The Three Digital Divides

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With Internet connectivity progressing at a dizzying rate, the focus of attention has shifted to those left behind. The shorthand word for this concern is the "digital divide." Underlying virtually every discussion about this digital divide of Internet connectivity is the implicit assumption that such a divide is a bad thing, requiring us to do "something." But maybe we should first pause for a moment and understand the implications of ending this divide. If we do that we might end up changing our perspective on Internet policy in an important way: away from a focus on *Internet connectivity*, and towards the creation of *e-commerce.*

For a number of years the U.S. administrations have been talking prominently about the digital divide. However, if one looks at the US government's own numbers, one can reach a more hopeful conclusion. With present trends continuing, in a few years Internet connectivity will be near universal in rich countries, like electricity or television. A major reason is that the access mechanism to the Internet will have changed and become user-friendly or user-independent. The Internet will soon be liberated from the complex gateway bottleneck of the microcomputer, arguably the least-friendly consumer mass-product ever. There will be many other entry-gates to the Internet, such as regular phones or TV sets. Therefore, for the rich world the universality of narrowband Internet connectivity will not be an issue.

It is most likely that an Internet differentiation will emerge along dimensions of *quality*. High-speed broadband Internet access requires an upgrade of the infrastructure -- whether telecom, cable, or wireless – which must be recovered through higher prices. Income, location and demand factors will be factors for bandwidth consumption. Broadband will therefore be the digital divide issue for wealthy countries. Yet one cannot expect that high-speed Internet access (most likely used by consumers primarily for video applications) would command the same societal priority as the basic type of Internet service.

But the transformation in rich countries of the divide into a gentle slope does not mean that the issue will not last and persist for the poor countries of the developing world. And in an interdependent world this becomes a problem not just for the South, but also for the North, because such a gap will inevitably lead to international conflicts.

In talking about the Internet for poor countries, it is easy to feel like a modern day Marie Antoinette. *Let them eat laptops.* Of course the Internet is important. But is it really a priority? The answer is yes, because tomorrow's problems originate in today's actions and omissions. There is no luxury to solve other problems first. The world does not stand still and wait.

Spain and Portugal, the first European colonizers of the New World, were the world's leaders in shipping, which was the primary communications technology in the 16th and 17th centuries. They had the best of

vessels, navigation equipment, maps, seafaring skills, and weapons. This combination catapulted the Iberian region to prosperity. And yet, by the 18th century these countries had fallen behind England in industrial hardware and scientific software. They missed the next revolution, and centuries later had not yet caught up.

Today we are in the beginning of another revolution, driven by the Internet, and the question is what the cost of falling behind is this time.

It is important to distinguish between three kinds of gaps: The 1st gap is that of *telecommunications connectivity*. This gap is being closed by investment in infrastructure and by liberalizing policy reform. In consequence, the telephone penetration of the developing countries has been improving. Governments have been making telecom connectivity a priority. Overcoming this gap is thus something that engineers, investors, and governments now know how to do. But progress in telecom connectivity, difficult as it may be, will prove to be the easy part.

The second type of gap is for *Internet access*. In 2000, only 3% of Internet computer hosts were domiciled in non-OECD countries. Telecom and Internet are related, of course. Internet usage is much more expensive in developing countries, both relative to income and in absolute terms. To an ISP in Argentina, leasing a T-1 equivalent capacity (~1.5 Mbps) from a phone company costs, in 1999, 50 times as much as in the US. Of course, progress is being made in Internet connectivity, too. For Latin America, growth exceeds 50% annually. But closing this gap, too, will prove to be, relatively speaking, an easy task. In fact, it is easier to overcome it than the gap in telecom infrastructure. Once telephone lines exist it is not very difficult to connect a computer or a simple Internet device to them. Some specific policies to encourage internet usage is to establish flat rate telecom pricing on local calls; accept widespread use of IP telephony; create public internet access points such as kiosks at public places, government departments or post office; and use of email for some government business with citizen.

Internet connectivity does not take care of the third and critical gap, which is *e-commerce*. In fact, progress in overcoming the first and second gaps may exacerbate the third gap. Right now developing countries account for only 5% of world commercial websites and for 2.4% of world Internet commerce revenues. In contrast, 12 countries will account for almost 85 percent of e-commerce and 8 countries will account for 80% of e-content.

To understand why this is so, let us make three observations about the global dynamics of e-transactions

1. The price of international transmission is dropping rapidly.
2. Domestic internet penetrations are increasing rapidly
3. Most e-commerce applications have strong economies of scale.

Low-cost global transmission leads to a great rise in electronic transactions with consequences for business. Of course, traditional ways of doing business will not disappear, just as the mom-and-pop store did not vanish when supermarkets emerged. But the energy and dynamism will be in electronic modes of commerce. And here, it will be especially US firms that will be most successful. They will be technologically at the leading edge, with risk capital at their disposal, with the advantage of early entrant, and a large home

market. Once a firm establishes a successful model for the US market, and invests the fixed costs and once transmission price is near zero, there is no reason to stop at the border.

The implications are that e-commerce will be dominated by firms from the US and other electronically advanced countries. Closing the first two gaps therefore exacerbate the third gap by creating the highways and instrumentalities for rich countries to sell in poor countries.

Of course, it is not purely a one-way street. The Internet also provides poor countries with opportunities to participate and share information. We have all heard stories about how a local craftsman in a remote village can now access the world market for his woodcarvings. True, for certain types of products marketing becomes easier. But for most mass products, the complexities of sophisticated e-commerce sites are great, are greater still for information products and services, and will be even greater in a broadband Internet environment where the production costs of attractive e-sites are high.

What counts are not absolute but relative cost reductions, relative advantage of e-commerce going to advanced countries.

One lesson we have learned the hard way is that it is expensive to do E-commerce well. E-commerce operations are difficult. They are vastly more is involved than running a website and a shopping cart. Many systems need to be in place and integrated. Some elements needed are supply chain EDI, payment systems, integration with financial institutions, fulfillment systems, customer data mining, production, customization, community creation and the creation of consumer lock-in by additional features. Intermediaries need to be re-shaped. Processes are accelerated domestically and internationally, at lightning speed, with great reliability, with easy scalability, and flexibility of configuration.

All this is still truer for the emerging broadband Internet. The costs for consumer e-commerce sites will rise considerably. Text and stills will not be good enough in a competitive environment, and expensive video and multimedia will be required.

What are some of the implications?

Instead of being that frictionless competitive capitalism that people rhapsodized about, many parts of the new economy will actually be a fortress of market power. Economies of scale are returning. On the supply side, the fixed costs of e-commerce operations tend to be high, but the variable cost of spreading the service to the entire world are relatively low—the classic attributes of "natural" monopoly. On the demand side, there are "positive network externalities" of having large user communities. Put these three things together –high fixed costs, low marginal costs and network externalities – and there are real advantages to being large.

Another implication is that traditional brands will predominate. When insecure customers brave into the new economy, they want to feel safe about the deal and the quality of the merchandise, and whether that dot-com will be around next week. Established brands are trusted? But at the same time, such brands will not remain static. The tools of individualization will assert themselves, and create customized branding.

Those without quality brand will have to find market niches. Some of those will be offshore transactions, which will inevitably lead to consumer protection problems. In other cases, developed countries and

established interests will desire to expand old rules to new activities, such as for e-medicine or distant education

Developing countries can probably best participate in e-commerce for commodity products (example: sugar), where there is no brand image and where sellers compete on price. The competitive advantage goes to the low-cost provider with low-cost production, economies of scale, and efficient distribution. It is difficult to be successful in these markets

The Internet is a revolution, and it is characteristic of revolutions that they create many losers -- banks will be threatened by electronic global financial institutions; universities will find their students migrating to distance education; global Hollywood video servers; etc will bypass TV broadcasters. Most institutions will be losing the protection of distance, and will be exposed to world markets.

It is characteristic of losers, especially if they are domestically still large and powerful, to seek protection through the political sphere. And therefore, there will be an inevitable global political backlash against e-commerce. This is likely to take the form of restrictions, by countries on the wrong side of the gap for e-commerce, and there will be a strong likelihood for international cyber trade wars.

Centuries ago in Spain, the powers resisting the industrial revolution and its reshaping of domestic power were the Church, the State, and agricultural economic interests. They won out, and Spain was slowed on the road to industrialization. A similar scenario will play itself out as we enter the digital economy, and as the losers begin to organize themselves.

The US has been strongly arguing in favor of non-intervention into the evolution of the Internet. Yet for the US to preach to the world to leave the Internet alone does not ring true. It is easy to criticize foreign restrictions on e-commerce in the abstract. But imagine the response in the US if there were a thriving entry by, say, tele-doctors from Albania, child pornographers from Thailand, tele-casinos from Monaco, and blue-sky stock ventures from Nigeria. Each society has a variety of values and interests, for better or worth, which underlies its legal arrangements, and it is not going to drop them just because the new activities are done over computer networks.

The main alternative to future conflicts over cyber-trade, and the best remedy to the gap in e-commerce is for developing countries to create progress in e-commerce that makes the electronic highways into two-way routes. But what can a developing country do, concretely? This is much more difficult than catching up with telecom densities, because it is a question of general societal modernization, not just of an infrastructure construction program.

There is no single strategy, no silver bullet. But here are several suggested elements.

- *telecom policy of entry and investment* based on market forces and competition

  Use government as lead user, to help create domestic critical mass and experts. The US military had been successful in getting the Internet started in the first place. Government operations such as procurement should move to the web. This would create transparency, reduce procurement cost, and force domestic suppliers to move to electronic marketing. Governments could also provide some services

electronically, such as the filing of forms and applications, or information on subjects such as health, education, taxes and agriculture.

- *Be prepared to ignore domestic consumer markets*. It takes too much time to develop them. The focus should instead be on the global market, mostly business-to-business. The domestic consumer market is relatively small, but the global Internet market is huge and open. The creation of free trade zones for e-commerce is one concrete step in that direction. Under such an arrangement, companies emerged in expert-oriented as in the provision back-office services to developed countries' e-commerce providers, would obtain some tax advantage in terms of tax and regulation.
- *Develop niche markets.* Leverage cultural proximity. Examples could be:
  Regional hub: Tunisia for North Africa
  Language: Brazil for Portuguese speakers
  Religion: Saudi Arabia for Moslems
  Economics: Bahrain for oil industry
- *Reform the legal system* to make e-transactions possible. The recognition of digital signatures is an example. Adapt commercial codes to online environment, and update rules applying to liability, contract, privacy and security issues. Examples are the UNCITRAL Model Law (1996), and the ITU EC-DC project. It is also essential to get control over fraud, illegal operations and piracy that undercut the emergence of a domestic industry.

- *Strengthen the physical delivery infrastructure and investments in it.* One cannot sell abroad if one cannot ship it quickly. This is one of the secrets of Singapore's success. This includes the physical delivery infrastructure of harbors, airports, and export facilities.

- *Strengthen the investment climate*. Provide tax incentives for e-commerce and e-exports, offer low international telecom rates, support micro-credit institutions, encourage local entrepreneurship and coops, and support the venture capital industry and incubators.

(6) *Support technological education.* Investments are important, but not as important as IT skills and new economy mind set. There are 3.8 R&D scientists and technicians per 1000 people in developed countries and only 0.4% per 1000 in developing countries.

- *Create wealth incentives*: Permit e-commerce entrepreneurs to become rich through the Internet, thereby fuelling the emergence of local start-ups.
- *Encourage foreign investments*
- *Provide back-office functions* to major e-commerce sites as a way to establish experience. India and Jamaica are examples.

Most well informed people understand the importance of e-commerce. But they often do not have a sense of urgency. Right now, the foundations are being laid for a great new economic system and for a new generation of business empires. Even if less developed countries cannot be expected to be among the leaders there are enough emerging countries and striving firms that could be suppliers and not only buyers. India, for

example, may be a poor country by most measures, yet it could become an e-commerce participant beyond its growing Internet technology role.

Success in e-commerce means participation in modernization, but also participation in the disruptions brought about by modernization.
The Internet will lead to less stability, more fragmentation, less consensus. But the alternative is much less palatable. Failure in participating in global e-commerce means fundamental long-term economic stagnation.

Different countries are affected differently, depending, among others, on their economic mix. The U.S. had a troubled industrial sector, and the new economy was a way to resume growth. The US society also is capable of change, being perhaps strongest in situations of accelerating change --"2nd derivative" situations. In contrast, Europe and Japan had stronger old economies, and are stronger in managing steady growth –"1st derivative" economies. And less developed countries had, for a multitude of reasons, the greatest difficulties of changing to new economy activities, primarily because these require substantial societal modernization and infrastructure investments.
This is then the challenge to developing countries. To get moving, to move beyond the first gap, that of telecommunications, by overcoming the traditional policy squabbles about the rights of companies entrants and the privileges of incumbents--issues that will seem in a few years quite trivial; to close the second gap, that of the Internet. And to deal aggressively with the closing of the e-commerce gap, because it is the real, critical, and fundamental threat -- as well as major opportunity -- to poor countries, and to economic relations around the world.