potential changes to be identified. Information of this type, on *local* economic and political patterns, was surprisingly difficult to find.

- Find information on current and near-term Internet development in the developing world. We focused on the countries and regions under study, but also looked at other areas for development patterns that might be applicable.

- Identify and interview an expert on each of the five geographic areas under study, asking particularly for their expectations once widespread Internet access was attained. Interviewees were identified not only for their geographic area

expertise, but also for their record of publishing future-oriented, technology-oriented analysis.

- The subject matter experts interviewed were—

  - **Sub-Saharan Africa:** Dr. Robert Houdek, National Intelligence Officer for Africa. Dr. Houdek served much of his diplomatic career in African countries and has focused special attention on the technological outlook for the continent.

  - **China:** Dr. Daniel Rosen, National Economic Council, Executive Office of the President. Until May 2000, Dr. Rosen was a Research Fellow at the Institute for International Economics in Washington, DC. He specializes in Chinese economic development and telecommunications issues.

  - **India:** Ms. Carol Charles, Assistant Director, Global Information Infrastructure Commission and staff scholar at the Center for Strategic and International Studies in Washington, DC. Ms. Charles, a native of India, has focused much of her research on that country.

  - **Russia:** Dr. William K. McHenry, Associate Professor, McDonough School of Business, Georgetown University, Washington, DC. Dr. McHenry teaches information systems and electronic commerce, has made more than 20 research trips to Russia, and has published on the outlook for information technology in Russia.

  - **Latin America:** Dr. Mark Falcoff, Resident Scholar, American Enterprise Institute, Washington, DC. Dr. Falcoff specializes in current analysis and future projections on Latin American economics and politics.

Subsequent to the research phase, a substantial part of the work for the paper consisted of a disciplined projective analytical process, focused on identifying proximate and second-order effects on local economics and politics of widespread Internet access in the countries under study.

The literary style of this paper is somewhat unusual, consisting almost entirely of "bullet" paragraphs, grouped under topical headings. The scope of the paper is broad, covering a wide range of long-term economic and political developments in five major geographic areas. The bullet format was used to highlight and encapsulate a wide variety of topics as efficiently and clearly as possible. Weaving a narrative around these major points would probably have obscured them to some degree and would have made for a much longer paper.

I. Prospects for Internet Availability and Usage in Developing Nations

The thrust of this paper is to assess the long-term economic and political impacts of widespread Internet use on specified, high-interest countries and regions. To lay a proper foundation, however, certain assumptions must be made and generalizations offered that will set the terms for the geographically specific projections. These factors fall into several categories, discussed at length in the sections that follow—

- Key assumptions and systemic factors relating to Internet availability and usage
- Modes of Internet usage foreseen
- Elements of trust, credit, and law that must be in place before electronic commerce (e-commerce) can develop
- Prospects for the availability of secure Internet communications
- The Internet as a tool for preserving the status quo.

A. Assumptions on Internet Availability

A number of assumptions underlie the prospective analysis that comprises the main body of this paper—

- This paper takes as a given the prospect for widespread popular access to the Internet in the countries of Africa, Asia, Eastern Europe, and Latin America that are under study. We do not predict the rate of this Internet penetration, such as what percentage of the population in a particular country will have Internet access by what date. Instead, our concern is the nature of the local-level economic and political effects that can be expected, at whatever time this Internet penetration does in fact occur.

- By "widespread" Internet access, we mean the point at which about half of a population has such access. This certainly does not mean that 50 percent of the population must each have their own, Internet-served, personal computer (PC). Computers — or other Internet user devices that are not PCs —can serve more than a single person. One device may be shared by members of a household, or by several households. A device may be available to many individuals when placed in a library, school, political office, farm cooperative, "cyber-café," or other common facility.

- As important as "widespread" Internet availability will be, many significant effects of Internet access will come well *before* such a large proportion of a country's population will be able to go online. At both the national and the local level, significant changes will probably begin to take place when only the first 5 or 10 percent of the population gains Internet access. This is largely because these Internet pioneers will naturally be among the leaders in a country's economy, government, academy, or other major institutions.

- An important but unquantifiable factor in the growth of Internet availability is the trend toward "infinite" Internet capacity at "zero" cost. User devices and network services that are beyond the financial reach of most people in developing countries now will probably come within their reach as time passes. Simple linear extrapolations of Internet availability based on recent trends will probably be too pessimistic. The stultifying effect of high telecommunications costs will probably be the primary obstacle to rapid Internet growth in developing countries.

- The development of Internet connectivity alone will not be sufficient for the *full* ramifications of Internet access to be felt in the economic and political spheres. Certain infrastructure services must be available for the Internet to have its

fullest effect, principally, reliable and economical electric power and telecommunications. For e-commerce to thrive to its fullest extent, there needs to be a functioning online payment system and a business environment characterized by trust and law.

- In the absence of fully satisfactory infrastructure services, payment systems, and legal frameworks, widespread Internet access can still have significant economic and political impact, even if its full potential remains unrealized. The greatly increased communication facilitated by the Internet will still promote economic growth and political activity to a marked extent, even if the environment in which it is operating is less than optimum.

- The prerequisite for literacy, especially in English, will become less important over time. Literacy is now virtually essential for Internet use today, and it will continue to be an important factor in the ability of a population to make full use of the Internet. Technology will reduce its criticality to some degree, however. Voice recognition and audio signal processing will continue to develop, and will probably make it possible for illiterate users to communicate effectively over the Internet. The further development of graphical interface technology will have a similar effect. Finally, the quality of automated language translation will continue to improve, reducing many language barriers.

B. Modes of Internet Usage

There are several ways in which the Internet can be used as a communications medium, and these modes will find a variety of applications and adaptations in developing countries. In view of the rapid advance of Internet technology, it is *likely* that these modes of usage will evolve significantly over the next two decades, new modes will probably be introduced, and perhaps some present usage modes will become obsolete.

Subject to that caveat, the following modes of Internet usage are now available in the developed world and are postulated to be the primary modes of usage that will be used in developing countries over the coming two decades. The key, basic attributes of each mode are noted briefly, as they would apply in developing countries.

- **Electronic mail (email)**

  This is the basic mode of Internet communication, in which a single person, business, or other organizational entity composes and transmits a text message to another person or entity. A message can be sent simultaneously to multiple addressees. The sender can transmit at any time, and typically within a matter of minutes, the message will be waiting for the recipient(s) to receive and open it. In many systems, more complex data files can be attached to email messages and transmitted to the recipient. Basic literacy is required. Email may be encrypted for privacy. Several global email services are provided free to users, including Hotmail, Yahoo, Juno, and in many countries, AOL.

- **News groups and bulletin boards**

  In this mode, an Internet site is established on which users post information, statements, or questions. Other users access the site; can read, copy, or print selected materials; and may post responses to questions or statements that have been posted by others. News groups are typically established to serve a universe defined by some affinity or common interest. Access can be worldwide, but many serve strictly local concerns. The news group server need not be geographically near its users; it can be located anywhere on the Internet. In many news groups, data files may be posted for downloading by others. Basic literacy is required. Users need not identify themselves. Encryption of news groups is theoretically possible, but all users would have to be privy to the key; encryption is rarely used. Typically, there is no cost to set up a news group once basic Internet service has been procured.

- **Chat rooms**

  A chat room is a more dynamic form of news group. Many users can access the site simultaneously, interactively asking and answering questions, making and responding to statements. All users logged on to the site see all such interactions. As with news groups, chat rooms are organized to serve an affinity group, although anyone who knows the address can gain access unless blocked by the group's administrator. Users need not identify themselves. Literacy is required. Access can be established worldwide, but many chat rooms serve local concerns. Servers need not be local, but rather may be anywhere on the Internet. As with news groups, encryption is theoretically possible, but rarely if ever used. Typically, there is no cost to set up a chat room once basic Internet service is procured.

- **Web sites**

  In their simplest form, web sites are static but readily updatable displays of text and graphics. New postings are under the control of the site's webmaster. Many users can access the site simultaneously, but in the simple case, users are passive readers rather than interactive discussants. Users do not identify themselves. Access can be established worldwide, but sites may serve only local concerns. Servers need not be local, but rather may be anywhere on the Internet. Web technology is developing rapidly, with vast advances over the simple form described above now the norm in the developed countries. State-of-the-art web sites typically feature complex graphics, video, continuous data updates, database access, commercial transaction support, and email communication with the site sponsor, with new features appearing daily. The resources and expertise required to manage a site that uses advanced technology are considerable, but such sites may be reached by anyone with Internet access. Web sites that wish to restrict access typically do so by requiring passwords for entry.

- **Other communications modes**

  Additional modes of communication via the Internet are available at least in rudimentary form or are being developed, some of which no doubt will find ready application in developing countries. These presently include—

  - Telephone-like voice communication, at low or no cost worldwide, either point-to-point or in conference mode

  - Transmission of video camera images, either still, sequenced, or streamed to show continuous motion

- The combination of the above technologies in video telephony or teleconferencing

- Audio streaming, permitting the one-way transmission of broadcast or recorded voice communications to an unlimited number of listeners

- Messaging and paging

C. Trust, Credit, and Law

As important as commercial trust, credit instruments, and contract or consumer law may be to e-commerce in the developed world, we must avoid mirror-imaging these standards and expectations when postulating the growth of e-commerce in developing countries.

Most of any commercial process involves the acquisition or exchange of information. The actual exchange of money for delivery of goods is only the final step in this informational process. Internet connectivity devoid of any provision for supporting financial transactions can still facilitate commercial activity: vendors can advertise goods for sale, shoppers can find information on price and availability of goods, terms can be negotiated, and arrangements for payment and delivery can be made. Consider the similarity to the telephone: only a fraction of the telephone traffic between businesses or between a business and the public involves actual transactions. Most traffic involves the exchange of information.

Thus, there need not be any provision for trust, credit, or law at all for widespread Internet availability still to have a profound beneficial effect on economic activity at the local level in developing countries.

As undeveloped as credit instruments and contract law may be in the countries and regions under study, nevertheless the Internet itself may be a vehicle for the introduction of certain advances in these areas.

A potentially significant development in this field is the advent of digital money. Today, the technology, associated banking infrastructure, and legalities are still embryonic, even in the developed countries. It is premature to project the ready availability of digital money in the developing world within the time horizon of this paper, but this is not to preclude unforeseen technological advances that bring it about sooner than expected. Even when (if) the use of digital money becomes relatively common, its use at the person-to-person or small business level would no doubt remain futuristic.

D. Prospects for Secure Communications

Another systemic factor that will play a role in Internet usage in the developing world is the increasing availability of technology—typically encryption—that can make communications unreadable by outside parties. Even today, strong encryption programs (PGP, for example[1]) are universally available free or at low cost.

In commercial terms, the assurance of communications privacy will facilitate the use of Internet communications for business negotiations and other sensitive matters, but perhaps more important at the local level, it will keep government and entrenched interests from monitoring informal or underground economic activity.

In political terms, private communications among opposition, dissident, or rebellious political elements will complicate the monitoring task of governments, political police, and dominant political parties.

Encryption aside, the growing volume of Internet traffic in developing countries will have much the same effect on economic and political situations. Local authorities, much less entrenched local business interests, will have little ability to intercept and monitor even unencrypted Internet traffic, trying to identify those few messages that contain pertinent information. Except in extraordinary circumstances, capabilities for sophisticated cryptanalysis or even traffic analysis that might exist in national governments will not be applied to monitoring diffuse economic and political activity in the thousands of localities in each country.

[1] Free download is available through www.pgp.com

E. The Internet as a Tool for Preserving the Status Quo

As suggested in the foregoing sections, the Internet has vast potential for enabling people in the developing world to engage in freer local economic and political activity, with far-reaching implications at the macroeconomic and national political levels. This is by no means a one-way street, however. Entrenched economic and political interests will be able to use the Internet as a tool for maintaining their dominant positions, especially because they typically command greater resources and coercive authority.

The ways in which this phenomenon may be observed include the following—

- Disruption of communications through attacks on servers or virus introductions into sites considered to be undesirable
- Surreptitious interception and reading of communications; noting originators and recipients of encrypted communications
- Introduction of disinformation into newsgroups and chat rooms, including the appropriation of user identities to induce confusion or discord
- Blockage of access to sites considered to be undesirable
- Probably the most powerful, the potential to flood Internet news and information channels with material that reflects a government's position on issues.

In addition to these means of defending entrenched interests, local economic or political entities in many developing countries would face few restraints on the use of coercive measures, such as—

- Damaging or confiscating computers
- Forcing the shutdown of web sites
- Intimidating individuals known or suspected to be using the Internet in ways that threaten established economic or political interests.

II. Effects of Widespread Internet Availability on Local-level Economics

The arrival of widespread Internet service in developing nations will be a catalyst for productive economic activity and more rapid growth. A key component of economic activity, in developing countries as elsewhere, is information. Information on the availability, attributes, and prices of goods and services must be exchanged before any physical transaction can take place. The ready availability of such information is an important factor in how rapidly economies develop. The Internet will be an important new vehicle by which economic information is exchanged in the developing world.

It is important, however, to resist excessive optimism. Enhanced opportunities for communication alone will not overcome cultural obstacles, oppressive governments, infrastructure shortfalls, ethnic bitterness, poor nutrition, ill health, or many of the other factors that stand in the way of economic progress in the developing world. Most of the events and trends postulated in this section are indeed expected to be positive, but the outlook must be tempered by a realistic recognition of the limiting factors also at work in the developing world.

In this section of the paper, we will consider the likely effects of Internet availability on a variety of economic phenomena that take place at the local level. The first segment under each topic will address phenomena that are likely to be universal or at least common. Following that initial segment, specific comments will be offered concerning the five countries and regions under consideration: Sub-Saharan Africa, China, Russia, India, and four selected states in Latin America: Nicaragua, El Salvador, Colombia, and Ecuador.[2]

The economic phenomena to be addressed are the following, all with a focus on the local level—

- Local market liquidity and efficiency
- The agricultural economy
- Local-level entrepreneurship
- Cartels, barriers to entry, and restraint of trade
- Capital accumulation, investment, and credit
- Employment patterns and labor migration
- Taxation, regulation, and licensing
- Informal vs. declared business activity

[2] In some cases, no significant data was available concerning a specific country or region under study.

- Crime and corruption.

A. Internet Effects: Local Market Liquidity and Efficiency

Let us focus first on the local producer of goods, whether a farmer growing crops for sale, or a small-scale handicrafter or manufacturer. In traditional economic arrangements, local producers have few options when it comes to selling their goods: they can sell them at retail to passers-by or in a local market, or they can sell them at wholesale to a middleman. The middleman will pass the goods onward, often through several sets of hands, transporting them to city markets or in some cases for export.

These traditional economic outlets essentially force the local producer to accept whatever prices are offered. The farmer cannot typically take time out from his labors to carry produce to a distant city for a better price, whereas the handicrafter or manufacturer will have filled the needs of his neighbors for his product and requires access to more distant buyers.

As maligned as they often are, local middlemen perform an essential service, for which they are entitled to payment. They purchase, aggregate, transport, and resell the goods of the producers. It is typical, however, for middlemen to take advantage of the dependence of local producers on their services—and of their access to information on supply, demand, and pricing—to pay only a pittance for the producer's goods, while making a markup of several hundred percent.

How will these traditional market relationships change once access to the Internet becomes widespread in these areas? Several major effects can be postulated—

- Probably the most critical single change will be producer access to current pricing information. A farmer, for instance, could go to the local co-op or supply store and use its Internet terminal to check current produce prices in the city or elsewhere in the province. This information would give the farmer new options. If the city price were attractive, he could take or send a load of produce there with a high degree of certainty as to the price he could get. At the same time, the farmer would now have a greater degree of bargaining power with the middleman—he would know how much the middleman could get for his produce, have the option of avoiding the middleman, and thus could probably drive a more favorable bargain. (See Section B of this chapter for further analysis of the effects of Internet availability on the agricultural economy in the developing world.)

- Internet connectivity will also inform local producers of the existence of potential buyers with whom they have not been traditionally acquainted. Perhaps the middleman from the next valley or the next town is prepared to offer a better

price this month than the middleman in the local village. Altering traditional buyer-seller relationships does not come easily, but neither is it easy to keep willing buyers and sellers from doing business together.

- Supply-side effects of Internet availability will mirror the above demand-side effects. Local producers purchase raw materials, tools, seeds, fertilizer, and so forth from middlemen or local shops. With the benefit of Internet connectivity, producers will be able to shop more widely for better prices for these inputs. A supplier in a nearby city, or two towns away, may be willing to sell needed supplies more cheaply than the traditional local vendor. So the local manufacturer may make the trip to take advantage of cheaper supplies, or may use his new knowledge to gain bargaining leverage with his traditional supplier.

- In addition to these immediate effects of Internet availability, important second-order effects can also be anticipated. What becomes of the middlemen, for example? Their traditional advantage over producers, based largely on their command of market information, will be eroded. The first reaction in most cases will be to try to protect their status through coercion, either directly or through the agency of local political officials. This can be only a temporary holding action, however, not a permanent means of preserving the status quo.

- Ultimately, however, traditional middlemen will be forced by competitive pressures (and enticed by business opportunities) to become more market-oriented service providers. A natural avenue for this evolution will be for middlemen to establish service firms offering transportation, distribution, wholesaling, or business finance. Some middlemen will be unable to cope with the challenge of Internet availability, but many will adapt and thrive, using the Internet to provide business services effectively and profitably.

- Perhaps the most far-reaching second-order effect will be lower prices and broader choices for consumers throughout the developing world. As Internet availability catalyzes greater competition, the economic inefficiencies of traditional processes will be squeezed out to an ever-increasing degree. More efficient processes result in lower prices to consumers. This increased purchasing power, plus the enhanced information flow produced by Internet availability, will give rise at the same time to a broader array of goods and services available to consumers in developing countries. Perhaps the greatest obstacle here will be situations in which prices are controlled or subsidized by the government.

- The quickening of economic activity resulting from Internet availability will immediately highlight shortfalls in infrastructure, especially the demand for better roads and telecommunications. Virtually all parties in each economy will have a keen interest in infrastructure improvement, which will translate into

greater political will for governments to provide such services or facilitate private investment (often from overseas) to provide them. Rising prosperity will provide a somewhat greater means for infrastructure improvements to be financed.

- A final effect on market activity that can be postulated in an environment of widespread Internet access is the proliferation of online advertising in developing countries. Especially at the local level, advertising currently is sparse because of the expenses involved and the dearth of appropriate media. As entrepreneurs make greater use of the Internet, advertising will probably flourish, especially the commercial use of email, news groups, and chat rooms. Legal restrictions on such use will be weak or nonexistent, and it will take some time for consumers to develop a concerted resistance to "spam," if they are inclined to do so at all. As annoying as advertising can be, it is essential to vibrant commercial activity, conveying important information about the attributes, availability, and price of goods and services for sale. Although the effect on economic growth of a proliferation of advertising is impossible to quantify as yet, it will certainly be positive.

We will next examine how these postulated effects of Internet availability on local market liquidity and efficiency are likely to apply in the cases of the countries and regions under study.

Sub-Saharan Africa

- Market conditions vary across the continent, but most commonly, prices for basic commodities are set by the government, with freer pricing allowed for other items. In fact, about half of economic activity takes place informally, without regard for governmental pricing rules or policies.[3] The advent of widespread Internet availability in this environment would significantly boost the efficiency of markets at the local level, as buyers and sellers could readily ascertain local product availability, compare prices, and opt for the most advantageous transactions available.

- Outside South Africa, most countries in the region have imposed quasi-Leninist structures on their economies, which is the greatest single factor accounting for economic underperformance in Africa in the latter decades of the 20th century. As opportunities for free and rational transactions multiply in an environment of widespread Internet access, failed market policies are likely to be abandoned altogether.

[3] Interview with Robert Houdek, National Intelligence Officer for Africa, 2 June 2000.

- South Africa leads the continent by far in Internet growth. Although virtually all countries have at least one Internet service provider (ISP), South Africa accounts for more than 90 percent of Sub-Saharan Africa's Internet installations and growth.[4] Telecommunications infrastructure is commensurate with this pattern. Economical wireless communications links will be essential for significant Internet growth in most of Africa in the coming decades.

China

- In a marked departure from recent history, most prices are determined in the marketplace; the government sets prices only for basic grains, energy, and steel. Less than 20 percent of produce originates on state-owned farms. Likewise, distribution is almost entirely accomplished by the market. At the local level, the distribution system consists of a highly fluid network of independent small truckers, and resellers working from carts and heavily loaded bicycles.

- Thus, the scope for Internet-based local market activity in China is considerable, although it does not appear to have started as yet. The publication and exchange of data on price and availability of agricultural inputs and products and consumer-oriented manufactured products would add a significant degree of efficiency to the market in these areas.

- Local commodity exchanges have sprung up across China, dealing in most commodities not under government price controls (i.e. grain, steel, and energy). Many of these are no more than open air markets, where producers, distributors, and resellers gather weekly. These local exchanges would be highly amenable to Internet use, posting prices, and matching buyers and sellers from within a local area. As the geographic reach of commodity exchanges expands, the number of separate exchanges would diminish as a result of consolidation.

- Infrastructure shortfalls will be an obstacle to the rapid development of local-area e-commerce. Roads, telecommunications, and business finance are the areas most in need of improvement in this regard.

- Most local business is conducted face-to-face, so any move to local Internet-based commerce would entail an adjustment to Chinese commercial culture. Few factors are as significant as *guanxi*, the network of personal relationships that underlies local commerce everywhere in China. There are already signs of a readiness to evolve away from person-to-person commercial contacts, however.

[4] "The Internet and Poverty," Panos Media Briefing No. 28, April 1998, accessed 13 June 2000 at www.oneworld.org

China is the world's top market for pagers,[5] and the country is expected to have as many as 70 million cell phone users by the end of 2000.[6]

[5] "Paging the PRC," *China Business Review*, 2 July 1999.

[6] "Ericsson To Sell Web Phones In China," Muzi Net Lateline, accessed 24 April 2000 at www.dailynews@muzi.com

Russia

- Commercial culture in Russia is severely underdeveloped, constituting a fundamental obstacle to the establishment of functioning local markets. The 74 years of Soviet rule, building atop an insular economy, resulted in a culture where the virtues of free exchange are barely understood. Indeed, capital, investment, and profit are widely seen in emotionally negative terms. A grim egalitarianism reigns, which punishes initiative and inventiveness. The situation is captured by a common anecdote: a peasant who has no cow sees that his neighbor has bought one. Rather than ask how he might acquire a cow of his own, the peasant plots to kill the one his neighbor has acquired, bringing him back down to his level.

- There certainly are exceptions to this dreary rule, however. Several million Russians have been involved at one time or another in "suitcase trading"—buying goods in Russian cities and bringing them back to towns or the countryside to sell, or even engaging in small-scale cross-border trade with countries in central Europe or elsewhere on Russia's periphery. Internet access will facilitate such local-level trade by telling sellers what products are most in demand and by telling buyers who has what products for sale at what price.

- Russian e-commerce sites sold only about $60,000 worth of goods over the Internet in 1999, mostly handicrafts, jewelry, and liquor. Most purchases involved payment of cash on delivery.[7] The total volume of e-commerce in which Russians were involved in 1999 exceeded $500,000.[8]

- Internet advertising in Russia is in its infancy, but in relative terms is already significant. Advertising revenues in 1998 reached about $500,000; relative to the estimated 1.3 million Internet users during the year, the figure is a healthy one.[9]

India

- India is well positioned to take advantage of the market efficiencies that can result from widespread Internet use at the local level. The country has entrepreneurial traditions, retarded by 40 years of socialism but now developing again as deregulation and economic rationalization proceed. India is a rising world power in computer software, so has a significant and growing domestic base of technical expertise for e-commerce development.

---

[7] "Virtual Commerce in Russia," Aport 2000, accessed 31 May 2000 at www.aport-ru.com

[8] Denise Albrighton, "Obstacles to Money-Making on the Web Remain," *St. Petersburg Times*, 18 April 2000.

[9] Rod Pounsett, "Russians Need the Internet," Russia Today, 23 February 1999, accessed 31 May 2000 at www.russiatoday.com

- Several political/cultural phenomena will retard the proliferation of e-commerce in India to some extent. There is a short-sighted but powerful sentiment that technological progress benefits only a minority of the population, that labor-saving measures hurt the poor by taking away their jobs. There is also a widespread suspicion, among elites as well as the less educated, that Western technology will bring a Western cultural imperialism, endangering the soul of India. Finally, the caste system persists despite official efforts to eradicate it.[10] Caste-sensitive individuals may be reluctant to establish Internet relationships with others whose caste they do not know or whose caste is considered inferior, although already observers have noted that online anonymity has in fact obviated caste obstacles that would have inhibited face-to-face transactions. Individuals professionally involved in information technology are finding themselves virtually exempt from the caste system.[11]

- According to a 1999 survey, India's major banks intend to initiate extensive e-commerce measures by 2004, including automatic teller machines, electronic funds transfers, digital checks, and smart cards.[12]

Colombia, Ecuador, Nicaragua, and El Salvador

- Economies in the region are functionally centralized, despite some movement in recent years toward market-based liberalization. The capital cities are the central nodes of most economic activity; transport links between provincial centers tend to be weak or nonexistent, with routes going instead via the capitals, even though greater distances are often involved. The widespread availability of Internet access at the local level would exert a countervailing influence toward economic decentralization, but existing patterns would be impossible to overcome in the foreseeable future.[13]

[10] See for example Kenneth J. Cooper, "How India Holds Itself Back," *Washington Post*, 30 May 1999, p. B2.

[11] Interview with Carol Charles, Center for Strategic and International Studies, 1 June 2000.

[12] Carol Charles, "Enabling E-Commerce in India," Global Information Infrastructure Commission, November 1999, p. 16.

[13] Interview with Mark Falcoff, American Enterprise Institute, 5 June 2000.

B. Internet Effects: The Agricultural Economy

In addition to the generalized effects on market efficiency postulated in Section A, widespread Internet availability will have important effects on agriculture in the developing world. Because agriculture typically accounts for more than half of Gross Domestic Product, and often provides the livelihood for as much as 80 percent of the population in developing countries, the sector deserves a closer look in this paper.

The effects of Internet availability on agriculture in the developing world are likely to include the following—

- The Internet will become the primary means by which government-run agricultural extension services and private providers of agricultural products reach farmers in developing countries. Information describing new varieties of seeds, fertilizers, livestock, pest control, and plant and animal diseases and cures will become much more readily available, enhancing agricultural productivity.

- Unfortunately, in agriculture in the developing world, often the "middleman" described above is not a private businessman but is a government official. With wide variations country to country and crop to crop, the prices of agricultural products are often set by the government. Ostensibly this is done to guarantee good prices to farmers, but in fact such pricing schemes are generally vehicles for concealed taxation, subsidization of preferred classes or localities, or illicit profiteering by officials. In such situations, market efficiencies in agricultural products will be more difficult to achieve, but not impossible: market-driven price regimes will likely arise in the informal economy to compete with unsatisfactory official pricing systems. (See Section H of this chapter, on the informal economy.)

- Improved availability of weather forecasts via the Internet will provide important knowledge to farmers and fishermen, enabling them to minimize weather-related losses.

- Patterns of agricultural labor employment are likely to be altered by Internet connectivity in some circumstances. The placement of seasonal or day laborers could be made much more efficient through online labor exchanges or placement services. This greater efficiency would help ensure that adequate labor was located where it needed to be and that the maximum number of laborers would have work.

- A second-order effect of the availability of agricultural pricing information online is likely to be the rise of local agricultural commodity exchanges. Once pricing and availability information from diffuse or remote areas is widely known, it is a natural step to establish centralized trading floors where agricultural products can be bought and sold efficiently. Not only are currently available crops and livestock offered for immediate delivery, but also commodity exchanges provide a means whereby producers can sell their promises of *future* delivery of *future* crops or livestock, locking in prices and gaining working capital. In the same transactions, buyers are ensuring the future availability of needed commodities at known prices, facilitating their own business planning.

- A third-order effect of Internet availability on developing-world agricultural economies then arises. As the pattern of future prices of certain crops and livestock takes shape, producers are then able to make strategic decisions on what to produce and how much to produce. The future price of yams is down? Then plant corn instead. The future price of pork is up? Then invest in some extra piglets. This process further increases market efficiency, maximizes returns to producers, and better satisfies consumer demands.

The outlook for the development of the agricultural economy as Internet availability proliferates in the countries under study is as follows—

Sub-Saharan Africa

- There is great potential for agricultural extension services in Africa, as rural Internet availability develops. The expense of maintaining extension service field offices is prohibitive, but putting information about seeds, fertilizers, plant and animal diseases, and related topics online would be cheap. Through a single village Internet terminal, farmers could gain extensive information to improve agricultural productivity.

China

- As noted above, China's agricultural economy is ripe for developing local Internet market mechanisms. Except for basic grains such as rice and wheat, prices for farm produce are set in the marketplace, and 80 percent of farm products come from private farms. Distribution and reselling are likewise in private, local hands. Local exchanges to support transactions in agricultural commodities are proliferating nationwide.

- Government participation in the production and sale of farm products other than basic grains will probably be a casualty of greater Internet access. Even now, the few remaining government-controlled produce stores can no longer compete

with free local markets. Government prices are artificially high, and the produce is usually inferior.[14]

Russia

- The Russian rural economy runs largely by barter, as money is scarce and its value seen as uncertain. The resourcefulness that goes into sometimes complex multiparty barter arrangements would lend itself to local Internet-based barter networks.

- A number of regional and local universities are establishing agricultural extension services.[15] It would be natural for them to use the Internet to make information available to farmers in the areas they serve.

India

- Price controls and subsidies are in place over many commodities, such as grains, sugar, edible oils, fertilizer, and many industrial inputs. The trend is toward liberalization of these measures, but they have substantial political constituencies. The development of Internet-based pricing will increase the economic tension that such official price distortions induce, probably speeding rationalization in many cases.

- A model for Internet use in India's agricultural and fishing economy is already in operation in Madhya Pradesh state. Villages have bought computers and arranged for Internet service, franchising a local individual to operate the computer as a public commercial service. For 10 cents U.S., farmers can receive a printout of current produce prices, which they find gives them leverage with middlemen. Said one farmer with three acres of land, "If the price he offers suits me, I'll sell it to him. Otherwise, I'll take it to the market myself." For 25 to 35 cents, villagers can buy printouts of government forms and documents such as land records, caste certificates, and income statements—circumventing bribery demands and saving days of waiting in line. Fishermen check a U.S. government web site that posts wave heights and wind conditions in their local waters.[16]

- Poor infrastructure—transportation, telecommunications, and electric power—throughout India, but especially in rural areas, will be a significant obstacle to much of the e-commerce activity that would otherwise be possible.

---

[14] Ditty Deamer, "Government-Run Stores Can't Compete," in *China Free Markets: Farmer's Markets*, June 1999, accessed June 2000 at www.saturdaymarket.com/chinaveg

[15] Interview with William McHenry, op. cit.

[16] Celia W. Dugger, "Connecting Rural India to the World," *New York Times*, 28 May 2000, p. 10.

Colombia, Ecuador, Nicaragua, and El Salvador

- All countries of the region are agriculturally rich. Even poor farmers are usually able to provide most of their own necessities if required. Large corporate farms approach world standards in technology. Widespread Internet access would increase farmers' access to information and supplies, while opening more opportunities to market their products. The chief limiting factor will continue to be poor transport systems.

C. Internet Effects: Local-level Entrepreneurship

Widespread Internet availability will act as a catalyst for entrepreneurship at the local level in developing economies. In many cases, the Internet eases entry into new business by reducing the need for formal stores, whereas customers may be found—even worldwide—relatively cheaply. The formation of new businesses is implied in many of the changes discussed in this paper, but here are several focused points—

- Providing Internet service to local-level users in the developing world will itself be a major opportunity for entrepreneurship. Local elites and larger businesses will demand computers and other Internet terminal devices, and all the services that go with them. Providing common-use Internet devices to people who cannot afford their own installations, however, will probably be an important new business opportunity. Cyber-cafes are already proliferating in cities throughout much of the developing world. Cities, towns, and villages can also be served by Internet kiosks, where the proprietor makes queries or sends email for customers, or permits them direct access, all for a small fee.

- The opportunities to use the Internet to provide information-based business services are extensive. Possibilities discussed in more depth elsewhere in this paper include local commodity exchanges, labor exchanges, various brokerage services, and financial services.

- Prime candidates for entrepreneurship, whether Internet-based or not, will be traditional middlemen who have been displaced by Internet-generated market efficiencies. These individuals or small businesses, with extensive local contacts, business acumen, and at least a modicum of capital, will be well positioned to reorient into services such as transport, distribution, or finance.

- Internet access to international markets will not typically be useful at the local level in developing countries, except in the area of particularly desirable handicrafts or artifacts. Businesses will arise to commission, collect, and sell such specialized items overseas.

Specifics on the outlook for the development of entrepreneurship in the countries under study follow—

China

- There are no more entrepreneurial people on earth than the Chinese. In China and among the extensive population of Chinese overseas, the culture prizes and

promotes business-building and calculated risk-taking. The waning communist period in China has been an aberration, unable to overcome several millennia of cultural conditioning.

- Irrepressible Chinese entrepreneurship is showing itself in the Internet era. Cyber cafes are numerous in most of China's cities, with unlicensed mom-and-pop startups constantly vexing larger operators.[17] Small handicraft firms and cooperatives are beginning to affiliate with online distributors, opening up international markets for local Chinese enterprises.[18] At present, most e-commerce in China takes place above the local level, but as business models are established, local adaptations can be expected.

- IBM recently announced it would assist small to medium-size enterprises throughout China to get into e-commerce.[19] Foreign firms are not now permitted to invest in Chinese Internet enterprises, but assistance projects such as this are likely to provide an avenue for the introduction of advanced technology and business models at the local level.

Russia

- As discussed above, entrepreneurship is culturally suspect in Russia, except in the major cities in the European part of the country. Even there, setting up a business is often viewed as an avenue for illicit gain rather than an economically worthy and healthy undertaking.

- Under present conditions, few would-be entrepreneurs are willing to put their own capital at risk. It is more common to try to preserve savings in a form that is safe from devaluation, theft, or confiscation, spiriting money out of the country if possible.

India

- In neighboring Nepal, less developed than most of India, some artisans are finding worldwide markets for their crafts. Several U.S.-based commercial web sites have been established to take and fill orders for craft items from developing countries such as Nepal. A representative from a participating village takes the finished goods by bus to Katmandu every two weeks, for shipment to the United States. Incomes among the artisans have doubled in the past six months, and

---

[17] Stefan Whitney, "What's That Next to the Bok Choy? The Internet!," Virtual China News, 9 June 2000, accessed June 2000 at www.virtualchina.com

[18] See Chinese handicrafts for sale on www.world2market.com, for example.

[19] "IBM Eyes Online E-Business for Chinese SMEs," Nikkei Asia BizTech, 13 June 2000, accessed June 2000 at www.nikkeibp.asiabiztech.com

employment opportunities have grown. Indian crafts are also for sale on foreign web sites.[20]

Colombia, Ecuador, Nicaragua, and El Salvador

- The widespread availability of the Internet to local entrepreneurs will provide a degree of opportunity to undercut the high prices of goods that now tend to come through middlemen and distributors in the primary cities. These local business connections will thrive as long as the goods being exchanged are available and there is a reasonable means of transporting them. International sales of local handicrafts are already taking place via the Internet.[21]

[20] Miriam Jordan, "Web Sites Revive Fading Handicrafts," *Wall Street Journal*, 12 June 2000, p. B1. See the site at www.world2market.com, for example.

[21] Abby Ellin, "High-Tech Philanthropy in a Low-Tech Guatemalan Village," *The New York Times,* 4 June 2000, accessed June 2000 at www.nytimes.com

D. Internet Effects: Cartels, Barriers to Entry, Restraint of Trade

Many local businesses and related government entities in the developing world will not welcome the widespread availability of the Internet. Commonly, preexisting businesses and government offices derive a large part of their livelihood from limiting the entry of new businesses into the marketplace, either to protect market-dominant business positions or to extract fees and favors from would-be entrepreneurs who need official permission to operate. This status quo-oriented situation will tend to unravel as entrepreneurs gain access to the Internet.

The following dynamics can be expected in an environment of widespread Internet access—

- As noted previously, local business interests whose dominance depends on exclusive access to information about the demand, supply, and pricing of goods and services will lose that advantage. Local producers, whether artisans, farmers, or fishermen, will have ready access to this economically useful information and in many cases will be able to find other buyers or demand better prices from existing buyers.

- In some business types, access to the Internet permits the entrepreneur to set up a virtual shop rather than one built of bricks and mortar—the kind with which existing cartels and permit processes are used to dealing. Not only are these virtual shops less visible in a physical sense, but also classic barriers to business entry may not apply to them even when local authorities are aware they exist.

- By lowering entrepreneurs' operating costs, Internet access will often permit new competitors to undercut the prices of existing businesses, giving them a competitive advantage.

- As corrupt as senior government officials in the capital city may be, often they truly and actively oppose petty corruption at the local level because of its adverse effects on economic growth and civil stability. By initiating e-government measures such as putting laws and regulations online, allowing the downloading and printing of government forms, and putting permit application processes online, central government officials will deprive corrupt or self-interested local officials of many opportunities to obstruct business entry or extract undue payments.

The outlook for changes in barriers to business entry and the operation of business cartels in an environment of widespread Internet availability in the countries or regions of interest is as follows—

China

- The various levels of Chinese government pose obstacles—and at times direct business competition—to many private enterprises, from the national to the local level. Licenses are required for entry into most businesses, the approval processes for which are often lengthy and costly. Administrative and legal offices frequently show favoritism to selected businesses, regardless of the objective merits of the issues. Contractual obligations, particularly those that commit a government entity to certain actions or behaviors, often are overturned in favor of preferred contenders. These universal problems plague the nascent Internet industry as they do other economic sectors.

- Chinese governments at all levels are far from averse to setting up businesses that compete with the private sector, and which make the most of their advantages as government-associated entities. A recent example in the Internet industry is the establishment by the Ministry of Information Industry of a major news and informational Chinese web site[22] positioned as a direct competitor to private Internet content firms. Its director has bluntly declared that the site intends to dominate the online information industry in China, capitalizing on its ready access to sought-after government licenses.

- At the local level, in Shanghai in February 2000, the government shut down 127 unlicensed cyber cafes under the guise of enforcing regulations. More than 700 legal cafés continued to operate, however.[23] The dominant, licensed chains welcomed the government crackdown, complaining that the upstarts were charging less and using inferior machines.[24]

Russia

- Monopolies and cartels dominate economic activity in Russia, whether on a large or local scale. New entry into the marketplace is discouraged, often by coercive means. Internet-based businesses, however, are less subject to this phenomenon than more traditional firms because they are less visible and less dependent on fixed physical facilities.

---

[22] www.ccidnet.com

[23] Stephen J. Anderson, "China's Widening Web," *China Business Review*, March-April 2000.

[24] "Shanghai Gets Tough on Illegal Internet Cafés," Muzi Lateline News, 1 Feburary 2000, accessed June 2000 at dailynews.muzi.com

Colombia, Ecuador, Nicaragua, and El Salvador

- Business in the region tends to be dominated by family-owned firms with advantages conferred through long associations with local and national political structures. Widespread availability of local Internet service will foster new, lower cost entries into many businesses. Growth into higher visibility enterprises will still be difficult as the new firms encounter competitive and official obstacles.

E. Internet Effects: Capital Accumulation, Investment, and Credit

Widespread availability of Internet access in developing countries will have significant effects on the local-level accumulation and effective placement of capital for investment. Likewise, credit will become increasingly available at manageable interest rates for use by local businesses. Some of these effects will simply be a result of rising levels of income and wealth facilitated by Internet access itself, but there will be structural changes as well. These include the following—

- Entrepreneurs and existing local businesses will be able to advertise the attractiveness of investment in their firms (depending in some degree on laws governing such matters). The scale of such advertisement need not be large. Attracting just three, five, or ten investors would significantly help a small local business to expand.

- A common means of assembling local investment capital in developing countries will be greatly facilitated through Internet contact. In many cultures, it is common for a group of would-be entrepreneurs to put a set amount of money into a common "pot" once a month. In rotation, the members of the group are given the total contents of the month's pot to use as business capital. Such affinity groups could be assembled and expanded rapidly through the use of local Internet contacts.

- In the developed countries, some venture capital syndicates are setting up web sites and inviting proposals from entrepreneurs. Surely this mechanism will spread to developing countries as well. Usually such venture capital matchups will take place within the country concerned, but investment from neighboring countries is likely to increase too as businesses look for sources of supply, cheaper labor, or outlets for their own goods in nearby countries.

- Expanded Internet communication will greatly facilitate investment in the "home country" by expatriates. Expat investments and other remittances are already significant sources of foreign capital in many developing countries. When expatriates can correspond rapidly and cheaply with investment candidates back home, and when investment proposals can be prepared and sent abroad easily, the volume of such investment is certain to increase. A further advantage provided by Internet access is the greatly enhanced ability of expat investors to monitor how their capital has been used, even to the point of demanding digital photos or videos of expanded facilities.

- Local-level banking and credit activity will also be enhanced by widespread Internet availability. At the level of officially chartered banks, many will move certain operations to the Internet as a means of reaching outlying or rural areas where branches are uneconomical. Depending on the rigor of local banking law and its enforcement, unofficial banking is likely to proliferate using Internet connectivity. Moneylenders will be able to post offers to make loans, while borrowers will be able to make requests easily and privately. Actual money transfers and execution of IOUs will no doubt still take place on a face-to-face basis.

- Finally, micro-lending programs sponsored by benevolent foreign organizations are likely to use the Internet to identify loan candidates. Micro-lending typically involves very small loans made to poor individuals in developing countries, providing them with working capital to set up a tiny shop or buy a few livestock animals in order to begin generating an income.

The outlook for the growth of capital accumulation, investment, and credit in an environment of widespread Internet availability in the countries or regions of interest is as follows—

Sub-Saharan Africa

- Outside South Africa, almost all Internet development initiatives under way or planned in Africa are sponsored by foreign or African governments, international organizations, or humanitarian groups. As well meaning as these initiatives may be, they do not evince a strong commitment to the development of private enterprise and free markets on the continent.[25]

- Small inroads in micro-credit are being made in Africa via such philanthropic Internet sites as PlanetFinance.org. PlanetFinance was set up as a way to fund some of the world's poorest would-be entrepreneurs. This innovative site lists potential projects in Senegal and Benin.[26]

China

- China has a cash-and-carry economy. Almost everything is paid for in cash and in full at the time of purchase. Few Chinese have access to credit; when credit is available to small businesses or individuals, interest rates are prohibitively high and 100-percent liquid collateral is commonly required. Few establishments accept credit cards, other than those frequented by tourists. In part for these

[25] See for example, "Internet Expansion in SADC Goes Very Slow," Africa News Online, 16 June 2000, accessed June 2000 at www.africanews.org

[26] www.planetfinance.org

reasons, the personal savings rate in China is very high, typically estimated at about 40 percent of income.[27]

- This very large pool of savings has vast potential to fund new and expanding enterprises if it can be harnessed effectively. Local Internet connectivity may facilitate the aggregation and evaluation of equity funding of enterprises, but much would also need to be accomplished in China's financial and legal infrastructure for such communication to be very useful in this regard.

- Credit alternatives exist at the local level, and their effectiveness stands to be enhanced significantly by widespread local Internet access. Micro-lending is making its appearance, in which people with a degree of wealth lend small amounts of startup or expansion capital (usually $100 or so) to would-be local entrepreneurs outside the established banking system.[28] A more traditional Chinese financing device is the *hui*, in which members of an established circle of associates put a certain amount of money into a common pot each month or quarter. The pot is then given to each of the members in turn to use as working business capital. Locally focused Internet news groups and chat rooms could be used to identify potential participants in these or other investment and credit arrangements. Wider Internet availability would also open access to foreign-based online microlending facilities such as PlanetFinance.org.

- Because the use of credit cards in China is at such a low level, the creation of a payment system suitable for e-commerce presents a special challenge. The Ministry of Information Industry is working with major banks to create such a system, but it appears to be far from operational. Farthest along is the ChinaPay.com on-line banking venture.

- Foreign banks are limited in their credit operations in China, and in any case they are hesitant because the government as been known to summarily dismiss debt or obligations to foreign creditors.

Russia

- Beyond the major cities of European Russia, the country is poor, virtually without access to working capital. Foreign investment capital goes almost exclusively to firms in Moscow and St. Petersburg, and to major natural resource and energy producers. Capital accumulation and investment are culturally foreign at the local level throughout most of the country.

---

[27] "Beijingers Save While China Deflates," U.S. Embassy, China, 20 October 1999, accessed June 2000 at www.usembassy-china.org

[28] Steven Mufson, "Ex-Mao Devotee Devotes Career to Women," *The Washington Post*, 18 June 1998.

- Banks in Russia generally do not make loans to businesses for startups or expansion. They are instead occupied primarily with financial speculation and arbitrage, with the handling of government and foreign investment monies, in money laundering, and with facilitation of capital flight. Nor do local businesses have access to any regular system of equity or venture capital. Mortgage banking is severely underdeveloped as a result of legal restrictions on land and real estate ownership, closing off another potential avenue for small businesses to raise operating capital.

- Several nascent e-commerce payment systems are active on the Internet in Russia, with at least limited current functionality. The payment systems are designed to support business-to-business and large-scale business-to-consumer e-commerce, but over time should also evolve mechanisms that would support small local transactions. Most items now ordered over the Internet are paid for in cash upon delivery or through the postal clearing system.[29]

- Menatep Bank in St. Petersburg recently unveiled a system on its web site that customers and others can use to pay certain personal bills.[30]

India

- As poor as many of India's people are, the economy actually is awash in cash and hard assets that could be put to work sponsoring small-scale startups that use Internet connectivity. The extensive informal economy runs on cash that is largely hidden from official view.[31] A significant amount of personal wealth is held as gold; India is the world's heaviest buyer of the metal.

- Domestic and international benevolent associations and other organizations are active in many areas of India, dispensing "micro-loans." Many of these small loans will probably begin to go into small, community-oriented Internet kiosks. In addition to providing an income for the entrepreneur, a village Internet kiosk would be beneficial in much the same way as a new well, road, or other local infrastructure project.[32] Microlending operations themselves will be able to use local Internet connections to identify loan candidates.

Colombia, Ecuador, Nicaragua, and El Salvador

[29] Denise Albrighton, "Obstacles to Money-Making on the Web Remain," op. cit.; Andrew Travin, "E-Commerce in Russia," Aport 2000, accessed 31 May 2000 at www.aport-ru.com

[30] Leonid Konik, "Menatep Opens Way to Online Shopping," *St. Petersburg Times*, 25 April 2000.

[31] Interview with Carol Charles, op. cit.

[32] Interview with Carol Charles, op. cit.

- It is extremely difficult for local entrepreneurs to raise capital to start or expand businesses in the region. Currency instability and a lack of firm property rights for land that might be offered as collateral contribute to making loans scarce and expensive. Equity markets are severely underdeveloped or nonexistent. Ready Internet availability will improve the environment in which these infrastructures might be created, but will by no means be sufficient to do so.

- At least one Latin America-focused venture capital firm, Explorador Capital, is active in the region, focusing exclusively on financing Latin American Internet companies. Online companies funded include a large job-placement service, a health information service, and several e-commerce sites.[33]

[33] See explorador.net

F. Internet Effects: Employment Patterns and Labor Migration

Widespread availability of the Internet will have important, beneficial effects on employment patterns and labor migration in the developing countries. The decentralized nature of the Internet will make more work opportunities available in outlying and rural areas, while improved information flows will help in the rational placement of labor. In the short term, however, some of the efficiencies that the Internet will bring about will put some people out of work even while it provides employment for others. Specific effects on local-level labor markets in the developing world include—

- Particularly as agriculture becomes more productive (see Section B, The Agricultural Economy), there will be net migration of labor from the countryside to urban areas in most of the developing world. Offsetting this trend to some extent, however, will be the Internet's enhancement of local work opportunities in outlying and rural areas in much of the world. Significant numbers of people who would have left the land or their small town for the city will now stay home because they can make a go of it through the access and efficiencies described elsewhere in this paper.

- In both cities and the countryside, local online labor brokerages or placement services are likely to proliferate, replacing to some extent the crowds of day laborers gathering on designated street corners for short-term work. Indeed, simple want ads are likely to appear on local Internet sites in the many places where newspapers are expensive, late, or unreliable as sources of job information.

- Cross-border labor migration will be affected in a variety of ways by widespread local Internet access. The "brain drain" effect on developing countries is likely to be mitigated by Internet expansion. As opportunity expands at home, fewer ambitious, educated young people will be inclined to migrate overseas for work. Indeed, a reverse flow will be seen to some extent, as expatriates return to their home countries to pursue emergent opportunities. At the other end of the spectrum, labor is likely to be attracted into thriving countries—legally or otherwise— from adjoining countries that are not experiencing similar prosperity.

- The potential effect of widespread Internet availability on the organization of labor into unions, or on unions that are already organized, is complex. Where labor is atomized, the Internet will occasionally be a vehicle for publicizing grievances and in some cases assembling a critical mass of workers into a viable

union to engage in collective bargaining or other concerted labor actions. Where unions already exist, however, they are often ossified vehicles whose primary functions are the enrichment of union bosses and the control of union members by governing political parties. In these cases, Internet access by workers will tend to unravel current structures over time as information about union abuses proliferates, and alternative employment or labor organizations are facilitated through Internet use. The common factor in these alternative scenarios is the Internet acting as a catalyst for the crumbling of vested interests that are unresponsive to popular demands.

- An indirect but potentially significant effect of widespread Internet access on labor markets in the developing world will be the improvements in basic education and job training that are likely to result in many places. School buildings and teachers are expensive, but certain models of "distance" education are less so. As youngsters and workers gain increased basic education and work skills via the Internet, their employment opportunities will increase as well.

The outlook for employment patterns and labor migration in an environment of widespread Internet availability in the countries or regions of interest is as follows—

Sub-Saharan Africa

- Upper class youth from across Africa commonly attend universities in Europe or the United States, where they become adept computer users. As they return home, or communicate with home from abroad, they are influencing the adoption of computers and the installation of Internet access in the region. An example is found in Eritrea, which has a large émigré contingent overseas. Returning emigres have installed computers to support business operations to a surprising degree.[34]

- Large numbers of Africans have emigrated to Europe, the United States, and the Near East to find work opportunities. As a rule, they maintain regular communication with families left behind, and their financial remittances are a significant factor in local African economies. As Internet access expands, these communication links will shift to email and electronic fund transfers in many cases.

China

- Probably the most salient aspect of employment patterns in China today is the existence of a mobile, underemployed urban labor force that numbers in the tens

[34] Interview with Robert Houdek, op. cit.

of millions. No longer tied to the land as they were under the commune system, or laid off from factories no longer under state obligation to retain unneeded workers, this labor pool constitutes both readily employable human capital and a risk to civil order. Many of these mobile workers are in this situation voluntarily. In many cases, rural families choose a young male member to work away from home in an urban center to supplement the family income.

- Widespread local Internet access has significant potential to alleviate this problem of mobile, underemployed urban workers. There is a seemingly infinite opportunity for entrepreneurs to create local-area Internet labor exchanges, placement services, or want-ad postings to match work opportunities with those seeking jobs. To the extent that work can be decentralized using Internet connectivity for coordination, employers will be able to take advantage of cheaper rural labor and facilities while providing work opportunities closer to home for many would-be workers.

- Many educated Chinese emigrate to the West, particularly to the United States, both to further their education and often to work in technological fields. As work opportunities in technology—often using the Internet in some way—expand, significant numbers of these young people will stay in China. Indeed, there is already a phenomenon of technological entrepreneurs returning to China to establish Internet-related businesses.[35]

- Internet access at the local level will also enhance work opportunities in handicrafting and other low-level manufactures. Some locally procured Chinese handicrafts are already being offered for sale worldwide on specialized Internet web sites.[36]

Russia

- Labor in Russia tends to stay put, with little movement in search of opportunities, either within the country or abroad. The advent of widespread Internet access would help bring people who are firmly rooted geographically into somewhat more productive economic relationships.

- Neither the trade unions that survived from the Soviet era nor more recently established labor organizations play economically productive roles. Where they have any strength, they act primarily to protect rigid labor rules from efforts to rationalize economic activity. More frequently, labor organizations are simply ineffective, as evidenced by abysmally low pay scales and chronically unpaid

[35] For example, many of the key figures in China Online, Sina.com, and MeetChina.com are returnees.

[36] See World2Market.com.

wages. Especially in this latter function, more widespread Internet access could provide a vehicle for more effective labor organization.

India

- More Indian computer engineers are staying home as domestic opportunities develop. Anecdotal evidence abounds of individuals who passed up jobs overseas to work locally instead. Microsoft and other U.S. computer firms have established subsidiaries in India to take advantage of lower labor costs and to circumvent the numerical limits on alien work permits in the United States.

- A "reverse brain drain" has also begun, as computer engineers have returned to India from the United States and other developed countries to set up their own firms.

- Traditional firms in India are subject to rigid labor laws that make it difficult or impossible to lay off employees or automate processes. New firms, especially those that are involved in information technology, employ younger unattached workers and are far freer to make rational decisions on employment.[37]

Colombia, Ecuador, Nicaragua, and El Salvador

- Emigration in search of economic freedom or employment opportunity is common among the educated elites and low class laborers. Economic middle echelons tend not to leave home as readily; people who have jobs tend to stay in them indefinitely rather than take risks with their livelihoods. To the extent that widespread Internet access fosters economic opportunity and growth, a slowdown in emigration would probably be observed. This slowdown could well be overwhelmed by countervailing factors, however.[38]

[37] Interview with Carol Charles, op. cit.

[38] Interview with Mark Falcoff, op. cit.

G. Internet Effects: Taxation, Regulation, and Licensing

The low visibility of Internet transactions in developing countries will complicate the task of governments as they try to impose taxes, administer regulations, and require licenses for local economic activities. Because each of these functions slows or obstructs business activities, one result will be a freer economy and more rapid economic growth. Government revenues—both formal fees and informal bribes—will suffer setbacks. Specific effects are likely to include the following—

- Tax regimes vary widely in the developing world, and they do *not* ordinarily reflect practices in the United States, where typically a percentage-based sales tax is added to transaction amounts and business revenue or net income is taxed according to a published percentage scale. Government revenues often come from tariffs on imports and exports; levies that are, in effect, negotiated with businesses; or a wide variety of fees for permits and licenses. Most governments in the developing world own revenue-producing businesses, especially infrastructure services. Finally, in countries where producers are required to sell products to state buyers, the prices typically are lower than the market would pay, constituting a hidden tax. It is against this background that the potential workings of Internet transactions at the local level must be postulated.

- Imports or exports resulting from Internet transactions by local-level businesses or consumers would still be subject to the same taxes and tariffs as at present. Small businesses that negotiate tax levies with government authorities, however, would be in a position to conceal some amount of their Internet-based transactions. Likewise, a number of permits and licenses could be omitted in an Internet business environment, particularly in the case of small local businesses.

- Although surreptitious monitoring of Internet traffic to capture taxable business transactions is theoretically possible, in practical terms local—or even national—tax authorities in developing countries are unlikely to be able to mount any serious effort in this direction. The universal availability of encryption greatly complicates any such task.

- In much the same way as tax authorities in the developed countries are beginning to wrestle with the tax implications of extensive Internet commerce, so also will corresponding authorities in the developing world. Indeed, the solutions that evolve in the West in the coming years will probably have significant influence on developing countries' policies.

- The sale of business permits and licenses in developing countries has several purposes, the least of which is ensuring that businesses demonstrate competence in lines of work that might affect public health or safety. Permits are moneymakers for the governments that issue them, a form of taxation. In many situations, a bribe must be paid to the issuing official in addition to the permit fee itself, so licensing contributes directly to the income of the bureaucracy. As in the developed world, licenses also function as barriers to entry into a given line of business by new entrepreneurs, protecting the status of existing businesses, which take care to develop a constituency among bureaucrats or legislators. If a new or expanding local business can grow by using the Internet, it will be able to circumvent some local licensing requirements because of its unconventional nature and low visibility.

The outlook for government taxation, regulation, and licensing of local business transactions in an environment of widespread Internet availability in the countries or regions of interest is as follows—

China

- Chinese tax authorities are already concerned about diminishing tax revenues as online transactions begin to increase. Rules for the taxation of online transactions or for Internet businesses are still in development. This has not kept authorities from making arrests for tax evasion in situations that have come to their attention, however.[39] The Chinese population is highly averse to taxation, as are local businesses. Even local and provincial governments routinely evade requirements to remit tax revenues to upper governmental echelons. The increased availability of the Internet at the local level will thus produce two contradictory dynamics. On the one hand, low-visibility local transactions will be able to escape taxation in many cases. To the degree that tax authorities gain sophistication in Internet operations, however, the electronic audit trails left by Internet transactions will support tax enforcement, particularly if authorities gain unrestricted access to lines through Internet service providers.

- The central Chinese government and some provincial authorities have made attempts to regulate the Internet content that is available to the general populace. The central government has openly declared its intent to monitor Internet traffic for inappropriate content, but officials have commonly admitted that the task is impossible on a practical level. There are prohibitions on pornography, for example, but these serve more as curbs to the industry than as effective barriers. There have been moves to license Internet advertisers and to curb political

[39] "China's Taxman Alarmed by Growing E-commerce Fraud," MuziNet Lateline News, 9 June 1999 accessed at dailynews.muzi.com.

discussion. Particularly problematic is the prohibition on posting "state secrets" on the Internet, which in China can often mean unclassified, innocuous information that some official simply considers inconvenient or embarrassing. ISPs in China are held responsible for the content on the web sites they host, and even in email traffic going to and from their subscribers.

- There has as yet been little movement in China toward the comprehensive posting of laws and regulations on the Internet for ready public reference. Should this begin to occur, it would be an important step toward the establishment of rule of law. Openly published law makes capricious actions by authorities more difficult to carry out.

- Government regulations require web sites and individuals wanting to use encryption of their Internet transmissions to apply for official approval. This requirement is often ignored, however.[40] Indeed, original government efforts to stifle the use of encryption were withdrawn in the face of opposition from commercial firms that needed it to protect financial data.[41] Online banking site ChinaPay.com advertises its use of strong encryption to attract and reassure customers, for example.

Russia

- The tax system in Russia is so extortionate as to be ineffective, driving business underground or making it impossible to generate healthy profits. Corporate taxes are several times the percentage levied in the West; indeed, frequent cases have been noted of total tax rates well in excess of 100 percent. As long as Internet transactions were to take place at a local level with low visibility, they could take place out of the reach of tax authorities in many cases, but this would be a poor basis for significant economic growth.

- Under a new law that took effect in January 2000, the national tax police have virtually unlimited surreptitious access to email and e-commerce Internet traffic. To the extent they are able to identify and analyze this traffic, they will be able to detect activity designed to evade taxation.[42]

India

[40] "China Unveils Rules on Audio-Visual Online Trade," Muzi Lateline, 25 March 2000, accessed June 2000 at dailynews.muzi.com.

[41] Alexa Oleson, "China Reverses Encryption Regulations," Virtual China News, 14 March 2000.

[42] Jen Tracy, "Russia's Electronic Police Get Carte Blanche," *St. Petersburg Times*, 14 January 2000.

- In May 2000, the Indian parliament passed a landmark information technology bill that establishes much of the legal groundwork for e-commerce.[43]

- The national Ministry of Law already has plans in progress to publish all laws and general legal notifications in an electronic gazette.[44]

- Local-level officials are resisting initiatives to give citizens online access to government, but the impetus in this direction at the state and national level is considerable. India's highly complex tax regime is a serious obstacle to business formation and growth. Unless major reforms are made—apparently unlikely in the near or middle term—a significant part of India's e-commerce potential will go unrealized.[45]

- Taxation of Internet-related revenue is an unsettled issue, with precedents set for favorable treatment. India's software industry is booming and is expected to employ more than 2 million people by the end of this decade. Software exports are in the $3 billion range. Income from software exports is exempt from corporate income tax, and technology firms are exempt from paying the 40- to 60-percent import tariffs levied on computer equipment.[46]

- Although there are no laws in India regulating encryption, the Department of Telecommunications does require domestic users to obtain permission to send encrypted messages and to deposit keys with the department.[47] The degree of compliance and enforcement of this regulation is unknown, but it is doubtful that it is widely observed, especially by small businesses or individuals.

[43] Narayanan Madhavan, "House Passes E-Commerce Bill," *The Observer*, 17 May 2000, accessed 17 May 2000 at www.observerindia.com; "Information Technology Bill Introduced in Rajya Sabha," Bharat On-line News, 17 May 2000, accessed 17 May 2000 at www.bol.net.in

[44] Carol Charles, "Enabling…" op. cit., p. 16.

[45] Interview with Carol Charles, op. cit.

[46] Celia W. Dugger, "India's Unwired Villages Mired in the Distant Past," *New York Times*, 19 March 2000.

[47] Carol Charles, "Enabling…" op. cit., p. 13.

H. Internet Effects: Informal vs. Declared Business Activity

In the developed world, "black market" is generally a pejorative term that conjures images of illicit trafficking in dangerous products or nefarious services. When discussing developing countries, however, the more neutral term "informal economy" is more useful. A virtually universal attribute of developing countries is their policy of exercising state control and revenue extortion over economic activity down to very local levels. If individuals, farmers, and local businesses are to thrive—and in some cases survive at all—they must find ways to avoid or minimize government interference in their economic activities. Thus there arises widespread phenomenon of carrying on economic activity informally, without declaring its existence to government authorities.

As individuals, farmers, and local businesses gain Internet access, their ability to carry on informal economic activity will be affected in the following ways—

- As noted throughout this paper, widespread Internet access will facilitate informal economic activity, particularly at the small-scale, local level. Individuals will be better able to identify sources of products or services they need, while the producers will be able to advertise discreetly. Chat rooms and news groups would be particularly adaptable to informal business use. Local authorities could monitor them with some effect, but most business arrangements would take place by point-to-point email or face to face, evading government notice.

- Once a business grows beyond this small, person-to-person scale, however, it will be difficult to maintain its informal status. Internet availability will thus have the immediate effect of stimulating informal economic activity at the local level, but over time is likely also to give rise to more businesses entering the formal, declared economy.

- There is another important aspect of individual economic activity on which widespread Internet access will have an important effect: customer satisfaction and feedback. Now, when a customer in an informal transaction is dissatisfied or cheated, he has little recourse because the transaction was illegal in the first place. Even in formal transactions, consumer protections are extremely weak. In an environment of widespread Internet availability, however, a disgruntled customer will be able to post his complaints on a news group, voice them in a chat room, or send emails to everyone he knows. This increased consumer leverage will have a beneficial effect on the ethics and culture of business.

The outlook for the evolution of informal vs. formal economic activity in an environment of widespread Internet availability in the countries or regions of interest is as follows—

China

- Informal economic activity thrives in China and can only be facilitated by widespread local access to the Internet. Locally focused news groups and chat rooms would be ideal mechanisms to arrange for off-the-books local transactions in goods and services.

- A good example of how the Internet already facilitates informal market activity in China is in the daily quotations of "black market" exchange rates for the Chinese RMB vs. the U.S. dollar and other major currencies.[48] Business people, including those at the local level, are able to follow an important market indicator on the Internet, avoiding the street corner and the eyes of the authorities.

- The ready availability of encryption and the difficulties in enforcing rules concerning its use will facilitate local informal transactions as Internet availability expands.

Russia

- Whether in urban or rural environments, most local economic activity in Russia is conducted informally. The lack of money has reduced much of the country to barter as the standard means of exchange. Extremely high tax rates drive a significant proportion of money-based transactions off the books as well. As Internet access expands, the flexibility provided by email and chat rooms will facilitate informal economic activity further.

India

- The informal economy in India is large and active, as individuals and businesses strive to avoid price and regulatory controls as well as extortion by low-level bureaucrats. The central government continues to make significant but measured progress in deregulating the economy, and is generally not interested in tightening up enforcement of restrictions. Local e-commerce will tend to thrive in this environment.

[48] http://www.chinaonline.com/features/currency/blackmarket.asp

Colombia, Ecuador, Nicaragua, and El Salvador

- The informal economy is an important factor throughout the region, which will enhance the readiness of buyers and sellers of goods and services at the local level to arrange transactions through Internet connections. In Colombia, the informal economy is epitomized by the illicit drug industry, with all its attendant support services. In Ecuador, where the state has largely ceased to function effectively, a very large part of economic activity is now conducted without reference to governmental demands or regulations.

I. Internet Effects: Crime and Corruption

Most of the effects of widespread Internet access postulated above have been positive, as greater freedom and availability of communication stimulate economic growth. The Internet will also be a tool for use by criminals and criminal enterprises, especially in developing countries with weak or corrupt law enforcement. As noted earlier, however, the effect on official corruption is likely to be somewhat favorable. The following phenomena can be anticipated—

- As unsophisticated as new Internet users in the developing world may be, they will not necessarily be easy pickings for scamsters. Especially in environments where trust, credit, and law are underdeveloped, most people are wary of dealing with anyone they do not know. Moreover, it will be some time before Internet-based payment systems are in common use, so eliciting money will be difficult in any case. No doubt, however, imaginative fraud artists will find ways to use the Internet to fleece consumers from time to time.

- More prevalent will be criminal activities that simply make use of the Internet's rapid and relatively secure communications environment to facilitate their existing activities. The illicit drug trade is no doubt already using the Internet, and this use will probably extend to local producers and supply aggregators. The black market in copyrighted music and entertainment will receive a boost. Online gambling or pornography may take hold in some developing countries. The operations of prostitution rings would probably be facilitated. In every case, the lack of technical sophistication among law enforcement authorities, the ability of Internet users to employ multiple identities, and the availability of encryption, will make such problems difficult to deal with.

- Petty corruption, in contrast, is likely to diminish in an environment of widespread Internet availability. As discussed earlier, central governments often oppose corruption at the local level—the solicitation of bribes for carrying out everyday interactions with the public. As central governments put certain basic functions online, such as blank forms, certain licensing applications, frequently asked questions, and certain laws and regulations, petty local officials will be deprived of many opportunities to extract illicit payments from the public.

- Until widespread trusted networks and processes are in place in developing countries, credit card theft, online banking theft, and other crimes involving the unlawful appropriation of identity will no doubt proliferate as e-commerce expands. The rise of digital signatures and digital certificates for business transactions will dampen identity theft to a large extent, however.

- The effect of widespread Internet availability on the avoidance or evasion of taxes and other government levies was discussed previously.

The outlook for the evolution of crime and corruption in an environment of widespread Internet availability in the countries or regions of interest is as follows—

China

- There are loosely organized hackers for hire in China. Many of these have a human rights or political agenda, but hackers have also been known to engage in online theft. China executed two hackers in 1999 for breaking into Bank of China computers and stealing $35,000.[49] In protest, a group calling itself "Legions of the Underground" attacked official government sites for a week afterward.[50]

- Some of China's new Internet hackers have been noted keeping company with organized crime figures. This leads to speculation that plans are afoot for criminal online activity, but no indications of the nature of such criminal enterprises have surfaced as yet.[51]

- As noted above, there is a nascent Chinese pornography industry that employs the Internet, and authorities have made arrests and shut down offending sites.

Russia

- Organized crime is a fact of Russian life at all levels of the economy. Virtually no business is able to carry on without paying protection money to local gangsters. Law enforcement is lax, nonexistent, or involved in the protection rackets. To the extent that local Internet transactions conceal business activity from organized crime, it will boost local economies to a small extent.

India

- Low-level officials are already complaining about the actual and potential inroads that Internet access to government will make in their incomes from bribery. Because of their opposition, progress toward e-government will be slowed somewhat, but the real impetus is in New Delhi and several of the state governments. Local corruption, especially in the form of petty bribery and

[49] Kevin Platt, "Tao of the Times: With a Click, Chinese Vault Cultural Walls," *The Christian Science Monitor*, 1 June 2000, accessed June 2000 at www.csmonitor.com

[50] Melinda Liu, "The Great Firewall of China," Newsweek International, 11 October 1999, accessed June 2000 at www.newsweek.com

[51] Kevin Platt, "Tao of the Times: With a Click, Chinese Vault Cultural Walls," op. cit.

obstruction, will decline over time due largely to increasing popular Internet access.

Colombia, Ecuador, Nicaragua, and El Salvador

- Concrete public information is lacking, but there can be little doubt that the Colombian drug industry makes extensive use of the Internet to facilitate its business operations. At present, this activity no doubt is focused on encrypted email and file transfer traffic between main business nodes in Colombia, transporters in Mexico and the Caribbean, distributors in the United States, and financial centers worldwide. As Internet access expands to the local level, coordination of in-country production, aggregation, and related activities will become increasingly possible. Indeed, with capital available to purchase wireless communications devices and small Internet terminal devices, this expansion of Internet usage may already be well under way.

- As (and if) government laws, forms, applications, and such are made accessible via the Internet, it will become increasingly possible for people at the local level to conduct necessary interactions with government offices without waiting in long lines and paying bribes to petty officials to the same degree as occurs now.

III. Effects of Widespread Internet Availability on Local-level Politics

Any political process depends on communication, whatever the form of government. The Internet is a vehicle for interactive communication that promises to reach local levels in developing countries, to a degree without precedent or parallel. As Internet access becomes widespread, numerous effects on the political process can be postulated. Most of these effects will be favorable, leading to greater individual freedom and limitations on governmental power.

As in the case of the Internet's effect on local-level economic activity in the developing world, it is easy to focus on the anticipated positive effects while slighting the negative. Governments are universally intent on retaining power, and in developing countries the restraints on their efforts to do so by authoritarian means are weak indeed. At the same time, governments typically possess extensive resources to employ in protecting their power. The advent of Internet access at the local level in the developing world will be a positive factor politically, but it will not by itself bring about individual liberty or democratic government.

The postulated political effects of widespread Internet availability at the local level can be grouped under four categories, and are discussed at length in the following sections—

- The effects of increased access to news and information
- The effects of interactive Internet communications on local political activity
- Connectivity between local political actors and expatriates or distant domestic political groups
- Adroit use of the Internet by existing political powers.

A. Internet Effects: Increased Access to News and Information

A primary means by which oppressive governments have maintained their grip on power has been their control over what information the populace has about domestic and foreign conditions and events. The widespread availability of the Internet will compromise this control, in some cases destroying it altogether. A number of politically important dynamics can be expected, such as—

- Government press controls will become less effective over time. Certainly, government-controlled news outlets will continue to publish what the authorities want. Alternative information sources will be freely available, however, especially those that do not depend on Internet servers located within the country. As long as an alternative news source chooses to cover events or conditions of local interest, the government press will no longer be able to control such information. This change is bound to have fundamental effects on public morale, public acceptance of governmental explanations of events or conditions, and indeed the public view of their government's legitimacy.

- Widespread access to foreign commercial advertising on the Internet, along with news accounts of free and fair foreign elections, is bound to create a tide of rising expectations in developing countries.

- It will become virtually impossible to clamp down on the flow of news and information from *within* each country as well. As events take place, local individuals or political groups will be able to send word to the outside world, often accompanied by pictures.

- Governments will be forced more often into reacting to the news. Faced with adverse reports of domestic events or conditions in the hands of international news organizations, oppressive governments will be increasingly hard pressed to conceal or deny negative news. Moreover, governments will never know when the next adverse revelation will appear, and will be embarrassed or blindsided much more often.

- Government actions intended for domestic attention only will increasingly be relayed to interested parties worldwide. Although oppressive governments are unlikely to become saintly overnight, once burned by international opinion they will often be more circumspect in the future.

- Although local-level news will be able to reach across borders, much of its significance will be felt on a local level as well. If a local official commits some egregious deed, in an environment of widespread local Internet access, word will

be posted on news groups, will surface in chat rooms, and will be the topic of emails. Abuse or corruption will be subject to greater public knowledge, if not necessarily public reproof or remedy. Thus, the potential will greatly increase for local unrest in the face of governmental excess.

The outlook for the effect on local politics of Internet-borne news and information in the countries or regions of interest is as follows—

China

- The Chinese government strives to control what news and information becomes available to the populace, including that available via the Internet. It has attempted to block access to foreign news sites, exercising its control over Internet service providers. News and information is carried on a plethora of web sites, however, as well as by postings on a constantly evolving and increasingly vast number of news groups and web sites. It is virtually impossible to block incoming emails containing news. Thus, despite the government's best efforts, the Internet will expand awareness of the outside world at the local level in China. Even the posting of inconvenient overseas news from generally approved sources can get a web site into trouble. Offenders have had their licenses suspended for several weeks.[52]

- The government takes even more care to limit the local and domestic news carried on the Internet, because this information generally has far greater impact on public compliance with leadership policies. In early 2000, authorities issued regulations preventing domestic web sites from posting any news information that does not come from officially recognized news services. This measure is designed to prevent investigative reporting or the reporting of events or conditions it deems unfavorable or inconvenient.[53] Internet operators who violate these rules are prosecuted.[54]

- At times the unauthorized Internet reporting of domestic Chinese news has had international implications. When a bomb was set off near Tiananmen in Beijing recently, the news traveled worldwide via the Internet within an hour, forcing

[52] "China to Regulate Web News Reporting," *Muzi Lateline News*, 16 May 2000 accessed June 2000 at dailynews.muzi.com. Bruce Einhorn, "A Web Site Feels the Wrath of Beijing," *Businessweek Online*, 22 May 2000 accessed June 2000 at www.businessweekonline.com

[53] Ellen Bork, "Dot-Commies: Beijing's Internet Policies Are Short on Freedom, Long on Control," *The Weekly Standard*, 15 May 2000; "China Sets Up Office to Regulate Internet News," *Muzi Lateline News*, 12 May 2000 accessed June 2000 at dailynews.muzi.com.

[54] "Chinese Web Site Operator Arrested on Subversion Charges," *The New York Times*, 8 June 2000, accessed June 2000 at www.nytimes.com

the government to acknowledge the incident and to publish its own account in the official press.[55]

- Strictly at the local political level, few of these official restraints on the dissemination of news will apply in an environment of widespread Internet availability. News pertaining to local events and conditions will be quite freely exchanged among local Internet users, via email, chat rooms, and news group postings.

Russia

- Although the press is freer now in Russia than under the Soviet regime, there is still no widespread access to uncontrolled domestic or foreign news. The central, regional, and local governments still own most of the mass media, and foreign broadcasts reach relatively few people. As local Internet access becomes more widespread, uncontrolled news and information will become available to Russians for the first time.

India

- Surprisingly widespread cable television service (India's 30 million cable hookups exceed its 20 million telephone lines) has already connected much of India to the outside world's news and information. Cable access is cheap, about $3 per month, and is likely to form some of the basis for Internet service.[56] Internet access will enhance this existing connectivity through a greater diversity of sources and interactivity, facilitating the widespread dissemination of news and information, much of it political in nature.

Colombia, Ecuador, Nicaragua, and El Salvador

- Local people in the region are not presently deprived of news and information by repressive governments so much as by their own poverty. Newspapers and satellite televisions are expensive. Access to news and information for those able to pay for it is unrestricted. As Internet access becomes widespread and cheap at the local level, more domestic and international news will become available. Newspapers themselves are often in politically precarious positions, and usually do not carry incisive reporting. Thus, the quality of news is likely to increase somewhat as Internet information providers, less subject to pressure than traditional publishers, become increasingly active.

[55] Kevin Platt, "Tao of the Times: With a Click, Chinese Vault Cultural Walls," op. cit.
[56] "The Wiring of India," *The Economist*, accessed 30 May 2000 at www.economist.com

- One of the first Internet-based news services in Latin America is Pulsar, based in Ecuador. Its staff gathers stories from regional newspapers and world wire services, rewrites them for a radio broadcast format, then emails the stories to a regional network of community radio stations.[57]

[57] Barbara Belejack, "Cyberculture Comes to the Americas," accessed 13 June 2000 at www2.planeta.com

B. Internet Effects: Local Political Activity

Interactive communications via the Internet—beyond the realm of news concerning events and conditions—will have a significant effect on local political activity in many developing countries. No longer will recruitment, organizing, and fundraising depend on face-to-face contact. Patterns of local political activity in an environment of widespread Internet access are likely to assume some of the following shapes—

- Although truly democratic elections are rare at the national level in the developing world, they are not nearly so uncommon at the local level. As popular access to the Internet expands, the medium will become increasingly popular as a means of publishing campaign information about candidates and opponents, soliciting contributions, and mobilizing volunteers and voters. Particularly where a governing party discourages overt opposition, low-visibility networking is likely to take place via local Internet connections. Stories of local bosses being toppled unexpectedly in elections are likely to become increasingly common.

- The Internet is likely to become an avenue for popular pressure on local officials and local representatives at the provincial and national levels. Individuals, village councils, city block committees, and local affinity groups will increasingly take advantage of the ability to send email to officials or representatives who have historically operated without input from local constituents. Criticisms can be expected to proliferate, especially in view of the sender's ability to conceal his identity. Over time, this communication channel will probably, in at least some countries, give rise to greater responsiveness and accountability in government.

- Especially in larger developing countries, there is little direct communication between the national government and the individual. Most governmental relationships are conducted at the local level. The widespread availability of Internet communications may entail the telescoping of these relationships: when it becomes possible for the individual (or lowest level political entity) to communicate with the central government, it may begin doing so. Conversely, national governments may increasingly bypass intermediate governmental levels to communicate directly to the local level. Over time, a flattening of pyramidal political hierarchies may evolve in some countries.

- Internet connectivity will arise among nonpolitical affinity groups as access becomes more widespread. Often, however, groups that began as nonpolitical take on a political character as their interests are impacted by governmental actions. This is especially true in countries with intrusive governments, as is the

case in much of the developing world. Brought to critical mass by Internet communications, affinity groups are likely to proliferate and take on political identities, representing the interests of their members. Political pluralism in some countries long run by single parties may become a reality, partly as a result of Internet communications.

- In some cases, the political outlet provided by Internet communications may assuage the radicalism of some interest groups, obviating the motivation to turn to terrorist activity.

- As systems are developed to permit reliable and tamper-resistant voting via the Internet, electoral participation may increase to some degree.

The outlook for the effect on local politics of localized interactive communication via the Internet in the countries or regions of interest is as follows—

China

- As widespread Internet access becomes a reality in China, it will no doubt become a tool in local political activity. Many low-level political offices are now filled by relatively free elections that feature true competition between candidates. In due course, some of these contests will turn to local Internet news groups, chat rooms, and email lists to generate support. The first sparks of such local political Internet activity have already been noted.[58] There have already been many instances of Chinese citizens airing grievances to local authorities in email messages.[59]

- The Falungong spiritualist movement is known to use email to coordinate its efforts, highlighted by the totally unexpected appearance of peaceful protesters in Tiananmen Square in 1999.[60] The tens of millions of Chinese Christians practicing their faith outside officially sanctioned churches will no doubt begin to coordinate their activities via email if they have not begun to do so already. Although neither Falungong nor members of the underground Christian movement consider themselves to be engaging in political activity, the government definitely *does* see any such organizing as political and potentially subversive. By their nature, religious communities are local, and their use of the Internet will be felt most at the local level.

---

[58] Steven Mufson, "A Quiet Bureaucrat, Promoting The Vote One Village at a Time," *The Washington Post*, 14 June 1998 accessed June 2000 at www.washingtonpost.com

[59] Thomas L. Friedman, *The Lexus and the Olive Tree: Understanding Globalization*, April 2000, p. 74.

[60] Melinda Liu, "The Great Firewall of China," op. cit.

- The first Chinese ethnic advocacy group to use the Internet actively has been the Free Tibet movement. Ranging from the simple web site of the government in exile (www.tibet.com) to sophisticated interactive sites that allow the user to email letters to such organizations as the World Bank (www.milarepa.org), the Free Tibet movement has turned Internet advocacy into a high art.[61] Other repressed groups, such as the Muslims in western China, can be expected to make use of the Internet as well.

- The presence of young, highly intelligent hackers is growing in China, and they seem to share the anarchic and activist tendencies noted among their counterparts elsewhere in the world. Hackers have defaced Chinese government web sites. They can also act in a nationalistic fashion, as when they attacked U.S. government web sites following the U.S. bombing of China's embassy in Belgrade.[62]

Russia

- As elsewhere, the widespread availability of Internet communications is certain to be put to use by political activists of all stripes. Politically oriented email, chat rooms, news groups, and web sites can be expected to proliferate, much of it directed at local issues.

- Political advertising on the Internet has already made an appearance in Russia, although its effect has been greatly limited by the small number of subscribers.[63]

India

- In rural villages in the state of Madhya Pradesh, public-access Internet kiosks have been established where for 25 cents U.S., citizens can send emails to state-level officials to make inquiries, complaints, or suggestions. Officials are supposed to respond within a week. Because most village residents are illiterate, the kiosk franchisee commonly drafts their emails for them.[64]

Colombia, Ecuador, Nicaragua, and El Salvador

- Without question, the widespread availability of Internet communication will have a stimulative effect on local political activity. As parties and interest groups find themselves able to communicate and coordinate quickly and cheaply, the

---

[61] One has only to type the words "Free Tibet" into a common search engine and dozens of examples of the Free Tibet movement's use of the Internet will return as hits.

[62] Kevin Platt, "Tao of the Times: With a Click, Chinese Vault Cultural Walls," op. cit.

[63] Rod Pounsett, "Russians Need the Internet," op. cit.

[64] Celia W. Dugger, "Connecting Rural India to the World,"op. cit.

pace and effectiveness of their activities can be expected to increase. Political advertising on the Internet will become increasingly common.

C. Internet Effects: Connectivity with Expatriates and Distant Domestic Groups

Advanced or dissident political thinking in developing countries often takes place among groups living abroad, or among people living in the capital city or in a particular region of the country. The communication of their ideas and political programs to the local level has always been attenuated or even made impossible by the distances involved and the lack of rapid, economical communication. Widespread availability of the Internet will change that. The following are some of the effects that can be postulated with some confidence—

- A web site can be hosted virtually anywhere in the world, outside the control of any particular government. A dissident political group, or simply a group with an alternative political agenda, can maintain a full array of policy statements, commentaries, or exposes completely free of interference from the targeted political regime. Access to the web site from within the country can in some instances be blocked, but the site address can be changed quickly and a notification sent out to an email mailing list in short order. Instead of the risk of putting up posters or handing out brochures, dissidents can simply pass along the current web address.

- Expatriates typically maintain ties with family and friends in their home city or village, usually by infrequent letters or visits. In an environment of widespread Internet access, these ties will be far easier and cheaper to maintain. Particularly when the expat is living abroad for political reasons, these contacts will frequently have political content. Email will allow regular, private communications between exiles and supporters on the home front. Expats will be able to engage in chat rooms or put postings on news groups read regularly by political associates back home. By the same channels, they will be able to keep current on local conditions, honing their political message for maximum effect.

- When such cross-border connections do not already exist, Internet connectivity will facilitate their creation. When a local-level dissident reads foreign news or accesses a foreign-based dissident web site, it will be but a short step for him to send an email to make initial contact.

- Expatriates are typically an important source of funding for dissident political groups back home. Frequent, reliable Internet communications will facilitate requests for support and arrangements for its delivery.

- The above dynamics would be much the same in cases where the locus of dissident activity is in the domestic capital or in a particular region of the

country. Web sites can be hosted on foreign servers, but updated by Internet contact from within the country concerned. Internet contact within each country, including via encrypted email, will become a matter of ease.

The outlook for the effect on local politics of communication with expatriate or distant domestic dissidents via the Internet in the countries or regions of interest is as follows—

China

- There is already voluminous Internet communication between Chinese students and technology workers abroad and their families and friends at the local level in China. No doubt the bulk of such traffic concerns personal matters, but such channels can readily be used to carry politically significant news and information, particularly in times of crisis.

- China's first "cyber-dissident," Lin Hai, was jailed in 1998 for a year and a half for providing Chinese email addresses to an online, pro-democracy magazine based in the U.S.[65]

- As mentioned above, the Free Tibet movement is based outside China, and seeks to promote its agenda for that locality by means of web sites and other uses of the Internet.[66]

- An international connectivity that is often overlooked is that among hacking groups in various countries. For example, the Hong Kong Blondes recently gave a rare interview to the Boston-based Cult of the Dead Cow (both are hacking groups). In the interview, the Hong Kong hacker leader outlined his group's crusade to expose China's human rights abuses to the world.[67]

Russia

- There is active Internet communication between Russians living overseas and their families and associates in the major cities in European Russia. Because Internet access is nearly nonexistent at the local level outside these few cities, it does not now play any role in the development or maintenance of political awareness. The fact that few rural or small-town Russians have emigrated in recent times will keep this phenomenon from being a significant factor at the local level in the future.

---

[65] Kevin Platt, "Tao of the Times: With a Click, Chinese Vault Cultural Walls," op. cit.

[66] Of particular note is the student-based advocacy group, Students for a Free Tibet, which has chapters around the world. Its main site can be found at www.tibet.org/SFT

[67] Arik Hesseldahl, "*Hacking for Human Rights?*," Wired.com, 14 July 1998 accessed June 2000 at www.wired.com

- The Internet would have been valuable to dissidents in the Soviet era, as a vehicle for communication and *samizdat* literature. Should the government become increasingly authoritarian, Internet communication would probably become an important vehicle for maintaining a political opposition.

India

- The governing BJP already receives much of its funding from expatriate Indians.[68] The widespread involvement of Indians abroad in information technology will provide a ready means for political fundraising via the Internet.

Colombia, Ecuador, Nicaragua, and El Salvador

- Large populations from each of the countries in the region live abroad, chiefly in the United States. There is already active communication between expatriates—be they businessmen or day laborers—and their families and friends back home. As people at home gain greater access to the Internet, this communication traffic will multiply. Most messages will of course concern personal matters, but political content will find its way in as well, especially in times of political crisis in the home country. Among the reasons the Internet has developed relatively quickly in Argentina and Uruguay was the return of political exiles who had been using the Internet in their teaching and research at universities in the United States and in Europe.[69]
- To date, the clearest example of expatriate and foreign Internet support of a local Latin American political cause is that of the Zapatistas in Mexico's Chiapas state, beginning in 1994. Sympathizers both within Mexico and abroad reproduced and translated the rebels' various communiques and public letters, disseminating them widely via email networks and posting them on a wide variety of Internet news groups and web sites.[70]

[68] Interview with Carol Charles, op. cit.

[69] Barbara Belejack, "Cyberculture Comes to the Americas," op. cit.

[70] Harry Cleaver, "The Zapatistas and the Electronic Fabric of Struggle," University of Texas, accessed 13 June 2000 at www.isoc.org

D. Internet Effects: Adroit Internet Use by Governing Political Powers

Established economic interests may be slow to take coercive action against Internet use by upstart competitors, but governments that are concerned about their domestic security situation are unlikely to spare such an effort or expense. There are a number of ways in which oppressive governments could combat the freedom of expression—and political threat—posed by widespread dissident use of the Internet. The following are some patterns of activity that may arise—

- Domestically hosted web sites, news groups, and chat rooms are highly vulnerable to being shut down or closely monitored by government authorities. Indeed, government pressures on domestic ISPs—often subsidiaries of state-owned or monopoly telecommunications firms—will be the chief avenue for exploitation or suppression of dissident Internet activity.

- Monitoring and interpreting high volumes of Internet traffic is difficult and expensive. If the traffic is encrypted, it will typically be unrealistic for a government security service to perform effective cryptanalysis. Indeed, in many cases, the mere use of encryption is illegal and would itself invite government enforcement measures against users. Traffic analysis—identifying senders, recipients, message volume, and related data—is more feasible. The task is greatly complicated if users employ floating servers or false identities, however.

- A somewhat sophisticated government security service could employ hacking techniques to disrupt targeted web sites or inject viruses into selected messages to disrupt dissidents' computers.

- A government could use the Internet aggressively to promote its own views and policies. Web sites, either openly or surreptitiously supported by the government, could attract significant traffic if they had attractive content. A government could send emails with propaganda messages to Internet subscribers, a practice that could be effective if skillfully done. The Internet is a perfect vehicle for the dissemination of disinformation: a government could easily plant misleading information in a variety of ways, even to the point of creating bogus email messages ostensibly from trusted associates to sow mistrust or confusion among dissidents.

- Finally, the effectiveness of central government control over local offices will probably be enhanced by using the Internet to promulgate orders and questions to the local level, and to monitor their compliance with policy decisions.

The outlook for the effect on local politics of the adroit use of the Internet by existing political powers in the five countries or regions of interest is as follows—

China

- The Chinese government makes no secret that it monitors email, tracks content compliance, and enforces e-commerce tax regulations. This is accomplished by intercepting, monitoring, filtering, and blocking content that flows through the government-controlled gateways that plug China into the global Internet. Although many adept users have found ways around the monitors and filters, the government's sophistication in using the Internet's tools will improve with time. Considering the vast potential traffic volume involved, however, the government's efforts to maintain control will only be marginally effective. Encryption will further erode government control of Internet content.[71]

- At the local level, governments are unlikely to be able to exercise effective control of political use of the Internet. It will be beyond local capabilities to monitor traffic for adverse political content, especially if messages use encryption.

- From the government's point of view, a more promising strategy of Internet use will probably be to dominate the flow of Chinese language news and information available to the Chinese people. The emergence of CCIDNet.com, backed by the Ministry of Information Industry, is a key indicator in this regard.[72] Flooding the Chinese language Internet with material favorable to the government will tend to marginalize the relatively few news sources independent of government control. The government itself need not produce all of this content. Rather, through licensing, regulation, and other official pressures, it can be expected to bring about favorable behavior on the part of most Chinese language content providers.

- This proactive strategy of attempting to dominate online news channels will probably also be pursued by local political authorities. Devices such as government-sponsored web sites, widely disseminated email newsgrams, and postings on news groups can be expected to proliferate.

- Specifically targeted active measures can also be expected. In an early example, the Chinese government evidently used the Internet to launch denial of service

---

[71] Stephen J. Anderson, "China's Widening Web," *China Business Review*, March-April 2000. Melinda Liu, "The Great Firewall of China," op. cit. "China Clamps Down on Mainland-produced Internet Content," *Muzi Lateline News*, 28 January 2000, accessed at dailynews.muzi.com

[72] "China's Internet Regulator Launches Web Site," Muzi Lateline News, 3 April 2000 accessed June 2000 at dailynews.muzi.com

attacks against foreign-based web sites supporting the Falungong movement.[73] At the local level, governments with a modicum of technical sophistication available could use surreptitious active measures such as false or deceptive email traffic to sow discord or confusion among targeted political groups.[74]

Russia

- In January 2000, a law was enacted that effectively provides eight Russian police and security services full access to Internet traffic. ISPs are required, at their own expense, to run their trunk lines through designated government computer sites. Ostensibly, the security services will require court warrants to tap email and e-commerce traffic, but this is a nonexistent safeguard. In effect, all Internet traffic will be subject to government monitoring, limited only by the challenges of volume and encryption. In addition to the Federal Security Service (FSB), agencies participating are the Foreign Intelligence Service (SVR), the tax police, Interior Ministry, Border Guards, Customs Committee, Kremlin security service, presidential security service, and parliamentary security service. Veteran human rights activist Yelena Bonner was quoted saying, "This means Russia has officially become a police state."[75]

- In addition to providing Russia's police and security services a window into Internet communications for monitoring purposes, this unrestricted access will permit them to block traffic to and from Russian users, both broadly and selectively. They will also be in a position to engage in "active measures," such as disinformation or other information operations.

- Both the Russian government and supporters of the Chechen combatants have made significant use of the Internet to disseminate their views of the conflict in Chechnya.[76]

India

- There is little risk of Indian authorities using the Internet in any oppressive or intrusive manner. The practical and technical challenges of doing so are nothing the state or national governments are equipped or inclined to try to overcome. Just as compelling is the widespread popular opposition to intrusive

---

[73] Melinda Liu, "The Great Firewall of China," op. cit.

[74] "China's Internet Clampdown Will Lose Sting in the Long Run: Analysts," Muzi Lateline News, 28 January 2000, accessed June 2000 at dailynews.muzi.com

[75] Jen Tracy, "Russia's Electronic Police Get Carte Blanche," *St. Petersburg Times*, 14 January 2000.

[76] See the Russian sites at www.infocenter.ru, www.chechnya.ru, and www.antiterror.ru; the pro-Chechen sites can be accessed at www.kavkaz.org and www.ichkeria.com.ge

governmental measures.[77] A recent example was seen in the May 2000 parliamentary debate over a major e-commerce bill. The bill's initial draft included provisions that would have forced the registration of domestically hosted web sites with the government. Cybercafe owners would also have had to record the identity of their customers, along with the sites the customers visited. These measures received little support in Parliament and were quickly dropped.[78] Although many structural obstacles to economic and political liberalization exist, the trend is toward increased freedom.

Colombia, Ecuador, Nicaragua, El Salvador

- The governments in the region have limited expertise and money to make active use of the Internet as a political tool. This situation is likely to persist indefinitely. In nearby Mexico, for example, supporters of the Zapatista rebels in Chiapas have accused the government of surreptitious interference with their Internet connections,[79] and governments of the countries under study here could probably do likewise if so motivated.

[77] Interview with Carol Charles, op. cit.

[78] Sanjeev Miglani, "India Drops Controversial Change to IT Bill," Reuters, 15 May 2000.

[79] Harry Cleaver, "The Zapatistas and the Electronic Fabric of Struggle," op. cit.