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From POTS to E-commerce: What Have the Developing Countries Learnt About Property Rights Over the Last 50 Years?

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ABSTRACT *The challenge of electronic commerce is new to the developing world. Will this technology-driven initiative allow developing countries in Asia to leapfrog? Electronic commerce will trot or walk depending upon the property rights shaping its behaviour. The history of information infrastructural provision teaches us that efficient property rights can only be expected in rare circumstances, when the polity has a highly developed civil society and existing institutions produce restraint. Sequencing and the fit between domestic institutions and the types of property rights are important. Well-organized large user groups are clear winners from reforms, but universal service in countries like South Korea and Singapore resulted from state prerogatives. Three layers of an electronic commerce network along with five conditions of property rights efficiency are identified.*

Keywords: Asian countries, electronic commerce, information infrastructure, property rights.

Introduction

The challenge of electronic commerce is new to the developing world. Like other technology-driven initiatives of the past, much is now made of the promise and uniqueness of electronic commerce. If developing countries have suffered from a case of market failures encumbering them from fully realizing the benefits of globalization, electronic commerce purports to deliver them from this curse. 'With the click of a mouse' as the adage goes, far-flung markets can now get connected—and created. A senior trade official from the Philippines recently noted that electronic commerce and information technologies are 'the ingredients that will make us either succeed or fail'.[2] From traditional industry to the fast-growing service sectors, developing countries can now reportedly become players in global markets. Asia, the region addressed specifically in this article, is seen as lagging behind only the United States and the European Union. Sixteen percent of Internet users, excluding Japan, are in Asia. Architectural drafters in the Philippines, software

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programmers in India, crafts makers in Thailand, clothing outlets in Pakistan, can thus all benefit from the creation and expansion of electronic markets.

Will electronic commerce allow developing countries in Asia to leapfrog? As with capitalism in general, electronic capitalism also requires an enabling set of property rights, which can encourage both the physical infrastructure needed for commerce, as well as the associated commercial services and activities. While electronic commerce is new, the history of information infrastructure provision, starting with Plain Old Telephone Service or POTS, in these countries is not, and may be instructive. What does the history of the past 50 years of information infrastructure provision tell us about the evolving property rights for electronic commerce?

The answer to the preceding question centres on the possibility of adequate and institutionally specific property rights for electronic commerce. I argue that property rights for electronic commerce must be impartial, inclusive, transparent, enforceable and interoperable. The interoperability condition, while common to infrastructures in general, is especially important with respect to electronic commerce. The history of the past 50 years of infrastructural provision sheds sobering light on the prospects for electronic commerce in the developing world. Infrastructural provision generally favoured state prerogatives, remained supply driven and, more often than not, ignored user demands and network externalities in most of the developing world. Regulations and policies were opaque and unenforceable. Finally, the infrastructure also favoured the politically influential areas. Information policies may have been heavy on the rhetoric favouring the weak and the marginalized in society but infrastructure provision did not come about for these groups. To think of electronic commerce as a magic wand carries with it a crude technological instrumentality. More than just an infrastructure is required to realize this promise. The property rights approach offers a comprehensive way for examining this challenge by embedding infrastructural provision in organizations, institutions and societies. I describe this approach before turning to the lessons from the last 50 years.

The Importance of a Property Rights Framework

Examining telecommunication infrastructure historically shows that technological evolution is best evaluated via criteria rooted in dynamic institutional contexts, ideally understood with reference to New Institutional Economics (NIE). Electronic commercial activities demand property rights resulting in the creation of new infrastructure and institutions, often in macro political–economic environments undergoing radical change themselves.

Technological change may or may not bring about growth-oriented property rights. North tells us that neoclassical economic theory can only inform us of resource allocations in a given moment of time, but fails when evaluating dynamic change. Creation and enforcement of efficient property rights are path dependent, which is the 'key to an analytical understanding of long-run economic change'.[3] Olson and Kahkönen note that in evaluating dynamic contexts, it is important to realize that emerging markets' transactions are neither spontaneous nor self-enforcing, and that both the creation and enforcement of property rights involve calculations of policy and power.[4] For Williamson, a bottom-up approach toward institutions examines the organizational environment in which particular rights arise, rather than a top-down approach which solely examines the differential impact of emerging market norms. Instead of evaluating the norms through the

criteria of normative efficiency, Williamson proposes that we situate both markets and firms in organizational constraints in which they are bound.[5] This would force us to ask why particular organizational arrangements exist and if they are remediable, rather than merely 'excoriate on politics' and politicians.

Before calling for changes in the contractual environment, NIE thus first examines the origins and constraints embedded in this environment. The lesson is clear: efficient property rights take a long time to evolve and to be implemented and enforced. *For economic growth, efficient property rights must include criteria of impartiality, inclusiveness, transparency and enforceability.* For electronic commerce to prevail, the additional specification (or sub-specification) of *interoperability* of property rights is necessary. This is a tall order which cannot be fulfilled even by sophisticated pluralistic systems like the United States, well suited for creating and enforcing private property rights. It would be unrealistic to expect Asian states to evolve and implement such property rights in a short period of time. North sums up the issue well: 'When there is radical change in the formal rules that makes them inconsistent with the existing informal constraints, there is an unresolved tension between them that will lead to long-run political instability'.[6]

While the property rights literature in telecommunications is still developing, it does provide a few clues to the kind of mechanisms that might allow countries to make credible commitments toward network expansion and efficiency under market-oriented circumstances to further electronic commerce. This builds on similar concerns noted by several authors.[7] The rationale behind such emerging property rights can be summarized as follows: avoidance of capture by the government's internal prerogatives, streamlining the regulatory process so it does not become messy or nepotistic, efforts to rule out rent-seeking by the industry, especially through pro-competition strategies, and making infrastructure provision demand-driven.

For property rights to be impartial, inclusive, transparent, enforceable and interoperable requires an optimal mix of demand and supply contexts. It is too early to tell if such a mix exists to further electronic commerce in Asia. However, the legacy of past provision of information infrastructures may offer a few clues on the future courses of action.

Network Requirements for Electronic Commerce

So far, I have noted that property rights for electronic commerce must be impartial, inclusive, transparent, enforceable and interoperable. What has been missing is the type of network that such property rights are supposed to enable. A barebones outline of such a network is described first before turning to the historical features of the institutional environment that may or may not enable its creation.

Figure 1 describes the three crucial layers of this network. A first glance shows that this network is more than just an infrastructure of computers and telecommunications. That is the foundational bottom, the historical 'old economy' portion of what traditionally constituted an information infrastructure, upon which other parts of the network must rest. In many parts of the developing world, including Asia, teledensities and computers per capita still remain pitiably low (see Table 3). However, an information infrastructure will not trigger electronic commerce unless a host of supportive commercial service networks are also in place. This is the second layer of the pyramid. For purposes of simplicity, the following supportive networks are emphasized here: transport and distribution,

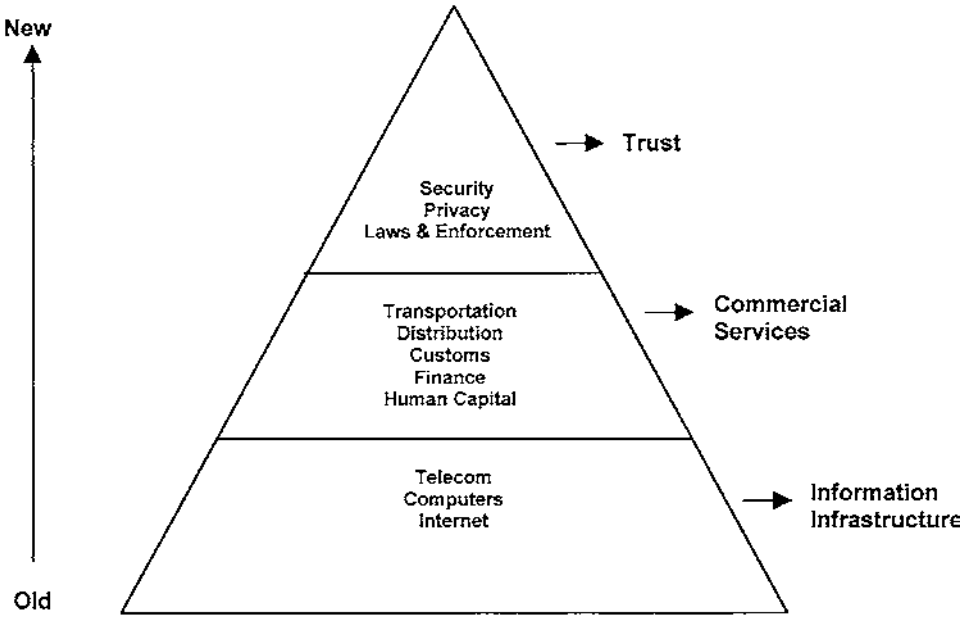

Figure 1. Three layers of the electronic commerce network.

banking and finance, taxation and customs regulations, and human resources. These networks are also historically derived but now they must be reconfigured to serve the ends of electronic commerce and are thus presented with a new challenge. For example, distribution networks ensure that shipping and packaging of goods flows smoothly, but electronic tracking capabilities are now crucial for a smooth functioning electronic commerce network. Payments clearing systems, ease of credit card use, and banking services are elements of the financial systems needed for electronic commerce. Taxation regimes, still in evolution for electronic commerce, are part of the enabling (or disabling) environment for commerce of any sort. The third layer of the electronic commerce network brings us to the newest, and arguably one of the greatest, challenges for electronic commerce in the developing world, namely the element of trust. Trust is always a crucial element of any type of network. Imagine the number of transactions that get honoured in your daily lives because of nothing else but trust that might exist among individuals. In a global economy, with widely dispersed users over a network, such trust must be generated through institutional means. For the purpose of electronic commerce, crucial elements of this trust include security and encryption, safeguards for privacy, means of legal enforcement, intellectual property protections, and that 'certain something' that would generate enough confidence among users to start participating in electronic commerce activities involving the developing world.

Developing countries are not alone in putting together the elements of the electronic commerce pyramid. Even the developed world is still trying to figure out crucial features. However, while most of the developed world's time is taken up by figuring out the top two layers of the network, involving mostly new challenges, the developing world must still grapple with the inadequacy of the (old) bottom layer while trying to instil supportive services and trust in the marginal networks that do exist. It is a tough job! A holistic approach is necessary. In political terms, it means

Table 1. Property rights requirements for an electronic commerce network (for infrastructure, commercial services and trust)

Impartiality	• Objective criteria laid down in rules • Autonomous regulatory agencies implement policies • Politically powerful or incumbents are not favoured
Inclusion	• Demand driven—consumer, civil society and business groups are involved
Transparency	• Well publicized, clear and predictable objectives laid out in policies and regulations • Checks placed on executive and legislative discretion • Pricing schemes are simple and cost-based
Enforceability	• Independent regulatory agencies possess dispute settlement powers • Existence of an independent judiciary and law enforcement framework
Interoperability	• Network interconnection is simple, cost-based, and seamless • Set of national and international agreements to ensure network (infrastructural, commercial and trust-based) interoperabilities

bringing about the cooperation of several ministries. No wonder, therefore, that even in a developed country such as the United States, the electronic commerce interagency working group appointed by President Clinton in 1997, included high-level officials from several departments and agencies (Executive Office of the President, Federal Communication Commission, Federal Trade Commission, Office of Management and Budget, the State, and the Treasury).[8] Mann *et al.* advocate the appointment of an electronic commerce czar.[9] In the United States, Ira Magaziner is believed to have played this role during the crucial time that the Clinton Administration made available its seminal report, *A Framework for Global Electronic Commerce*, on 1 July 1997. The report paralleled and preceded global policy advances in electronic commerce, especially in the European Union.

Evolution of Property Rights in Asia

Can Asian countries design a set of property rights that will enable the three layers of the pyramid to emerge? Five conditions for property rights were identified earlier which are now described collectively, both with respect to the three layers of the electronic commerce network and also with respect to the past history of infrastructural provision. First, each of these five conditions is defined here in Table 1 with respect to the three layers of the electronic commerce networks, before turning to the institutional factors that may or may not enable these property rights to emerge.

Infrastructural Provision

The foremost lesson over the last 50 years is that infrastructures do not bring about progress and growth; the institutions in which they are embedded do. Thus, we must be wary of instrumental beliefs in progress where '*x*' amount of technology is supposed to result in '*y*' amount of progress. And, we must also take care to look at the role of underlying institutions and property rights. Even in terms of electronic commerce, '*x*' amount of an infrastructure must be thought of in terms of the institutions that bring it about. Electronic commerce is as much about technology as it is about institutions.

Instrumental beliefs in progress, equating infrastructure provision with development, have been an indelible feature of telecommunications in the last 50 years. Studies correlating a given amount of telecommunications with a given amount of growth (or vice versa where a given amount of GNP in a country is taken to dictate a certain number of telephones for a country), while contributing to our understanding of the importance of telecommunications, nonetheless, through a slight twist of logic, convert the development problem into a technical one. Two types of linkages then become common: ones which compare telecommunications indices across countries (investment, number of phones, service quality, etc.) to implicitly argue that more is better, and ones which assume that given a certain amount of telecommunication infrastructure, development benefits to particular groups in society would be automatic.

A related myth is that of technological efficiency which is often posited as an end in itself. The common practice here is to underscore the high growth rates in countries undertaking restructurings, to note the value of restructuring outcomes. Without careful comparative work—which compares countries with government providers versus those without them, or growth rates in countries before and after privatization or liberalization—these outcome indicators mean very little. But most of all, these indicators tell little about who benefits from these outcomes, and for how long, and on whose behest restructurings are taking place. Large quantitative studies here also gloss over the finer nuances available in many cases.

It is hard, in fact, to evaluate the outcomes of telecommunication market reform without a reference to institutional contexts and property rights. First, growth rates in telecommunications in most countries, since telecommunication was made a priority in the 1980s, have been quite high compared to previous eras. Going by these growth rates alone would make us pronounce reform exercises to be a success story the world over. But, how should we examine the high growth rates of network expansion under state auspices in authoritarian countries like Myanmar, Laos and China and compare them with low growth rates in more democratic and market-oriented circumstances? Thus, attributing change to reform is difficult without comparing countries temporally in terms of service provision and supply-side efficiencies before these reforms took place. A comparison with countries in which reforms have not taken place is also necessary. Second, given the varying levels of reforms in different sub-sectors, capturing precise effects of reform in sector-wide quantitative studies, which are usually carried out in this regard, remains a dubious proposition. Third, given the non-comparable starting points for reform efforts, differences in levels of development and other cross-national variations, quantitative indicators may be too pithy to tell the precise story. For example, it is well known that countries with low teledensities can achieve much higher growth rates than those with high teledensities.

While quantitative indicators tell a partial or inconclusive story by themselves, their analysis in the context of institutional change does point out a few broad trends, and thus it helps to count them as dependent variables affected by property rights and institutional environments. They are thus able to show us infrastructure growth rates during particular periods even if they only tell a partial story about the underlying causes. But, the empirical evidence examined in this paper (see Table 2) also paints inconclusive results about telecommunication reform: for every success, there's a puzzle or contradictory evidence. The clear success story seems to be cellular with its rapid diffusion but here, again, China's 'success' with government-led terrestrial telephony makes one wonder if market liberalization is

Table 2. Network expansion indicators

	Years	Singapore	S. Korea	Malaysia	India	China	Philippines
Main lines (per 100 population)	1980	21.68	7.34	2.95	0.3	0.2	0.9
	1985	30.96	16.1	6.11	0.39	0.3	0.9
	1990	39.96	30.97	8.97	0.6	0.6	1.0
	1995	47.85	41.47	16.56	1.29	3.35	2.09
	1998	56.2	43.3	19.8	2.2	7.0	3.7
Compound annual growth rates	1985–90	4.7	13.97	7.98	9.0	14.86	2.12
	1990–95	4.2	6.0	13.0	16.5	41.1	15.86
	1995–98	5.5	1.45	6.13	19.47	27.84	20.97
Waiting list (000)	1980	4	604	133	447	164	
	1985	0.05	280	183	839	274	173
	1990	0.07	0.7	82	1961	689	567
	1995	0.02	0	122	2227	1620	900
	1998	0	0	160	2705	7400	900.2
Tele-accessibility (residential main lines as percent of total)	1980	73.9	62.8	58			
	1990	67	82	72		28	61
	1995	61	79	72		71	64
	1997	60.4	78.3	72.3		77.7	
Cellular mobile subscribers (per 100 population)	1990	2.0	0.19	0.5	0	0.0016	0.06
	1995	10.6	3.69	5.1	0.008	0.3	0.73
	1998	34.6	30.2	9.9	0.1	1.9	2.2

Sources: International Telecommunication Union, *World Telecommunications Indicators on Diskette*; International Telecommunication Union, *Yearbook of Statistics, Telecommunication Services, 1986–1995*. (CAGR calculations are those of the author.)

the likely cause of this success. The lesson seems to be reinforced by the two NICs, South Korea and Singapore, that have eliminated their waiting lists, boast very high teledensities and falling costs for services. Korea, which has had some form of competition (among government carriers) since the mid-1980s can be seen to have an efficient sector, too, and is the only country in the 1995–98 period with a positive growth rate for revenues per main line. However, most of the increases in teledensity, the entire elimination of waiting lists, and many of the cost efficiencies came about under state auspices for countries like Singapore and South Korea. Privatization and liberalization being relatively new in these countries, it is not clear the degree to which the infrastructural growth and efficiency indicators can be attributed to them.

While Malaysia and India are not comparable in terms of their levels of development, they offer interesting parallels in terms of their reform experience. Their mainline growth rates during the 1990–95 and 1995–98 periods are clearly high during the time period when, in Malaysia's case, privatization and market competition are in place or, in India's case, there are sufficiently high competitive pressures on the monopoly basic service provider while the rest of the market is being liberalized. (Given the economic downturn in East Asia, the lower 1995–98 growth rates for Malaysia are understandable.) Both also show increases in growth rates for mainlines per employee. Beyond this, the efficacy of reform in these

countries is called into question on the following grounds as waiting lists begin to increase during the reform period.

It is at this point that contrasts with China and the Philippines offer a sobering picture for all the cases. China offers the highest growth rates—under state control. The Philippines offers the lowest growth rates during 1980–90 and that, too, with a private provider (and some degree of market liberalization). China's contrast with India is particularly telling, too. Both are at similar levels of development and both started off with similar teledensities in 1980, but China is now far ahead. Like Korea in the 1980s, China now has government-sanctioned and government-led competitive providers. It seems to indicate that government bodies competing with each other maximize welfare better that private ones! This would even be supported by the evidence of government owned MTNL (with its high rates of growth) in Mumbai (Bombay) and Delhi that sees India's Department of Telecommunication Services (DTS) as its competitor.

In sum, while growth seems to be the order of the day in the cases examined, it is not clear if the variation is due to, or in spite of, reform efforts. Second, it seems that growth rates are particularly high (and, as shown later, reforms more streamlined) in states such as Singapore and South Korea. But, they are also high for the 1990s for countries like Malaysia, the Philippines and India moving toward market-reform. How should we arbitrate between the two types of cases?

Outcomes posited by quantitative indicators are misleading only if we refuse to check them against the property rights and institutional contexts that are important for explaining the variations and inconsistencies told by these indicators. A simple way of understanding property rights is to examine the institutional context of state supply, and the way that the state responds (or does not respond) to societal and user demands. A few things are paramount to our understanding of the institutions underlying property rights provision. The latter is often messy and difficult because of the way states are organized and because of the many pressures they often face. First, in terms of supply, states can be distinguished as being catalytic or dysfunctional.[10] Catalytic states come with high degrees of resources and capacity, and can often act autonomously in shaping pro-growth policies. Dysfunctional states come with varying degrees of capacity and are often beholden to special interests. An alternative to these two types of states would be the functional liberal-democratic state that approximates responding effectively to all kinds of societal pressures. In terms of demand, a state would find it most convenient to not have to respond to any kind of pressure, but such luxuries only exist for highly authoritarian state. However, a few states may be adept at marginalizing many societal pressures, thus limiting their agendas. Dysfunctional states often face pluralistic pressures that they are unable to arbitrate. Many of them, including states like India and Brazil at various times in the last 50 years, often resort to populism to address such pressures.

In terms of property rights, the supply side focuses on the special interest driven nature of most Asian states. However, in the case of three of the East Asian states examined (South Korea, China and Singapore), the state was strong enough to contain all pressures and (in South Korea and Singapore) to build its legitimacy through universal service provision. The impressive growth of the infrastructure until the early 1990s is a testimony to the effectiveness of this model. It seems that private property rights are not necessary for infrastructural expansion in the 'East Asia Model'. States had enough capacity, autonomy and a sense of purpose to overlook direct demands on itself and force in development the 'Prussian way' (a

term coined by Alexander Gershenkron). But, as economic and political liberalism make an entrance in East Asia, it is hard to predict if its current institutions will be able to enforce the property rights as effectively as they have done in the past. On the surface, Singapore so far has done a better job of containing these pressures than South Korea. The property rights in the latter are not only biased toward the *chaebol*, but their implementation is continually challenged by workers and the civil society in general, which is at odds with the elite underpinnings of the state. Singapore state's continuing catalytic role can be seen in the recent streamlined auction for a local and long distance provider ending Singapore Telecom's monopoly in the year 2000. However, whether the state can remain so monolithic in its task, as its boundaries become increasingly seamless with information technologies is a moot point. On the other hand, the liberalizing and democratizing South Korean state is fast learning to cope with pluralistic pressures.

In the case of India and Malaysia, where the states, while being special interest driven, cannot contain pluralistic pressures, privatization and liberalization measures become messy. Malaysia represents the special case of a semi-catalytic state becoming quite dysfunctional. Its corporatization, privatization and liberalization program can be viewed as success stories (in as much as the transitions were relatively smooth and opposition contained). But by the mid-1990s, the evolving property rights had resulted in nepotism and negative externalities from a crowded marketplace. Legislative and regulatory safeguards were also not forthcoming. The mess of liberalization and privatization in India from the supply side also points to the danger of bringing in market competition before political checks and balances and a regulatory framework are in place. With state capacity in Malaysia, the state was at least able to start streamlining the reform process in 1995, but the Indian scenario, which features a weak and inept state, continues to suffer from an anarchic liberalization program. The formation of a semi-autonomous regulatory authority and the emergence of competitive politics in India may change the course of institutional evolution, but it is too early to tell if that would be the case.

The Philippines case is analogous to that of Malaysia and India in the inability of the state to go beyond powerful (elite) pressures on itself, but its example is instructive for another reason. Unlike Malaysia and India, the Philippines does not feature broad based reform coalitions although middle class pressures (especially in urban areas) were quite intense in the 1990s. Second, its private provider and slow liberalizations featured poorly during the 1980s political environment, but during the 1990s, the reform was strengthened. This is revealed in the increase in infrastructural growth rates and the worker productivity from 1990 to 1998.

The institutional lesson is clear: efficient property rights take a long time to evolve and to be implemented and enforced. However, once in place, they are good for infrastructural growth. Of special significance here are the growths in countries like India and the Philippines as property rights get streamlined. Korean infrastructural expansion is also taking off now as the state picks up the ability to arbitrate pluralistic pressures. South Korea is now even getting touted as more of a 'success story' than Singapore.

Turning now to the demand side, collective action (or alliance formation) is easier for privileged groups in society with small numbers and difficult for larger groups with fewer resources. It is for this reason that most influential reform coalitions in Asian countries have an elite nature, usually including influential business users, equipment manufacturers, international organizations like the World Bank and WTO, and foreign governments. But, while it may be difficult for

Table 3. Growth of information infrastructures in Asia

		Singapore	S. Korea	Malaysia	India	China	Philippines
Personal computers (000)	1991	230	1967	230	350	800	210
	1995	700	4857	750	1200	2800	660
	1999	1700	8519	1500	3300	15,500	1260
per 100 inhabitants	1999	43.66	18.18	6.87	0.33	1.22	1.69
Internet hosts (000)	1991	0.5	2				
	1995	22.8	29	4	0.8	2	1.77
	1999	148.2	461	59	23	72	12.39
per 10,000 inhabitants	1999	381	98	27	0.23	0.57	1.66
Estimated Internet users (000)	1991	5	20				
	1995	100	366	20	250	60	20
	1999	950	10860	1500	2800	8900	500
per 10,000 inhabitants	1999	2440	2318	1145	28	70.25	67.16

Sources: International Telecommunication Union, *Yearbook of Statistics: Telecommunication Services, 1990–1999,* Geneva, 2001; International Telecommunication Union, *World Telecommunication Indicators, 2000–2001.*

groups to form coalitions, other entrenched coalitions (often representative of erstwhile economic strategies) opposed to reform may exist. Not only is reform partly a result of the interplay among these coalitional interests, but the problem gets even more complicated when there is not one or two, but several coalitions. Only countries like China have the ability to showcase a cohesive coalition in favour of infrastructural expansion.

With multiple coalitions, reforms may be slow and piecemeal, but there is also a positive side to the story. Articulated coalitional demands, especially plural ones, are forms of restraints on political systems. In as much as political systems now begin to respond to wider demand pressures, they are moving away from exclusive considerations rooted in the supply driven PTT model, even when the change is slow and piecemeal (as in India and the Philippines). Second, these coalitions are often part of other nation-wide processes and might, in the long-run, turn out to be not so elitist at all.

Table 3 presents a few figures of information infrastructural provision for the Asian countries examined in this paper. The results mimic the broader findings noted above about telecommunication service provision. Only the Philippines presents a slightly different result, perhaps due to the fact that streamlining of property rights in telecommunications itself is new to the country and thus the Internet must wait longer before take-off. There are also a few surprises for other countries. Electronic commerce thrives more in South Korea than Singapore. It would be interesting to see if this results from the relatively greater openness of the South Korean system. Here, results from India might corroborate the findings. A recent study gave as good, or even better, ratings to India's electronic commerce than that of China.[11]

Commercial Services

Electronic commerce does not replace capitalism. It is merely another form of capitalism. This becomes the most clear as we move away from exclusive

considerations about the information infrastructure and begin considering the supportive commercial services that must get provided for it to work. To be sure, many of these services must be provided over information infrastructures, too, but their rationale and functionality lies not in an engineering mindset, but in the class of functions to which they belong: transportation (including roads, trucks, shipping and airports); distribution (including mailing services); finance (including banking and credit card use); human capital (both from the point of users and as well as distributors); taxation and customs regulations (including the ease of the latter's use); and even other physical infrastructures like electricity. These categories of services have existed before and predate telecommunications, but, to use Oliver Williamson's word, what is needed is 'remediability', or reconfiguring them to serve the purposes of electronic commerce and to gear them to the job of the new economy. In developing countries, where many of these services are still state run, this is an uphill challenge involving dealing with vested interests in each country. In a similar vein, the *2000 Asian Development Outlook* acknowledges that many of the public policies that affect IT-driven developments 'can be posited a priori', but that 'it is much harder to discuss the interface between the old and new economies outside its specific country context'.[12] In other words, the problem of remediability is country and institution specific, as was the case with information infrastructures, too.

Information technology has forward linkages and thus even commercial support services are now information infrastructure sensitive, but the functioning of these services requires coordination among several agencies. However, that coordination is neither an apt role for the erstwhile officials of PTTs nor should the governments think that it is their job to provide these services now. The appropriate role for governments here is to clarify and streamline the incentive structure of the property rights that will guide the development of these services in the future.

Quite obviously, to think of information rich and sensitive commercial services is to think of a movement away from the old economy toward the new one. What can then the old economy of information infrastructures teach us about the evolving property rights here? Two lessons are important, one in terms of moving toward private provision of these services and the second in terms of the human capital needed to provide them. First, just because many of these services in their 'new economy', or information age incarnation, do not exist in the developing world, it is not the job of the state to provide them. Here, the lessons of telecommunication liberalizations, as noted in the previous sections, are equally apt for commercial service provision. In fact, yesterday's PTTs might even have something to teach the struggling commercial support service sectors of developing economies about how to go about creating level playing fields for private providers!

Second, human capital is the key to all of the commercial services working smoothly. Education systems are essential to produce a cadre of workers who can staff the various organizations and firms providing services. However, this perspective is also supply centric and technocratic. Capitalism depends on externalities. What about the hosts of consumers in the developing world who have never used a credit card or will not trust that a website 'out there somewhere' can meet their needs, even if they have access to the information infrastructure? Here, there is not just a need for innovative policies to tap into externalities, but we can learn from other communication technology introductions in the past 50 years in

terms of the way people adopt technologies. The diffusion of innovations literature is particularly instructive. The lesson has been clear: innovations are always mediated by societal institutions in terms of their use and demand. Instrumental thinking must be avoided here, too.[13]

An interesting perspective is offered in a report prepared for the United Nations Commission on Science and Technology. The report is concerned with the exclusion of the underprivileged from sophisticated information and communication technologies (ICTs), and the (perhaps limited) strategic ways in which the latter might better their conditions. The Commission authors are wary of instrumental notions: ICTs, in order to be effective, need to be examined in their organizational contexts. In particular, for technologies like the Internet to be adopted, educational capabilities (including technical skills) first need be improved: 'Overemphasis on "access" to links in the information "highways" means that insufficient attention may be given to other crucial matters. Development needs, preparedness, affordability, and skills development all need to be considered systematically'.[14] However, only a few developing countries are ready for the sophisticated ICTs through comprehensive national policies. Most of them are not in any position to do so. But, instead of excoriating on institutions, the Commission notes the possibility of a 'new' development model in which governments and businesses are working together to not only expand markets, but also in enhancing the kinds of capabilities that are necessary to take advantage of ICTs.

Trust

This is the realm of the new economy. If there is an opportunity to leapfrog for developing countries, this is it. As policies are suggested by politics, there is less of a vested interest here, and therefore the developing countries can carve new policies. What can the past teach? Two lessons are offered here, too. The first would be to de-emphasize the local where interoperability concerns matter, and the second, ironically enough, would be to emphasize local solutions to expanding electronic commerce nationally and domestically. Developing countries need to make credible commitments. Past history shows the difficulties for developing countries in doing so. The two-pronged strategy, drawing upon history, entails effective participation in international negotiations to ensure interoperability, while working locally to find effective and enforceable, even if sub-optimal, solutions to electronic commerce challenges at home.

The international terrain is not unfamiliar to the developing world. Developing countries, once marginalized from most multilateral negotiation processes are now effective partners in it. Developing countries have come a long way from the 1960s and 1970s when the only option they had was foot-stomping when it came to communications issues. The contentious New World/Information Communication Order (NWICO) North–South debates in the 1970s and 1980s are a case in point. Times have changed and developing countries exercise increasingly sophisticated international negotiations strategies ranging from agenda-setting, issue linkage and trade-offs, coalition building, direct lobbying in the developed world, and exercise of technocratic and legal options, all of which in turn improve the developing world's alternatives.[15] One particular story is especially telling, and this is the role the developing world played in the GATS negotiations in the Uruguay Round, and the subsequent WTO Telecom Accord (also known as the Fourth Protocol).

Accepting services in the global trade agenda was at first difficult for the developing word. In fact, the very fact that GATS was separate from the GATT negotiations was in part a concession to the developing world. But, when the developing world began to participate in these negotiations, it did so quite effectively allowing these countries to make international commitments that were politically palatable at home and also specific enough to be tailored to their needs as can be allowed in the GATS framework.[16]

Being global players, participating effectively in international negotiations and making binding commitments will allow developing countries to gain that crucial element of 'trust' that is needed for electronic commerce. An official I recently interviewed at the WTO noted that she gets numerous inquiries from international firms about the level of WTO commitments developing countries have made while these firms consider venturing into that emerging market. Many international negotiations are underway in several multilateral fora that pertain to electronic commerce issues such as privacy, security of electronic transactions, intellectual property, etc. Developing countries can make credible commitments toward ensuring trust by following savvy, rather than ideological or conflict-heightening, negotiation strategies.

The second lesson offered here pertains to expanding trust and making credible commitments in local and national circumstances. Most of the electronic commerce market in the developing world is limited to export markets, and to B2B type applications. A recent survey, for example, found that of the projected $6.09 billion in electronic commerce that India can generate in revenues by 2004, $5.04 will come from B2B.[17] What the article does not mention, but is commonly understood in the developing world, is the fact that most electronic commerce revenues are expected to be generated from export markets.

The biggest hurdle to domestic expansion, even for those at the 'haves part of the digital divide', is the lack of trust in the system and the human capital factor mentioned in the last section. Thinking in terms of sub-optimal property rights that are situated in local needs would be helpful here. Credible commitments often come not from the most efficient outcomes, but those with the best fit between local institutions and enforceability. Levy and Spiller have made this point effectively while writing of the design of effective regulatory institutions.[18] Those institutions that can enforce their rules are more credible than ones which lack such capabilities. In fact, many of the liberalization programs in the developing world suffered from such a dilemma.

Credible local solutions are necessary here. These solutions will often entail ingenious answers to problems of intermediation and disintermediation, aggregation, and creation of portals for electronic commerce in the developing world. The *Wall Street Journal* article cited above notes several effective solutions that entrepreneurs in India have adopted to overcome local hurdles. In the context of developing local markets, it notes: 'The Internet may someday create its own global culture, but in the developing world, local conditions are still shaping electronic commerce'. For example, in order to overcome the problems of the lack of credit cards in India, one firm, Fabmart.com, sold its own currency, 'Fabmoney', through Cybercafes. A number of reports now account for other credible local solutions in the developing world. One initiative in South Africa in a remote area used graphics and biometric fingerprinting to overcome problems with illiteracy and credit card use: 8000 credit cards were thus provided to residents of this remote area.[19]

Conclusion

Like capitalism, its older cousin, electronic commerce will trot or walk depending on the property rights shaping its behaviour in different parts of the world. The scenarios focusing on the effectiveness of electronic commerce need to account for the role politics plays in these efforts. The history of information infrastructural provision teaches us that efficient property rights can only be expected in rare circumstances, when the polity has a highly developed civil society and existing institutions produce restraint. Of special importance here is the symbiotic relationship between property rights and the institutions for their enforcement. In terms of supply, sequencing and the fit between domestic institutions and the types of property rights provided are important. From the demand side, well-organized large user groups are clear winners from reforms, but universal service in countries like South Korea and Singapore resulted from state prerogatives. To make the beneficiaries of evolving property rights less dependent on powerful user groups or the state's internal prerogatives, we need an appreciation of the internal mechanisms of states and their interaction with civil society to understand how societal preferences are articulated and arbitrated to shape property rights.

Three layers of an electronic commerce network along with five conditions of property rights efficiency are identified in this paper. However complex this configuration may be, the effectiveness of such a system is best provided not just by the history of information infrastructures preceding the advent of electronic commerce, but perhaps more so by the history of all kinds of commercial transactions in the world, especially those under capitalism. It is all first and foremost about politics.

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