



Information Policy and Technology Diffusion

Lessons from Bosnia, Croatia, Macedonia, Montenegro, Serbia and Slovenia

Laura Hosman and Philip N. Howard

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Abstract

Some governments choose telecommunications policies that hinder technology diffusion, while others choose policies that appear to do a good job at encouraging technology diffusion and reaping subsequent economic rewards. Bosnia, Croatia, Macedonia, Montenegro, Serbia and Slovenia—all former members of the Republic of Yugoslavia—have enacted different kinds of information policy reforms over the last 20 years. These different policy decisions have led to diverse outcomes. Some of the outcomes present puzzles, while others seem to follow the received wisdom regarding best practices. Bosnia and Serbia, considered by many to be the least open and democratic of these six regimes, have the lowest levels of technology use. Macedonia and Montenegro have achieved similar outcomes in terms of levels of telecommunications technology adoption rates, but have followed different policies to achieve these results. Yet Slovenia, which did none of the commonly touted reforms, has reaped most of the economic benefits of technology diffusion.

- ❖ What explains such different causal outcomes?
- ❖ Which policy reforms have the best discernable impact on technology diffusion and economic development?
- ❖ Which combinations of political, economic and cultural conditions allow governments to make effective telecommunications policy?

We analyze the status and effects of membership application with EU, the degree to which regulatory functions are divorced from ministerial ones, the formation of coherent information and broadband policy, and the degree of monopoly privatization, market liberalization, and mobile competition.

Among the countries studied here, there may be two ways to distinguish policy innovation: a set of telecommunications reforms that involves having the state withdraw from service provision and regulatory oversight; and, a set of changes that involves having the state remain active through a publicly owned telecommunications service provider that aggressively protects its turf and moves into other markets. From the consumer's point of view, it is not clear that state withdrawal is the best strategy for improving access to ICTs. And even though many of the reforms have been enacted by countries eager to join the EU, the primary benefits of these reforms seem to accrue to the publicly owned telecommunications firm from a country that is already in the EU.

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About this Research

The World Information Access Project

The World Information Access Project (www.wiareport.org) brings together an international team of researchers dedicated investigating global trends in technology distribution, information security, and personal privacy. We look for practical ways to improve equity in information access, and ways to use communications technologies to improve the quality of our economic, political and cultural lives. Please direct correspondence to:

Philip N. Howard
Director
World Information Access Project
Department of Communication
141 Communications Building, Box 353740
University of Washington
Seattle, Washington, 98195-3740
Telephone: (206) 543-2660, Facsimile: (206) 616-3762
www.wiareport.org

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Author Biographies

Laura Hosman (BA Wheaton, MA Amsterdam, PhD USC) is assistant professor of political science in the Department of Social Sciences at Illinois Institute of Technology. Before joining IIT in the Fall of 2009, Dr. Hosman was a Ciriacy-Wantrup Postdoctoral Fellow at the University of California, Berkeley. Prior to that,

she was a Postdoctoral Researcher at USC's Institute for Communication Technology Management at the Marshall School of Business. Dr. Hosman's research focuses on the role for information and communications technology (ICT) in developing countries, particularly in terms of its potential effects on socio-cultural factors, human development, and economic growth. Presently, she is focusing on ICT-in-education projects, as well as the role of corporate involvement in bringing technology to the developing world through Public-Private Partnerships. Her research has been published in *Information Technology for International Development*, *Review of Policy Research*, *Information Technology for Development*, *Perspectives on Global Development and Technology*, and *International Journal of Media and Cultural Politics*, among others. She is a research affiliate with the Institute for Communication Technology Management at the Marshall School of Business at USC, as well as a consultant and contributor to the World Information Access Project. Her research has been supported by grants from the National Science Foundation, University of North Carolina McDowell Research Center for Global IT Management, and Association for Information Systems (AIS)-Microsoft Unlimited Potential. She has carried out field research in Sri Lanka, Macedonia, countries of the former Yugoslavia, Haiti, and Senegal. Hosman received her doctorate in Political Economy and Public Policy from the University of Southern California. She also holds an MA in Economics from USC, and an MA in International Relations from the University of Amsterdam, earned while studying on a Fulbright Scholarship.

Philip N. Howard (BA Toronto, MSc London School of Economics, PhD Northwestern) is an associate professor in the Department of Communication at the University of Washington, with a courtesy appointment in the Jackson School of International Studies. His latest book, *The Digital Origins of Dictatorship and Democracy: Information Technology and Political Islam* is forthcoming from Oxford University Press. His current research and teaching interests include the role of new information technologies in the political communication systems of advanced democracies, and the role of new information technologies in the social development of poor countries. He is the author of *New Media Campaigns and the Managed Citizen* (New York: Cambridge University Press, 2006), about how information technology is used by political elites to structure public opinion and political culture in the United States. This book was awarded the 2007 CITASA Best Book prize from the American Sociological Association and the 2008 Best Book prize from the International Communication Association. He has edited *Society Online: The Internet in Context* (Thousand Oaks, CA: Sage, 2004, with Steve Jones) and the *Handbook of Internet Politics* (London: Routledge, 2008, with Andrew Chadwick). He has authored numerous journal articles examining the role of new information and communication technologies in politics and social development, including pieces in the *American Behavioral Scientist*, *New Media & Society*, and *World Development*. He has worked on several National Science Foundation projects, serving on the advisory board of the Survey2000 and Survey2001 Projects, co-managing a project about Information and Communication Technologies in Central Asia, and directing the World Information Access Project. Howard has been a consultant to the Canadian

International Development Agency, and held fellowships at the Pew Internet & American Life Project in Washington D.C., the Stanhope Centre for Communications Policy Research in London, and the Center for Advanced Study in the Behavioral Sciences in Palo Alto.

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Panel of Reviewers

- ❖ Jeffrey Hart is Professor of Political Science at Indiana University, Bloomington, USA.
- ❖ Christopher May is Professor of Political Economy in Politics and International Relations at Lancaster University, UK.
- ❖ Helen V. Milner is B. C. Forbes Professor of Politics and International Affairs at Princeton University, USA.
- ❖ J.P. Singh is Associate Professor of Communication, Culture and Technology and Georgetown University, USA.
- ❖ Tim Unwin, UNESCO Chair in ICT4D, Royal Holloway, University of London, UK

Introduction

Levels of scholarly and policy-related interest in information and communications technology (ICT) for development purposes have grown significantly in recent years, reflecting the high and ever-increasing expectations placed on ICT in terms of quality of life improvement, socio-political empowerment, and economic development for the technology users. Economists have long acknowledged the significance of the telecommunications sector in its own right as a contributor to economic growth, and its multiplying effect for other sectors of the economy. Political scientists, sociologists, computer scientists, engineers, and development scholars, all now have perspectives on how ICTs can contribute to overall development and growth.

Thus, telecommunications policy has come to occupy an important position in developing country governments' strategies for promoting socio-economic growth. Developing country governments recognize that ICT-oriented initiatives can be promoted through policy, but questions remain as to effective methods for doing so, particularly on a nationwide level. The question of what makes for good policy has become a key issue area for academics and international organizations alike, with various recommendations emerging from numerous macro-level studies aimed at addressing this issue. The stakes are particularly high in the developing world, given the scarcity of funds available to devote to development projects of any kind, and due to the oft-cited risk that developing countries will fall even further behind wealthier nations, in terms of technology adoption, as wealthier countries that successfully adopt new technologies outpace the poor countries' wealth and growth at an increasing rate. For all of these reasons, a government's understanding of how to develop a healthy telecom sector, and its ability to realize high levels of telecommunications technology adoption among its population, are important issues.

This paper analyzes the development of the telecom sector and of telecommunications technology adoption in the states of the former Yugoslavia. These transition countries make for an interesting cross-country comparison, because as recently as 1990, none of these countries existed; they were all regions, with varying degrees of autonomy, within the state of Yugoslavia. Certainly each state faced different challenges as a result of the breakup of this state and subsequent wars. Yet each new country inherited a state-owned monopoly in its telecommunications sector, and therefore, began the processes of liberalization, privatization, and (de)regulation (or not) from a similar, formerly socialist political-economic arrangement. In addition, they all faced theoretically similar incentives regarding a path to EU membership.

Less than two decades later, these states have pursued differing policy paths regarding their telecom sectors and towards telecom adoption within their borders, and have achieved varying degrees of success. The development of the telecom sector in each state is reflective of its overall levels of achievement in terms of economic growth, stability, and political independence. However, not only are there some surprising particularities to be found within these cases, but the specific policies adopted and paths taken toward the development of the telecommunication sectors and promotion of telecommunication-related uptake have differed in each case. This is where comparative case level of analysis offers a great deal of insight, for there is no single policy approach to growth or development that can be prescribed for all places at all times. Being able to compare offers a wider lens for analysis than what is possible from a single-case study.

This case-level approach also complements and informs the numerous macro-level analyses on this issue, for even while each state under analysis here has taken a unique approach to specific policy decisions, many of the policy prescriptions that have arisen from the macro-level studies, which are predicted to have positive outcomes in terms of technological adoption, are borne out within some of these countries, while conversely, the lack of their implementation is demonstrated to result in less positive outcomes in others. In addition, this paper gives empirical evidence for the argument that an independent telecom regulator, a liberalized market for consumer communications services, and the privatization of the national telecommunications operator are constructive policies for encouraging telecommunications technology adoption (Howard and Mazaheri, 2009), even while making the case that issues such as privatization and liberalization are far from black-and-white in reality. It further argues that direct policy intervention and programs that promote technology adoption among the general populace can also have a beneficial effect on rates of technology uptake. In other words, if we can talk about two separate policy areas where governmental activity can have an effect on overall telecom technology adoption; on the one hand regulatory reform that creates the healthiest market environment for the telecom sector, and on the other, active governmental policies that promote technology use among the populace, then this paper asserts that a both/and approach is superior to one of either/or.

The Method of Interpretive Policy Analysis

This paper employs a qualitative, comparative case study methodology for interpreting the history and impact of public policy in the area of information and telecommunications. The case study method is best employed when there are a limited number of cases for analysis, as it allows the researcher to examine the unit of analysis intensively. An additional strength of this methodology is the contribution it can make to expanding the body of knowledge in a particular area of study, and to identifying best practices. We adopt Gerring's definition of a case study as "an intensive study of a single unit for the purpose of understanding a larger class of similar units" (2004:342). Two additional strengths of this in-depth qualitative method of analysis are that they can serve to better inform macro-level studies covering the same topic, whether to confirm or deny macro-level findings in particular cases, while they may also better be able to flesh out more complex concepts that are not well captured within quantitative datasets. For example, one of the frequently used macro level data entries in large-n studies is the year in which a telecom regulator was established. However, as argued above, there can be many years between the mere establishment of a regulator and its development into a functionally independent body, if this ever happens. Counting the number of years a regulator has been in operation reveals little about its operational effectiveness. This concept eludes capture when a variable must be coded into a binary, yes-or-no representation: shades of gray cannot be captured when one must opt for black or white.

Though we can detect overall best-practices according to macro-level analyses, policy decisions are never formulated based upon standardized prescriptions. Still another feature of in-depth case level analysis is the ability to uncover what may be missed in large-scale data collection. Another example is that if the year that competition was introduced into the telecom sector is the only variable that can be incorporated into a large-N database, this too may miss the fact that competition was legally mandated in a certain year, but may not, in fact, have been implemented or enforced for a number of years following its *de jure* establishment. There is often a sizeable gap between legislation and implementation. This is where case-level analysis becomes necessary.

The research findings presented herein are based upon a combination of firsthand fieldwork and a review of secondary source materials. The fieldwork was carried out by the primary author from April to June of 2009, in Macedonia, Slovenia, and Croatia. Fieldwork consisted of interviews with officials employed in the various governmental agencies responsible for telecom-related policy, as well as interviews with current and former directors and employees of telecom regulatory agencies in these countries. Additionally, telephone

interviews were conducted with similar officials from Montenegro. In some cases, during the interviews, additional official government documents were obtained.

The secondary literature analyzed comprises policy documents, official government publications, statistical and summary data from agencies such as the ITU, Eurostat, and Freedom House, as well as industry reports and publications, scholarly articles, and news reports. Whenever possible, the information obtained from secondary sources was substantiated or refuted during the first-person interviews.

Comparisons from the Countries of the Former Yugoslavia

The six countries of the former Yugoslavia could be organized into three groups by technology diffusion: Slovenia and Croatia, where diffusion has been rapid, Macedonia and Montenegro, where information technologies are available but not pervasive, and Bosnia and Serbia, where information infrastructure is notably underdeveloped. To those familiar with each of these state's level of economic development, political conditions, and its status or progress towards meeting the requirements of EU-Membership, the ordering of this list may not be surprising.¹ However, each state demonstrates particularities in the telecom policies chosen, which have had significant effects on the outcomes for their populaces. These particularities are presented briefly below, and are covered in greater detail in the country sections.

Slovenia and Croatia possess the most advanced telecom sectors, and have the highest rates of telecom technology adoption. These factors correspond both to their levels of overall (economic and perhaps socio-political) development and to the fact that both countries have a technology sector large enough to contribute to their overall economies, both of which seemed to be present before the dissolution of Yugoslavia.

Curiously, however, Slovenia has not had policies in place that promoted universal availability of telecom services or uptake/use of computers and the Internet. Rural areas in this most "developed" state actually lack connectivity at a higher level than other "less developed" states. They are out front in terms of Internet use, but could have done a better job, and broadband levels could have been higher, at an earlier stage if this had been a priority for the state. Additionally, they remain the only state where the incumbent operator is still a state-owned monopoly, and what is even more curious is that they are the only country that is currently a member of the EU, and the EU is not actively (but only passively) pressuring Slovenia to break up this monopoly. In the meantime, Telekom Slovenija is aggressively expanding and buying up telecom providers that are subject to competitive conditions in neighboring states. Thus, there is little incentive for

¹ Requirements for joining the EU include aligning the state's telecom policies and regulatory environment with EU laws and policies regarding liberalization, competition, and regulation. The EU's original legal framework regarding telecom directives and policies was known as the "1998 acquis," but has undergone revisions, and evolved into the "2003 acquis" and will likely become the "2010 acquis" as a result of directives adopted in 2009. EU candidate countries are required to align their policies to the most recently adopted EU directives before membership is granted. (See Enlargement Countries Monitoring Report, 2009).

Slovenia to break up its incumbent monopoly, and there is little incentive for the monopoly to serve the rural areas.

Croatia benefited initially from its incumbent's early investment in updating the country's communications infrastructure to fiber-optic lines across the entire country soon after the war, as well as from its academic community taking an early pro-Internet stance, which spread awareness of the Internet across the population at a comparatively early date. The academics' endeavor was going well until the monopoly cut short their efforts. The country may also have been predisposed to be interested in such technology, given the fact that a technology industry exists, and given the country's pride in being the birthplace of Nicola Tesla—thus an emphasis on technology is present in the society. The country has privatized the incumbent and introduced competition into the telecom sector, and since the mid-2000s has seen Internet uptake rise as one would expect in the presence of competition. Because the government is quite focused on joining the EU, it is successfully implementing many of the EU directives and requirements for membership, which includes a comprehensive framework for introducing ICT into all sectors of its economy and government.

Macedonia and Montenegro occupy the middle positions in terms of telecom technology adoption and policy progress towards liberalization, privatization and regulatory reform. Both of these countries have privatized their telecom sectors, yet Deutsche Telekom/T-Mobile/T-Com continues to dominate both of their markets.

In Macedonia, the government has taken a strongly pro-active stance towards promoting nation-wide Internet uptake and use within its borders. The original push to make this happen came from USAID, but the government supported and participated in this project from the beginning, and is (arguably) acting on the success and lessons learned to increase exponentially the size of the computers-in-the-schools project from one computer lab per school to one computer per child. Given the fact that telecom sector competition now exists in Macedonia and the government is actively promoting computers and Internet use among all of its youth, as well as through some projects that target rural, elderly, and underserved populations, Internet uptake has grown quickly in recent years, and it should continue to increase.

In Montenegro, the government has not been as proactive at promoting Internet uptake as in Macedonia, but there have been initiatives. There was an attempt to replicate the USAID project that took place in Macedonia, but it has gone forward on a much smaller scale, was not implemented nationwide, and was not targeted at schools. On the other hand, possibly realizing what happened when Macedonia introduced competition through the Macedonia Connects project, T-Mobile began a concerted effort towards consolidating a public-private partnership precisely in order to carry out the tasks that were part of the

Macedonia Connects project: claiming to connect all the schools in Macedonia to the Internet at a discounted rate, promoting Internet use in the schools, including teacher training and content development and a web portal for the schools to use.

In the region, Bosnia and Serbia are the two least developed countries, in terms of Internet use and of policy development regarding the telecom sector. This corresponds to the fact that these two countries have the least developed economies, and the least democratically functioning political systems: the Yugoslav war affected these countries the most severely, and the subsequent governments up to the present have not given any evidence of the political will or interest to promote the development of an information society or increased Internet use. Both countries were comparatively late in passing laws to regulate their telecom sectors at all, but both now have some competition in their telecom sectors, at least in the mobile telephony markets.

Table 1 offers some comparative perspective on the conditions of technology use across all 6 countries. Why does Slovenia, with the most expensive monthly rates for broadband services, have the highest proportion of subscribers? Why does Croatia, with a level of internet use comparable to Slovenia, have cheaper broadband costs but half the subscriber base? Moreover, how is it that market oriented policy reforms have resulted in such cost access in countries that most aggressively pursued such reforms?

Table 1. Telecommunications Infrastructure In Study Countries

Country	Gross National Income	Population	Internet Users	Broadband Costs	Broadband Subscribers	Mobile Phone Subscribers	Fixed Line Telephone Subscribers
	Current USD	Millions	Percent of Population	Lowest Monthly Rate	Percent of Population	Percent of Population	Percent of Population
Bosnia	\$8,620	3.77	35	€11.37 (256kbps)	5%	84%	27
Croatia	\$18,420	4.42	51	€10.73 (256kbps)	12%	133%	42
Macedonia	\$9,950	2.04	42	€9.42 (512kbps)	9%	123%	22
Montenegro	\$13,920	0.62	47	€15.00 (512kbps)	6%	118%	58
Serbia	\$11,150	9.84	34	€13.3 (256kbps)	4%	98%	31
Slovenia	\$26,910	2.02	56	€18.62 (256kbps)	21%	102%	50

Sources: World Bank, World Development Indicators, 2009, Eurostat, 2009, International Telecommunication Union, 2009.

Note: All data from 2008, except broadband penetration rates, which are from 2009.

Case Studies

The cases are presented in greater detail in this section. Each individual case begins with a brief overview of the country's experience in gaining independence from the former Yugoslavia. It continues with a discussion of rates of Internet and telecom-related technology use among the populace, as well as laws and governmental policies that have been put into place regarding privatization, liberalization, universal service (if applicable), and the establishment of a telecom regulator. It concludes with steps the government has taken or programs it has implemented, in order to promote technology adoption among the populace, such as establishing a Ministry of Information, promoting e-Government and e-Business, or implementing technology-in-the schools or technology-in-the-communities projects.

The cases appear in descending order in which they have been ranked above, from highest overall levels of reported Internet uptake and telecom sector development, to lowest overall levels.

Slovenia

Slovenia may have suffered the least amount, in terms of casualties or damage, in the war over the breakup of Yugoslavia. Its participation in this war is often termed the "10-Day War." On December 23, 1990, Slovenia held a referendum on independence which passed with 88% of the vote. It seceded from the Yugoslav Federation on June 25, 1991. The federal government ordered the Yugoslav People's Army to secure border crossings in Slovenia. Slovenian police and Territorial Defense blockaded barracks and roads, leading to standoffs and limited skirmishes around the republic. After several dozen deaths, the limited conflict was stopped through negotiations at Brioni on July 9, 1991, when Slovenia and Croatia agreed to a three-month moratorium on secession. The Federal (Yugoslav) army completely withdrew from Slovenia by October 26, 1991.

Slovenia is the only of the former Yugoslav countries that already has become a member of the European Union. Slovenia was accepted as an EU member state in 2004, and many of its telecommunications laws and regulations have been designed to meet EU member state requirements. Despite this, Slovenia remains the only of the former Yugoslav countries that retains a state-owned monopoly telecommunications incumbent. It has been slow to liberalize and privatize. Its regulatory body has been lax in enforcing regulations to promote competitiveness, and this has allowed the incumbent to make use of all manner of non-competitive activities in order to continue dominating market share in all areas of the telecommunications market, even when competition was supposed to be present.

Interestingly, although Slovenia faces the highest subscription rates of any of the countries, it boasts higher overall broadband Internet subscription rates than its neighboring countries, and one that is nearly on par with the EU average. This may be reflective of the fact that Slovenia's national income level is nearly double, or even triple, that of the other former Yugoslav countries. Even so, despite the country's subscription rates being comparatively high for the region, Slovenia's Internet Users per 100 Inhabitants is a mere four percentage points ahead of Croatia, and only around 10 percent ahead of Macedonia and Montenegro. In other words, just over half of Slovenia's population uses the Internet. Its mobile phone subscription rates are at lower rates than half of the other Yugoslav countries, and its fixed line telephone subscription rates do not lead the pack, either. Slovenia also suffers from lower rates of rural connectivity than that seen in neighboring countries. This is due to the government's lack of will to force the incumbent to provide connectivity to rural areas, despite awarding the incumbent with the universal service obligation contract and funds in 2004, and the awarding of WiMax licenses to the incumbent in 2006 which would enable it to connect rural areas less expensively, through wireless technologies. The government's emphasis on promoting the incumbent to a position as a regional power has come at the expense of higher rates of telecommunications use and lower prices for these services.

As in all of the former Yugoslav states, Slovenia inherited a state-owned monopoly in the telecommunications sector, the Post, Telegraph & Telephone (PTT). This body was split up into its constituent divisions, and Telekom Slovenije was formed in 1995. The incumbent is presently 62.5% state-owned, and also conducts further telecom-related operations through subsidiaries: a mobile operator, Mobitel, and an ISP, Slovenija Online (SiOL Internet). These, in turn, are also state-held. Thus, the monopoly structure is evident not only in broadband access to the Internet, but also in the fixed and mobile telephony sectors.

In 1997, Slovenia passed its first Telecommunications Law, which established the National Program for the Development of Telecommunications, and gave exclusive monopoly rights to Telekom Slovenia for both voice and data telephony through the end of 2000. In April, 2001, a new Telecommunications Act was adopted, which was intended to bring Slovenia in line with the EU regulations, and to introduce regulated competition. This law was later replaced by an Electronic Communications Act (May 2004) which, corresponding with Slovenia's EU membership, officially adopted the EU regulatory framework for communications into Slovenian Law.

In terms of regulation, the Post and Electronic Communications Agency (APEK) was established in July, 2001 (replacing the Telecommunications Administration), as an independent regulator to ensure telecom sector

“...the ITU reports the level of competition in Slovenia to be at “full competition” for every single telecom service area. This is a salient example of reported data not accurately reflecting the de facto situation.

competition, universal service provision, and to regulate license holders. Slovenia’s telecom market was officially liberalized in January, 2001. However, despite the official position of liberalization, potential competitors have complained about the lack of effective regulation by APEK and the absence of political will to enforce regulatory laws, as well as of predatory and disruptive behavior, and of delaying tactics on the part of the incumbent. Since APEK does not respond to the complaints, appeals are sent to the competition authority (Competition Protection Office—CPO), which, in turn, has issued a number of decisions that find the incumbent at fault, and in some cases has forced the APEK to act or respond (which it then does only incrementally) (Hrovatin et al, 2005).

In late 2004, the CPO issued a decree stating that there had been an abuse of monopoly power by Telekom Slovenia from 2001-2003 in the ADSL market. This was followed later on by another finding against Telekom Slovenia, for delaying the process and avoiding action to remedy the situation of monopoly abuse in the ADSL market. Thus Slovenia finds its telecom regulator actively avoiding its responsibilities, as well as effectively transferring its duties to the Competition Protection Office, a body with far fewer staff, that is responsible for overseeing competition in all Slovenian industries—not just telecom, and whose decrees can only be used when the firm starts court proceedings (Hrovatin et al, 2005).

The number of lawsuits brought against Telekom Slovenija has continued to grow. Within the last year, three additional suits have been filed against the incumbent for violating competition rules, stifling competition, and delaying, disabling and restricting access, in all sectors of the telecom markets (Pristavec, 2008). Hrovatin et al. assert that the same lack of regulatory enforcement has also hindered competition in the Slovenian mobile sector. There are now two competitors to Slovenia Telekom’s mobile service provider, but they were also victims of the incumbent putting up roadblocks that prevented the competitors getting their services started, thus leading to a situation in which the incumbent took an early lead, and still dominates the mobile services sector.

Despite this, the ITU reports the level of competition in Slovenia to be at “full competition” for every single telecom service area. This is a salient example of reported data not accurately reflecting the de facto situation. The government’s attempts to follow through on privatization date back to 2000. This first stage of privatization was set back until September 2001, and then was delayed indefinitely, due to economic conditions. Renewed efforts commenced in August, 2005. In May, 2006, the Government readjusted its proposed level of ownership in privatizing the incumbent. In August, 2007, the government once again commenced privatization proceedings, and in March, 2008, rejected as too low the final two bids (from the 15 original bidders) resulting from this round. There have been no further privatization discussions. Pristavec (2008) claims that this situation directly affects the stability of the sitting Slovenian government, as the two

coalition parties are opposed to selling Telekom Slovenia to foreign companies. Despite the nationalistic position held by Slovenia's own governmental officials, Slovenia Telekom has met with a great deal of success in increasing its regional influence by acquiring numerous companies in neighboring countries where telecom sector competition is enforced.²

Slovenia's Internet penetration rate leads the former Yugoslav countries, and is, in fact, on par with many Western European countries. Even so, household broadband subscription rates continued to lag, remained at comparatively low levels, and have only recently begun to rise, and rather slowly, due to the lack of competition and resulting high prices. Slovenia in fact has had a high Internet penetration rate from the early 1990s, owing to narrowband, dial-up access that was available to all households with landline phones, which was between 90-97% of all Slovenian households as of 2004 (Hrovatin et al., 2005). As there was no need for regulatory intervention to allow alternative providers to offer dial-up Internet services, numerous competitors entered the market, and the Internet penetration rate in Slovenia rose above the EU average.

The broadband market presents the opposite picture, where regulation is necessary, and has been absent. Rural ADSL coverage only reaches 79% of the population at present, and the incumbent continues to dominate the market. Competition has been introduced, but the incumbent employed delaying and other prohibitive tactics to prevent competitors from operating. As a result, there is a gap between the value of

² The following is a list of Telekom Slovenija's activities in the region:

- ❖ In March, 2006, Telekom Slovenia bought a 76% stake in On.Net, Macedonia's second largest wireless and wired Internet Services Provider and fixed-line telecommunications company (and which constitutes the only competition to Macedonia's monopoly) (3/20/06, SeeNews)
- ❖ Slovenia Telekom holds 75% ownership in Kosovo's main Internet provider Ipko Net. (AP Worldstream, 5/29/2006)
- ❖ Slovenia Telekom owns Netkom, a cable TV operator in the Serb-dominated Republic of Bosnia-Herzegovina (Deutsche Presse-Agentur, 9/2/2008).
- ❖ In May, 2008, Slovenia Telekom bought Albanian telecommunications operator H-Communications, after having already bought the country's largest Internet Service provider (AOL SP) the previous year (5/30/2008, Reuters).
- ❖ Slovenia Telekom has submitted a binding offer to buy 100% ownership Cosmofon, the second largest mobile and landline telephony operator in Macedonia. (03/2009, Novak, Reuters).
- ❖ Also in May, 2008, Telekom Slovenije announced its plans to participate in the privatization of Bosnia's largest telecom operator, BH-Telecom, a process that had been blocked by the Bosnian parliament for about two years due to differing views over the model for selling.
- ❖ Slovenia Telekom Group is eager to enter the Croatian telecommunications market either by taking over B.net (the country's only cable internet provider) or Metronet telecom (a fiber to the home provider using its own-constructed optic network) (2/11/2009 dtczabreb)

dial up and broadband offerings among the public, such that there is a large remaining proportion of dial-up users that do not see the value of migrating from dial-up to broadband. The government recently earmarked 1 billion euro for rural broadband development (yet these funds will go to the incumbent, to enable it to meet its universal service obligations).

In terms of wireless Internet, the Incumbent launched commercial service in March, 2008, in Ljubljana, which is a very late date by international standards. Telekom Slovenije has plans to invest in the network with the goal of providing coverage to approximately 60% of the country over the next three years. (By comparison, Macedonia has had greater than 95% national wireless broadband coverage since 2005.) Cable broadband services are also available to households with access to the cable infrastructure, however cable is not universally available, with rural cable coverage extending to just 24% of the population, compared with the national average of just 49% (of this, 39% of households subscribe to cable TV).

Given the rather low rates of uptake and the lack of competition throughout the relevant telecommunications sectors, it is not difficult to make the case that Slovenia could have higher rates of broadband Internet penetration if there were to be true, enforced competition in its telecom sector. This is not currently the case.

Slovenia's government has taken a number of steps to develop an information- and knowledge-based society. Both businesses and the government have been instrumental in creating online content and services that make up the Internet economy, which Slovenia can be said to have adopted. The development of Slovenia's Internet society is guided by its "Strategy for the Development of the Information Society," adopted in February, 2007. This was legislation that was enacted to implement EU directives. Slovenia now has a one-stop e-government portal that provides services to citizens, business, and other government organizations online. There is also an e-procurement portal. Citizens and businesses can now obtain governmental information, obtain forms, and submit forms online. Areas covered include commerce, education, and health. There is now a national electronic ID initiative underway, and all citizens older than 14 years of age are issued an eID card. The takeup of e-government services has been higher among business than among the public, but nonetheless, progress has been made. Interestingly, a 2006 government survey found that respondents believe that providing public internet-access points, providing cheap internet access, and equipping schools with PCs is of equal importance as building highways in Slovenia. Additionally, 78% of respondents were convinced that information society development should be an important strategic priority for the country (Vasja & Tina, 2006).

Slovenia established a Ministry of the Information Society in 2001. It then dissolved this agency in 2004, dividing its work between a Directorate for the Information Society at the Ministry of Higher Education, Science and Technology, and the Directorate for Electronic Communications at the Ministry of the Economy. The website for the Directorate for the Information Society at the Ministry of Higher Education, Science and Technology posts a long list of major projects it has implemented in the goal of promoting Internet use among students and in society. However, further information about these projects, numerous though they are, is not available online. There appears to be a rather significant break in the reported data on telecommunications projects and initiatives in Slovenia from 2004. Since this is the year that Slovenia became an EU member state, it may be that these initiatives, as well as statistical reporting, were transformed to align with EU policies.

Slovenia is a member of Schoolnet, which is a network of 31 Ministries of Education in Europe. This organization promotes technology use in the schools and provides a well-developed network for connecting all schools with each other. They also collect, maintain and provide information about (Slovenian and other) educational resources and services. It appears that all schools, universities, and libraries in Slovenia have free access to the Internet.

Slovenia also has a rather well-developed IT industry, and the government has pursued a pro-active industrial policy to promote that industry. Numerous multinational technology companies (such as Cisco and Microsoft) have invested in Slovenia, or partnered with Slovenian companies.

Croatia

The Croatians voted by majority referendum to declare independence from the former Yugoslavia in 1990. However, they did not decide to separate from Yugoslavia immediately, and rather would have sought more autonomy within the Socialist Federative Republic of Yugoslavia. However, after the acting Yugoslav government (in Belgrade) launched a military intervention in Croatia, on September 15, 1991, the Croatian parliament declared complete autonomy and separation from the rest of the Federation, on October 8, 1991. Although the EU and UN recognized Croatia as a Sovereign state in 1992, the war with Yugoslavia continued to be waged within Croatia's borders until 1995 (Pale & Gojsic, 2003).

During the war, a good deal of infrastructure in the country was damaged or destroyed. More specifically, the Yugoslav army had been advised to destroy telecommunication infrastructure (Pale & Gojsic, 2003:587-588). Like all the other former Yugoslav republics, Croatia inherited a monopoly telecommunications

provider, Hrvatske (Croatian) Post and Telecommunications (HPT). Unlike in some of the other republics, this entity had already been investing rather heavily in infrastructure development, and after the war, the decision was made to rebuild and upgrade the entire infrastructure. Thus, despite the destruction brought about during the war, Croatia's HPT soon had the entire national telecommunication infrastructure rebuilt and upgraded, entirely with fiber optic cables, by the late 1990s (Pale & Gojsic 2003:588).

In 1999, HPT was divided into Croatian Post and Croatian Telecom (Hrvatske Teledomunikacije, and HT, respectively) and the government declared its intention to start the privatization process. In the same year, it passed the Telecommunications Act, which introduced a regulator, simplified the licensing procedure, and determined that the monopoly of the incumbent fixed-line operator (HT) would continue for five more years, until January 1, 2003.

Phase one of privatization was completed in October, 1999, when Deutsche Telekom (still a monopoly incumbent in its own country) became a strategic partner by acquiring a 35% stake in HT. The second phase of privatization was to have begun in July, 2000, and was to have involved a public stock offering, but this was cancelled, reportedly due to instability in global stock markets. Thus, the second privatization phase in fact took place in 2001, when the government passed a new draft law to allow Deutsche Telekom to acquire a majority stake, and then signed an MOU to sell an additional 16% of HT to Deutsche Telekom (although the 7% of shares that were promised in 2000 to war veterans and employees went ahead).

Pale & Gojsic report that secrecy surrounded this second deal, and the public never learned the conditions or amount for which the state's most profitable company and assets were sold. The situation was rendered even more questionable due to the fact that the government prolonged the newly foreign-held entity's monopoly status for an additional year (until December 31, 2002) as a condition of the deal, and made further competition in the sector more difficult by releasing the incumbent of its obligations to unbundle the local loop, provide operator preselection or provide number portability until January 1, 2005, which effectively allowed it to retain near monopoly status until then. Nor was it ever made clear whether Deutsche Telekom had ever purchased or was responsible for the telecom infrastructure itself. Subsequently, Deutsche Telekom did not make infrastructural investments in HT, and prices for services remained very high for the duration of the monopoly's existence (Pale & Gojsic, 2003:588). Hrvatski-Telekom is now T-Hrvatski Telekom, and is currently comprised of two units: T-Com, its fixed-line and Internet business, and T-Mobile Hrvatska, its mobile operations arm.

Despite this, the government did move ahead with promoting regulatory activity, by passing the Telecommunications Act of 2003, which established a single regulatory agency (merging the two that had

previously served the function) that would eventually become the Croatian Telecommunications Agency (CTA) in 2004, which operates under the aegis of the Ministry of Maritime Affairs, Traffic, and Communications. This agency is tasked with regulating relations between service providers, providing an efficient, competitive environment, and issuing licenses, concessions, and authorizations.

Given the enduring monopolistic situation described above, with lack of competition or initiative to provide services and the presence of high prices, it may seem somewhat surprising that Croatia's rate of Internet uptake is, and has consistently been, among the highest in the region (nearly on par with EU levels), and the country boasts a well-developed ICT sector in its own right. In fact, the government moved at a comparatively early stage (at least regionally) to address "higher order" concerns and issues, such as adopting a National Program on Information Security in 2005, adopting an Open Source Software Policy in 2006 (Simcic, 2007), prioritizing the connection of public libraries to the Internet and enabling the documentation of their contents and sources available online (Vrana & Barbaric, 2007), initiating an e-schools program in the elementary and secondary schools (in conjunction and with the assistance of CARNet, described below) (Garasic, 2003) and implementing a project to connect all remote and sparsely-populated islands and their schools, to ensure equal access to information for all citizens regardless of their educational, social or economic background (Aparac-Jelušić, 2004).

The background to such an emphasis on promoting an ICT-enabled information society may include what a 2008 Government document describes as a long tradition of local interest in ICT, electronics, science, and technology, dating back to the early 1900s, due to the influential work of Nikola Tesla, who was born in Croatia (see also Petrovečki, Paar, & Primorac 2006). It may also have been influenced by Croatia's acceptance as a formal accession candidate to the EU in June, 2004, after having submitted its application in February, 2003 (which, in fact, signifies it was already well on its way to being able to join the EU and meeting its laws and standards).

Contributing to the high levels of Internet awareness and uptake, as well as to the development of a national ICT infrastructure, Pale & Gojsic point to the Croatian Academic and Research Network (CARNet). This network was initiated by a small group of very young scientists already involved in computer networking development and deployment in 1991 (while the war for independence was still being fought). These five engineers advocated establishing a national educational and scientific network, targeting the academic and research community, but with the goal of leveraging its growth to promote public interest in Internet use as a whole (Pale & Gojsic, 2003). Fortuitously, these engineers' professor was appointed deputy minister of science at the beginning of the war. When they formulated this project into a \$1 million proposal, the Ministry of Science accepted it, and the project was quickly implemented and generated

visible results: within the first year, the national backbone had been established and connected with the rest of the Internet, taking advantage of the nation-wide fiber-optic network that, at the time, had virtually no customers. Within three years, 100% of all academic and research institutions had been connected to the CARNet (Pale & Gojsic, 2003:591).

Once these institutions became connected, the “avalanche” effect began, and interest in understanding and using the Internet began to snowball, to the point that the infrastructure could no longer handle the capacity. Unfortunately, at this point, the telecom monopoly began to assert its control, once it began to see CARNet as competition. It discontinued allowing CARNet to use the cheaply leased slower lines, forced CARNet to purchase expensive upgraded digital connections and signed contracts with them to provide faster service through these new connections, and then did not deliver any service through these connections (such holding up of service seems to be a common practice among monopoly telecoms across the former Yugoslavia). At the time Pale & Gojsic’s article was written (2003), the monopoly was still hijacking the spread, development, or effective use of the CARNet system. However, knowledge of the Internet had already been spread to a far greater proportion of the population than would have been the case without the existence of CARNet. Additionally, every year since 2003, the state has invested a consistently increasing amount of money on the development of science, technology, education and sport (Petrovečki, Paar, & Primorac 2006).

The governmental body responsible for electronic communications in Croatia is the Ministry of the Sea, Transport, and Infrastructure. There is no “Ministry of the Information Society,” per se, and this may explain why the government’s information society projects are distributed over several bodies and are not centrally housed or coordinated. Even so, the government has launched an extensive program, e-Croatia, which is described in greater detail below. Meanwhile, other information society activities fall to various other bodies, such as the Central Bureau of Statistics, CARNnet, the Ministry of the Economy, Labor and Entrepreneurship, the Croatian Accreditation Agency, the Office of the Council on National Security, and the Institute for Information Systems Security.

In 2008, Croatia’s government adopted the Electronic Communications Act, which was designed to bring the country’s policies into line with the principles of the EU’s required regulatory framework, and to replace its Telecommunications Act of 2003. Among the provisions of this Act was to establish the Croatian Post and Electronic Communications Agency (HAKOM) as the state’s regulatory authority, which replaced and assumed the responsibilities of the Croatian Telecommunications Agency’s role, described above. This regulatory body is autonomous, and independent, and is responsible for carrying out legislation that is within its jurisdiction. HAKOM is a self-financed, not-for-profit institution funded from fees for its services.

One feature of the E-Communications act of 2008 was to remove HAKOM from direct Ministerial oversight and supervision. Appeals against the regulator's decisions may only be brought before the Administrative Court of the Republic of Croatia, and cannot be overturned by the Ministry.

Croatia's fixed-line telecom sector began partial liberalization in 2003, making it the first among the former Yugoslav countries to initiate this process. However, due to the continuation of the incumbent's exclusive right to maintain a number of restrictive elements in this sector, no new competitors entered the market. (In fact, one fixed-line license had been awarded in 2003, but the license was revoked two weeks later due to what were described as "procedural irregularities.") In May, 2004, the government reduced the cost of acquiring a fixed-line license that had served as a real barrier to competition. As a result, two additional fixed-line licenses were awarded that year. When license fees were again reduced in 2005, three additional licenses were awarded. Given the expiration of the incumbent's monopoly in 2005, broadband uptake grew significantly that year, driven predominantly by the incumbent's initial offering of ADSL services, as well as due to the introduction of competition. Additionally, four WiMAX licenses were awarded in 2006.

Also in 2006, the state launched an ambitious project that had been in development since 2003: e-Croatia 2007, which serves as its overarching framework program for the development of the information society in Croatia. Some of e-Croatia's main goals include: the promotion of ICT use in all sectors, including in education, science, culture, public administration, government, and business. It seeks to do so through activities such as ensuring a safe and secure communications infrastructure, promoting an enabling legal framework, reducing administrative burdens, optimizing business process through the use of ICTs, reforming public administration, and offering an increasing number of eGovernment services. One of the top priorities of the e-Croatia program is to increase the number of broadband Internet users.

Even so, e-Croatia is not a project that is starting from scratch. Rather, it is building on a rather strong recent history of strategies and programs that the government has implemented in the past few years, including the following:

- ❖ Information and Communication Technology Strategy (2002)
- ❖ e-Croatia 2007 (2003)
- ❖ HITRO.hr Program Strategy (2004)
- ❖ National Program on Information Security (2005)
- ❖ Open Source Software Policy (2006)
- ❖ Broadband Strategy (2006)
- ❖ National Program of Digitalization of Archive, Library and Museum Heritage (2006)
- ❖ National Strategy for Development of e-Business

Croatia is expected to become an EU Member State in 2010 or 2011, which will make it the second of the former Yugoslav countries to join the EU, and this e-Croatia initiative, as well as many of the telecom market reforms over the past few years, have been shaped and influenced by the country's bid to join the EU. Except for Slovenia, Croatia is far ahead of the remaining former Yugoslav countries in terms of Internet uptake, ICT sector development, e-Government services development, and sophistication and enforcement of laws and policies regarding the telecom sector. One additional and revealing event that underscores Croatia's success in its overall levels of development is that in May, 2008, Croatia officially transitioned from a USAID recipient to a USAID partner, indicating that it no longer receives development funds from this organization, and is no longer considered a "developing country."

Macedonia

Macedonia declared its independence from the former Yugoslavia on September 8, 1991, three months after Slovenia and Croatia had done so. It is the only one of the former Yugoslav republics that gained its independence peacefully and did not take part in the war. However, it was seriously destabilized by the Kosovo War in 1999, when an estimated 360,000 ethnic Albanian refugees from Kosovo took refuge in the country. Shortly thereafter, the young country faced the specter of a civil war, fought between the government and ethnic Albanian insurgents in 2001. Although overall casualties remained limited to several dozen on each side, the conflict lasted throughout most of the year. The war ended with the intervention of a North Atlantic Treaty Organization (NATO) ceasefire monitoring force and the signing of the Ohrid Peace Agreement, in which the government agreed to devolve greater political power and cultural recognition to the Albanian minority. Ethnic tensions have remained in Macedonia, mainly between the majority ethnic Macedonians (who comprise approximately 64% of the population) and the ethnic Albanians (25%).

Macedonia passed its first legislation concerning the telecom sector in 1996: The Telecommunications Act of 1996. In anticipation of eventual privatization in the sector, this law separated the state-run post and telecommunications entities, and turned the national operator, Makedonski Telekomunikacii (MakTel), into a public enterprise. A year later, it was converted into a corporation. This Act provided MakTel with the exclusive rights to offer local, national, and long-distance voice services, Internet Protocol (IP) services, public payphone services, and leased line services, as well as the sole right to construct, own, and operate fixed public telecom networks until December 31, 2005, but this was later changed to 2004 after negotiations with the EU.

In 2003, Macedonia passed its next piece of telecom legislation: the Telecommunications Law of 2003, which was designed to begin the process of implementing the EU's regulatory framework, as it applied for EU candidate status in this year. Macedonia also joined the WTO in 2003.

In 2005, Macedonia passed a new Electronic Communications Law, designed for the country to come into further compliance with the EU's regulatory framework for communications, and to create a fair and competitive telecom market. This law stipulated that in the instance when an operator (in the event, this initially meant the incumbent) possessed Significant Market Power (SMP), it would need to make special provisions in its service offerings. This Law also established an independent regulatory authority, the Agency for Electronic Communications (AEC). The regulator's objective is to promote fair competition in the telecom market, and has the authority to conduct activities that will ensure a competitive market, including placing price regulations and controls on operators with SMP, to initiate activities to ensure interconnection between operators, to approve agreements between operators, control pricing, resolve disputes, and oversee the universal services funds.

Macedonia's regulator, the AEC, is a self-financed and non-profit legal entity, with its budget funded from administrative and service fees. It is reported to have made significant progress towards being independent of political influence, but still suffers from understaffing. To date, the AEC has not completed any market analyses, despite a law, passed in August, 2005, requiring the regulator to carry out such analyses on a yearly basis. As a result, the effective implementation of regulatory obligations such as competition, pricing, and universal services cannot yet be realized by the regulator.

Macedonia was accepted as an EU candidate in December, 2005. This process then stalled until March, 2009, when the European Parliament asked the EU to grant Macedonia a starting date for accession talks by the end of the calendar year.

MakTel's privatization was originally to have taken place by the end of 1998, but this was delayed due to political reasons and because of the Kosovo crisis. In 2001, Magyar Telekom of Hungary (which is majority owned by Deutsche Telekom) signed a shareholder agreement with the Macedonian Government to acquire a majority share of MakTel. In 2008, Magyar Telekom increased its ownership stake in MakTel. Thus MakTel was privatized, but remained a de facto monopoly. Instead of addressing the incumbent's market domination in most areas of telecommunications service, the state has instead required the incumbent to make provisions to allow competitors to offer services. This situation has come under criticism from the European Commission, which warned that a failure to truly liberalize the telecom market would be seen as

an indication that Macedonia did not have the capacity or will to meet the EU regulatory requirements. Regulatory reform and enforcement have improved since 2005.

Since the incumbent has been allowed to dominate the fixed-line telecom markets, the issues of interconnection and access have been important. Network operators that want to offer competitive services must negotiate agreements with the SMP in order to use the SMP's interconnection points. Similarly, competitive operators must negotiate with the SMP to access any point of their networks. The regulator is charged with monitoring this process. Following market liberalization, 52 providers of public fixed telephony services had entered the market as of January, 2008.

Macedonia's mobile market comprises three competitors: the incumbent's subsidiary, T-Mobile (which dominates the market), Cosmofon, and VIP. Cosmofon is a Greek owned subsidiary that was awarded the second national GSM license in 2001, and launched services in 2003. VIP is a subsidiary of Telekom Austria, which was the successful bidder in the government's awarding of a third GSM license in 2007—a result of the regulatory authority ruling that both T-Mobile and Cosmofon had reached SMP status. Number portability for mobiles was introduced in September, 2008, which should further increase competitiveness among the carriers.

A number of efforts have been made, and projects carried out by both the government and by international aid organizations operating within Macedonia, in order to promote Internet use, improve access, and develop IT literacy among the population. These efforts have had a significant effect on pricing, access to, and adoption of telecom services by the Macedonian population.

In September, 2005, Macedonia became the world's first "all-wireless nation." This ambitious project was the result of a USAID-led public-private partnership initiative, centered on education, called Macedonia Connects. The project provided the entire country with a broadband wireless network through a single technology deployment, by connecting all 460 of the nation's schools (as well as 70 other sites, including dormitories, hospitals, and NGOs) to the Internet. A second USAID-led project, carried out in conjunction with Macedonia Connects, is the e-schools initiative, which oversaw the training of 7,000 primary and 2,000 secondary teachers in ICT integration into their curriculum plans prior to the arrival of computers in their classrooms. As a result of this project, all primary and secondary schools across the country are now equipped with computer labs and had free wireless broadband Internet connectivity from 2005-2008 (Hosman, 2010).

Of equal importance, this project was designed to introduce competition into Macedonia's broadband telecom market, and it succeeded. The incumbent employed numerous and diverse tactics aimed at derailing the project and preventing competition from entering the market. In the end, On.Net, the local ISP that USAID chose to be a partner in the project, was able to complete rollout of the infrastructure and wire all of the schools in four months' time, and, as part of the plan's strategy, also currently offers WiFi services to the public and to businesses, competitively, over this network, which covers 95% of the population. From January, 2007 to January, 2008, On.Net increased its broadband subscriber base from 5,400 to 20,400. It is currently the second-largest ISP in Macedonia, making the market a duopoly. In March, 2006, Telekom Slovenia acquired On.Net (making the market a duopoly of two monopolies). As a result of competition being introduced into this market, prices for broadband internet dropped by as much as 75% (Murdzeva, 2009).

The government has initiated a project (that may or may not be a follow-on to the Macedonia Connects project) that is currently in the process of installing one PC for every student, with between 75,000-100,000 PCs to be deployed by mid 2009. The government awarded the provision of Internet to the incumbent, taking this service away from the competition On.Net, and the incumbent promptly ceased providing Internet connectivity to the schools for the bulk of the 2008-2009 school year. However, as of late 2009, this issue had been corrected and all schools once again have Internet access.

In order to spur additional competition, in 2007, the regulator awarded two national authorizations and six regional authorizations for fixed WiMAX, however, the commercial launch of these services has been delayed.

In May, 2007, the government established two IT centers for use by rural communities, in order to promote Internet use in these underserved areas. Also in 2007, the government launched an IT literacy campaign, offering free PC and Internet usage training. A total of 22,229 people applied for the training courses. In May, 2009, the government announced a plan to launch a four-year project for providing wireless Internet infrastructure to 680 locations in rural areas across Macedonia. In order to increase the financial attractiveness of providing rural areas with Internet connectivity, the Government will pay for service at these locations for the next four years (and this Internet service will be provided for free), while the operators themselves are to install the equipment at their own expense.

Macedonia's government has also established a number of action plans for developing its eSociety, enumerating policy steps and goals, and elaborating upon these in the National Information Society Policy and the National Strategy and Action Plan for Information Society Development, which the government

adopted in September, 2005. These plans enumerate a framework for developing and implementing e-government, e-education, and e-business initiatives, and to develop ICT infrastructure. Additionally, on July 9, 2008, the Macedonian Parliament passed a bill creating a new Information Technology Ministry, which served the purpose of creating a new Ministry to implement these directives, and to carry out the functions related to building an eSociety. The Statistical Office remains responsible for reporting information society statistics.

Montenegro

Following Yugoslavia's dissolution in 2003, Montenegro became a semi-separate state entity within Serbia. The state subsequently gained its independence in May, 2006, following a referendum vote in which the majority of Montenegrins voted for independence. Like the other republics, Montenegro inherited a state-monopoly telecom sector and provider (Telekom Montenegro, or Telekom Crne Gore), however, the Post and Telecommunications divisions had already been separated in 1999, and the previous government had embarked on structural reform in the telecommunications industry in 1998. The Government passed its general Telecommunications Law in 2000 to provide a regulatory framework for the sector, which included regulation between providers and users of telecom services, issuing of licenses, and the provision of universal services. In 2008, the government adopted the new Law on Electronic Communications that is designed to bring Montenegrin law into line with the EU regulatory framework, to speed Montenegro's accession process as an EU candidate.

The state's regulatory agency was originally established in 2001 as an independent regulatory authority responsible for competition in the industry, supervising and regulating operators, settling disputes, issuing licenses, regulating tariffs, and ensuring non-discriminatory public access to services. Its responsibilities have been amended in response to the passing of the Electronic Communications Law of 2008, and is currently a self-financed entity, funded by fees collected for services. The process of appointing the board of directors for this regulatory agency gives the European Commission "cause for serious concern about the national regulatory authority's independence" (Montenegro 2008). To date, no market analyses have been carried out by the regulator, even though significant market power by the incumbent had been acknowledged since the Telecommunications Law of 2000, in the areas of fixed networks and services, Internet services, and mobile networks and services.

In January, 2004, Montenegro liberalized its local, domestic, and international long-distance markets, as well as the national and international data network market. VoIP services were also allowed, although they must be authorized by the telephone service provider.

The state first launched plans to privatize Telekom Montenegro in 1998. In 2001, the government proposed to sell a majority share to the public. What eventually came to pass was that a 49% share of the incumbent was sold to the public through the Mass Voucher Privatization program, which took place in December, 2001. The plan distributed the privatization certificates to Montenegrin citizens, who could invest them into Privatization Investment Funds, or in the companies they chose. The remainder of the shares were sold to Hungary's Magyar Telekom (a subsidiary of Deutsche Telekom), in January 2005. Magyar Telekom was chosen by the Privatization Council from among five public bidders. (Telekom Slovenije had been among the bidders.) Nearly 22% of the (public) minority shareholders chose to sell their shares to Magyar Telekom, consolidating its total ownership level to 76.5% of the former incumbent. This company is now under the T-Mobile/T-Crnogorski label.

Despite liberalization and privatization taking place in the letter of the law in 2004, T-Crnogorski Telekom continues to dominate the fixed line market, as little was done to allow actual competition. The incumbent continued to enjoy a de facto monopoly in the international voice market until 2007. In April/May, 2007, a reform of the telecommunications law was passed, which reduced the fee on international traffic from €100,000 to €1,000, which effectively broke the incumbent's monopoly hold on the market. As a result, competition in many telecom-related sectors began to see improvement in 2007. A number of licenses were awarded in this year, to encourage fixed line competition, and the development of the country's cable TV market. Additionally, the Electronics Communications Law of 2008 introduced a general authorization regime where a number of electronic and network services that do not require the use of limited resources may be provided without a license.

In the mobile phone arena, there are three main operators, and mobile phone penetration rate is high. The one area in which the incumbent is not currently dominant is in the mobile phone sector. A company called ProMonte (headquartered in Norway) is the leading mobile telecom provider in Montenegro. It was the first mobile operator in Montenegro, and its activity dates back to when it acquired the country's first GSM license issued in July, 1996. The second-placed operator is the incumbent's subsidiary, Monet (now T-Mobile Montenegro) which launched its mobile services in July, 2000. Even though the market had already reached a high penetration rate, a third operator opened for business in 2007, with rates and prices, features, plans, services, and offerings following as one would predict, given increased competition.

In practice, competition has only emerged in Montenegro's mobile market, as the incumbent continues to dominate both fixed line telephony and broadband Internet markets, while the regulator does not yet possess the ability to stipulate, enforce, or remedy market corrections. Even so, substantial investment has been made in Montenegro's telecom infrastructure since 2000. A national fiber-optic network, digitalization, and a high capacity, packet-switching network had all been implemented by 2006.

Montenegro's Internet penetration rates are high for the region (at 46.8% in January, 2008), although broadband subscriber rates are extremely low by comparison (3.8%). This can be explained by the enduring monopoly of the incumbent. In 2007, the incumbent Telekom Montenegro (now known as T-Mobile Montenegro) still accounted for 98% of the ISP market (including dial-up, leased line, and ADSL). However, beginning in 2007, a number of events took place that will promote competition.

In early 2007, the government issued three tender awards for licenses for the provision of wireless internet access in Montenegro (one of which was awarded to the incumbent). In addition to wireless internet access, the license would also cover VoIP service, which would also represent a competition for fixed telephony lines and ADSL. The tender was announced in order to promote the introduction of new technologies to the Montenegrin market, including 3G networks and WiMAX.

While the Ministry of Maritime Affairs, Transportation and Telecommunications is the government department responsible for overseeing the telecommunications sector, the Government established a Ministry for the Information Society in December, 2008. This new ministry assumed the tasks of the former Secretariat for Development, and is responsible for e-Government, information society strategy, and IT infrastructure. The Government produced its first Strategy for Information Society Development of Montenegro in 2009. Statistics and surveys regarding the information society are carried out by non-governmental entities.

The government of Montenegro has not been proactively involved in promoting Internet uptake among its populace. Even so, there have been international aid organizations that have been active in this arena. In order to promote both competition in the telecom sector and increased levels of access to the Internet, USAID launched a public-private partnership, Montenegro Connects, which provided subsidized internet service for 18 months to non-profit organizations, such as schools, health clinics, and NGOs. Besides USAID, the main partners included CHF International, a US-based NGO, and MNNEWS, a local Montenegrin Internet Service Provider. In addition to providing Internet connections to the non-profits mentioned above, three cities have been provided with free municipality-wide broadband. Three months after the first city (Tivat) went wireless, there were already 1,000 active users.

In a situation nearly identical to that which took place in Macedonia as a result of the Macedonia Connects project (which took place on a much larger scale, it should be noted,) the incumbent T-Mobile Montenegro found itself suddenly in a position of competition in the broadband Internet market, due to the efforts of the Montenegro Connects USAID project. T-Mobile reacted by cutting its high-speed household Internet subscription rates in half, from 40 Euro per month, to less than 20 Euro per month, in order to compete with the new local ISP MNNEWS. In a similar way to Macedonia, then, this project made Internet access more affordable, virtually overnight, across the entire country, which should result in higher Internet uptake rates and an increased number of broadband subscribers.

On a related note, not wanting to lose a lucrative contract wherein schools across the country serve as anchor tenant lessees on a nationwide network as had happened in neighboring Macedonia, T-Mobile Montenegro took preemptive action. As of September, 2008, T-Mobile announced its own public-private-partnership with the government, to provide free Internet to all the schools in Montenegro, provide teacher training, increase the amount of local content available on the Web, all in the goal of increasing Internet literacy and uptake across the country, over the next four years, until the penetration rate reaches the level of the regional average (Szasz, 2008). “The strategy has a strong PR element” (p.10) T-Mobile Montenegro plans to invest €250,000 yearly during the four-year plan, focusing on four areas:

- ❖ Internet education in schools and public areas
- ❖ Production of educational films about the usefulness of the Internet
- ❖ Supporting the development of Montenegrin Internet content
- ❖ Covering existing white spots with service

Interestingly, the corporate document announcing and describing this plan is no longer publicly available on the Internet.

Bosnia and Herzegovina

Bosnia and Herzegovina declared independence from Yugoslavia in April, 1992. However, because this was the most ethnically diverse of the republics, with a population of 43% Muslim, 31% Serbian, and 17% Croatian, loyalties were divided. Bosnia erupted into war shortly thereafter, and thousands died, while over a million were displaced. The country achieved a tenuous peace in 1995, but remains largely segregated along ethnic lines.

Because the telecommunications infrastructure was a strategic target during the Yugoslav war, this infrastructure was destroyed. The destruction included transmission and switching equipment, buildings, towers, and overhead cables, as well as libraries and other public facilities. As of 1996, there were only 260,000 main local telephone lines and 400 international lines, mainly in poor condition (CDT.org, 2000). Rebuilding this infrastructure remains a challenge for the government, for numerous reasons, including financial and ethnically-based obstacles.

Once peace was achieved, the country was partitioned into three areas, with each region governed by one of the three ethnic groups. Each enclave now comprises approximately 90% of its own ethnic group. Under the central government designation of Bosnia and Herzegovina, there are two fairly autonomous entities: Republika Srpska, and the Federation of Bosnia and Herzegovina. Following the breakup of Yugoslavia, the Federation of Bosnia and Herzegovina inherited two national telecom operators: BH Telecom and Hrvatske Telekomunikacije Mostar (now T-Hrvatske), while Republika Srpska inherited its own national telecom operator: Telekom Srpske.

Thus, although the country found itself with three telecom operators, all three were state-run monopolies, divided (mainly) along ethnic lines. The enmity left from the 1992-95 war ensured there was little cross-over, and counting the entire country as a whole, BH Telecom had 50% of the fixed and mobile market, Telekom Srpske had 35% and HT Mostar some 15%, broadly reflecting the ethnic balance between Bosnia's Muslims, Serbs and Croats. There was not, in fact, competition that would have resulted in lower prices, innovation, a greater number of services on offer, infrastructure improvement, response to demand for services, or other benefits generally associated with competition. Cooperation of any kind between these entities was absent, and infrastructure repair and improvement only began upon the infusion of international aid (CDT.org, 2000). However, the major institutions that set up shop in BiH to do the work of reconstruction did not contribute positively to the infrastructure and regulatory situation as they relied on their own satellite and dedicated high-speed links for their communications. (This is in contrast to what happened in Kosovo a few years later. Perhaps this was a lesson learned by the development organizations, or possibly it reflects the fact that Bosnia represents a more complicated situation as regards ethnic divisiveness.)

In October, 2002, the Regulatory Agency for Communications (RAC) became a legally defined entity, and now oversees and supervises the Telecommunications sector in Bosnia. Privatization was to have begun in the second half of 2002, but this process has not gone according to schedule. Bosnia passed its Law on Communications in 2002, to create an institution framework for policymaking the telecom sector. This is the law that is still governing e-Communications within the country. The law on Communications established the

Communications Regulatory Agency (RAK) as an independent, not-for-profit institution, with a budget financed through service fees. Although it has been duly established, the European Commission found that the regulator was still in need of human, financial, and technical resources to carry out its responsibilities.

In Bosnia, the Council of Ministers is responsible for adopting communications policies. While the Ministry of Communications and Transport is technically in charge of information society policy, and strategic documents with this goal have been put forth, the amount of progress that has been made in nearly all areas has been limited. The Council of Ministers is charged with the actual adoption of the Telecommunications Sector Policy. When the 2002 policy expired in 2007, and the Ministry failed to adopt a new policy for over a year, a regulatory vacuum existed during 2008, and no important decisions were taken addressing any major telecom policy decisions (Enlargement Countries Monitoring Report, 2009), which included 3G licenses, number portability, and local loop unbundling implementation. In this regard, Bosnia remains severely hampered in moving forward with new technology adoption.

As of October, 2008, two of the incumbent operators (BH Telecom and HT Mostar) remain state-run, after numerous failed attempts to privatizing them. The third operator, Telekom Srpske, was privatized. However, the majority share (65%) in Telekom Srpske was bought by Telekom Srbje, which is still a state-run monopoly (except for the mobile sector) in neighboring Serbia. Not surprisingly, liberalization attempts moved slowly as well. November, 2006, saw T3 Telecom offering the nation's first competitive commercial services (Kajic, 2006).

In an ironic twist, in December, 2007, BH Telekom (itself still a state-run monopoly) submitted a complaint to the state regulator against the "privatized" Telekom Srpske over "unfair competition and monopolistic practices." This was done because Telekom Srpske had violated a tacit agreement between the two operators to stay on their own side of Bosnia's two ethnic halves: BH Telekom operated in the Muslim-Croat federation, while Telekom Srpske offered services in the Serb Republic (TeleGeography, 2007).

Liberalization has been achieved in the mobile telephone service market, which has had for an effect that the three mobile operators (mirroring the three incumbents in ownership and primary location) now each offer coverage and have sales centers in all parts of the country. Not only has this expanded the range of coverage, services, and available rates, but it also means that users may have the opportunity to select their carrier based upon price, rather than local ethnic interest (Kajic, 2006). As of the end of 2008, Wireless Federation reports that the mobile telephony penetration rate in Bosnia-Herzegovina had reached 86%, with a subscriber base of 3.843 million people, divided between the three operators: BH Telecom (1.4 Million subscribers), M:tel (1.1 Million subscribers), and Eronet (660,000 subscribers). Neither governmental

nor development agency projects to promote Internet uptake could be located and Bosnia's statistical agency does not collect any Internet use or Telecom-related information.

Serbia

Serbia has had perhaps the worst post-war situation, in terms of its infrastructure and government. NATO bombing destroyed much of the telecoms infrastructure of the country, leaving many areas without any wired access. The government's will to ameliorate this situation and to privatize the state telecom monopoly has been lacking. This is rather ironic, since use of the Internet in Serbia under the Milosevic regime is widely acknowledged to be the first known (and successful) instance of the use the Internet to form communities joined in a common purpose of combating a regime's repressive use of power (Bennahum 1997).

Lack of competition for the fixed line monopoly incumbent Telekom Srbija has left Serbs complaining of a poor quality service, which is partly analog, partly digital, with many households still sharing lines, so that only one can use the phone at the same time (Harper, 2009). According to the regulator's figures, landline penetration was around 38 percent in 2007. Presently, only the mobile sector in Serbia is fully liberalized, with GSM penetration at nearly 112 percent, a discrepancy explained by long waiting times for landlines to be installed (Harper, 2009).

There was no law in Serbia that regulated the Internet before April 2003 (Surculija 2003) when the Law on Telecommunications was passed. However, there was no regulatory body established to enforce the law. An independent regulatory body was established two years later, due to international pressure. Compounding the difficulty of this situation, the International community was simultaneously pointing out serious concerns about the Law on Telecommunications that the Regulator was established to enforce. The 2003 Law is the current legal framework the Serbian government is operating under, however, as of December 2008, the Ministry for Telecommunications and Information Society initiated work on a new Law on Electronic Communications, intended to harmonize Serbian laws with EU regulations. This Ministry is charged with the responsibilities of carrying out relevant laws and with implementing Serbia's National Strategy for Development of Telecommunications, which was adopted in 2006. Unfortunately, this Strategy did not set out any deadlines for the implementation of liberalization nor for competition (Enlargement Countries Monitoring Report, 2009).

Since Serbia's telecom regulator (RATEL) was established, major disagreements emerged between the bodies responsible for coordination of efforts, which led to the Ministry for Telecommunications and

Information Society temporarily taking over RATEL's responsibilities. Thus, although RATEL was set up as an independent, self-financed, non-profit entity, its present status is not independent but directly government-controlled, while its ability to carry out any of the provisions of the National Strategy for Development of Communications remains severely hampered.

The OSCE provides an example of what the monopoly and lack of a functional regulator has meant for Internet services in Serbia:

For some time, a certain number of ISPs had been offered Voice-over-Internet-Protocol (VoIP) services in Serbia. Telekom Srbija had been obstructing operations of ISPs that provide VoIP by reducing their leased capacities starting February until June 2002, when the group of ISPs were simply disconnected by Telekom Srbija from public switched telephone network (PSTN) services. It was done without prior notice, warning, or consent. The affected ISPs brought their cases in front of the Economic Court in Belgrade and the Inspector of the Ministry of Transport and Telecommunications of the Republic of Serbia, which both ruled in ISP's favour. These decisions also ordered Telekom Srbija to fully restore the disconnected services to ISPs and to stop with similar practices. Telekom Srbija refused to follow the respective decisions that have not been enforced until today (Surculija 2003).

Officially, by law, the incumbent held a monopoly until June 2005, however, due to political turmoil and long periods without a functioning government, the process of establishing competition has been continually delayed, and the incumbent retains a de facto landline monopoly at present. The projected opening of the landline market in 2009 will come a year before the government launches an expected initial public offering for Telekom Srbija. With the IPO having been postponed postponed to 2010 due to the global financial turmoil, Telekom Srbija raised prices in November 2008, in an attempt to expand its network before competition arrives (Harper, 2009).

The government currently controls 80% of the incumbent, Telekom Srbija, and retains a "golden share" with the power to veto all of the important company decisions. Telekom Srbija remained the only licensed public fixed voice telephony operator, as well as the only operator authorized to interconnect international telecommunications networks, until the end of 2008 (Enlargement Countries Monitoring Report, 2009). When this changed, the regulator granted three authorizations for public fixed telecommunications network operators, nine VoIP providers, and four authorizations for international interconnection, but all of these providers must use the fixed network infrastructure of the incumbent, which remains a monopoly. The only competition that has emerged in Serbia is in the mobile telephony market, where two operators, Telenor

(owned by the Norwegian mobile operator) and VIP (owned by mobilkom Austria) were awarded licenses in 2006, and have begun to compete with the incumbent's mobile subsidiary.

There are no known efforts by the state/government to promote public Internet use or uptake. Internet penetration rates, while rising, remain low in Serbia. There were two USAID ICT-promoting projects uncovered: In February, 2005, USAID (through its Community Revitalization through Democratic Action program CRDA), partnering with CHF International, opened two Internet centers in primary schools in the city of Bogovina. This project asked local communities what they felt would help them develop their local economies. It was not necessarily computer/Internet related whatsoever—only if the local community wanted that. In 2006, a partnership between USAID, Microsoft, and Telekom Srbija provided 50 computers to establish computer labs at the Engineering Electro-Technical School at the Faculty of Technical Sciences in Bor.

Comparative Analysis of Reform Strategies

In the former Yugoslav countries, liberalization of telecom networks and services has not always been a straightforward process. For example, Macedonia liberalized its local data services and networks in 1998, but the incumbent retained monopoly control over all international networks for some years to follow. In another example, Montenegro legislated to liberalize its data networks and services in 2004, but charged a licensing fee of €100,000 over international gateway facilities, effectively barring entry for any competitors until April, 2007, when the fee was lowered to €1,000. In the detailed cases above, many of these types of examples were given.

There is wide agreement that in addition to legislating for the privatization and liberalization of a telecom sector, the establishment of a national regulatory authority is an important step for a developing country government to take in the effort to promote telecom sector growth and telecom-related technology uptake within a country. The concept of a regulator being independent comprises two aspects: first, that there be a separation of the regulator from the influence of the firms that it is regulating, and second, that the regulator be independent from direct political intervention.

Normally, the first of these is both less controversial and more straightforward to evaluate. However, in most of the countries of the former Yugoslavia, the privatization (whether partial or full) of the national incumbents took place when a firm from a neighboring state that was already a member of the EU acquired the local incumbent. Or, in cases where there was competition, the neighboring incumbent bought a

majority share in the competitor. This has been the case for most of the emerging states, in all of the telecom sectors: data and voice, fixed-line, mobile, and broadband.

Interestingly, Telekom Slovenije is one of these regional incumbent powerhouses, and a more complete list of its regional activities and acquisitions appears in the case study on Slovenia. Another major regional powerhouse, Deutsche Telekom (often branded T-Mobile), controls substantial-to-majority shares of the former incumbent operators in Croatia, Macedonia, and Montenegro, as well as one of the three former incumbents in Bosnia.

What this means in practice is that in young states, newly established regulators are being charged with creating and enforcing competition in their telecom sectors, but these sectors are dominated by incumbents with many more years' experience in dealing with regulators (after all, they hold monopoly power in their home/headquarter countries of the EU, where this is not supposed to be the case), they possess greater business acumen, as well as large legal teams that are experienced in the process of employing delaying tactics or submitting legal appeals when decisions are made against them. The newly established regulators have none of this experience, and may also lack the support of their government, in terms of the government not exerting its influence or becoming directly involved in the regulator's affairs, or they may suffer from a lack of a sufficient number of professionally trained staff to carry out the work that is expected of them. Concern over this David-and-Goliath scenario was expressed during on-site interviews with regulatory staff in multiple countries.

In addition to the struggle the regulator faces to free itself from corporate influence, there is the more widely recognized challenge of becoming independent from political influence. However, the two can be interrelated, particularly when financial or other interests enter the picture, or if a wealthy incumbent acts to exert its influence through political means.

One of the first tasks for a telecom regulator to function and exercise its independence is to carry out market analyses. The regulator must start with this task because it is the first step towards being able to carry out the rest of its functions. In order to carry out market analyses, the regulator must first define the relevant markets, gather the necessary data, designate which operators have significant market power (SMP), and only then can it distinguish and impose the appropriate penalties or corrections. The majority of regulators in the former Yugoslav states have not yet begun this process, which is a requisite first step; progress has been limited in any case, and none have accomplished the process completely (Enlargement Countries Monitoring Report, 2009).

Thus, establishing and developing a functional, independent telecom regulatory authority in these rather newly-formed states will continue to be an uphill battle. The limited progress made in nearly all of the states underscores this fact.

State Leadership and State Withdrawal

Table 2 identifies some of the causal conditions that would reasonably explain the contemporary level of technology diffusion across study countries.

Slovenia has not privatized its incumbent telecom operator and has pursued its own unique path of telecom policy. Slovenia's population enjoys the highest overall levels of income, Internet use, and broadband penetration rate. Yet because Slovenia's telecom incumbent still dominates the market, Slovenes pay the highest monthly broadband subscription rates, comparatively. As noted elsewhere in this paper, Slovenia is the only state that is currently a member of the European Union.

Croatia has not established a Ministry for coordinating efforts to promulgate its national ICT policy, despite the fact that doing so has been identified as a best practice (Enlargement Countries Monitoring Report, 2009). In Croatia's case however, this does not seem to have proven a hindrance to effective ICT policy promotion: it was among the first to establish a national ICT policy, and the government has effectively promoted ICT use in its schools. The country has a comparatively high level of Internet users (that is approximately on par with the European Union average,) broadband subscribers, the highest level of mobile phone subscribers, and competitively low broadband Internet prices. Croatia is currently a candidate for membership in the European Union, and is generally expected to be the next state to join the Union (among those being considered here) within the next year or two at most. As such, Croatia has taken numerous steps to align its telecom policies with the various Acts and regulatory frameworks required for joining the EU. As such, the European Commission has rated its level of progress as significant.

The years of Macedonia's market liberalization, regulator efforts, and establishment of a national ICT Policy and Dedicated ICT Ministry all lie in the middle range, chronologically, compared with the rest of the countries. This is reflected in its middle-range levels of internet users and broadband penetration rates, as evidenced in the table below. The effect of the state's recent introduction of competition into the broadband sector can be seen in the fact that Macedonia has the lowest broadband subscription prices of any of the countries, as well as comparatively high levels of Internet Users and broadband subscription rates, despite having the second lowest levels of income, comparatively. Macedonia has established a dedicated Ministry for the promotion of ICT, and is working to promote ICT use in the schools. Macedonia has also been a candidate country for EU membership since 2005. The progress it has made in aligning its telecom policies with the EU frameworks has been judged significant.

Montenegro was among the last countries to establish a national ICT policy, but it should be borne in mind that it was also the last country to gain status as an independent state, in 2006. Despite this, it is not a laggard in other areas of regulatory development or market liberalization. However, to date, it has not promoted ICT use in the schools, which is perhaps reflective of the late date of the establishment of an ICT policy and dedicated Ministry. The state has a relatively high level of Internet users among its population, but its broadband subscription rates comparatively, are somewhat low. This may be partially explained by the fact that Montenegro boasts the highest rate of fixed line telephone subscribers among its population, which can mean that the number of dial-up Internet subscribers in the state who have not yet converted to broadband may be relatively high. Montenegro has applied for candidacy status in the European Union, but has not yet been granted such status. The incentive for aligning the state's telecom policies with EU frameworks may be lacking (when compared with Macedonia, which is a candidate state, for example) and the European Commission observed the level of progress Montenegro had made in this area to be "some."

Bosnia has made comparatively little progress when compared with the rest of the former Yugoslav countries, in nearly all of the telecom-related areas under examination, despite being an early actor in terms of regulatory separation and depoliticization (if only in the letter of the law). It has undergone market liberalization, but not privatization. The state has not yet established a national ICT policy (nor a dedicated Ministry), nor is it promoting ICT use in its schools. Bosnia's inhabitants have the lowest levels of income overall, the lowest levels of mobile phone subscribers and have approximately the same levels of Internet users and subscribers as in Serbia, which are at the bottom of the group. Bosnia is the only one of the countries that has not yet applied for EU candidacy status, and the European Commission has judged its progress in telecom policy framework adoption to be limited in scope.

Serbia has not privatized its incumbent, nor liberalized its telecom market. However, it has undergone regulatory separation and depoliticization, and has established a national ICT policy and a dedicated ICT ministry. Its figures for Internet users and broadband subscribers are the lowest among the former Yugoslav states, but it has, as of December 2009, applied for EU candidacy status. Despite this, the European Commission has noted little progress in its efforts at aligning its state telecom policies with the EU frameworks.

As noted above, statistics that are available from multiple sources do not always accurately reflect the fact that there can be a sizeable gap between a policy's legislation and implementation. The outcomes noted in the table above are intended to give a more accurate description of the de facto reality experienced on the ground, in the areas of privatization and liberalization of the telecom sectors, as well as the levels of

regulatory independence and effectiveness in the former Yugoslav countries. Perhaps not surprisingly, Serbia and Bosnia rank low in each category. Montenegro's scores rank lower than Macedonia's, and this may be reflective of the point noted above that Macedonia has a more salient incentive structure, as it is officially an EU candidate state. In a similar vein, Croatia faces similar incentives regarding EU membership. It is expected to become a member country within the next year, and this may be both reflected by and reflective of its rankings, which are the highest in the chart. Slovenia's rankings are quite low as well, but as noted throughout this paper, it has pursued an alternate path to the "recommended" steps for development, reflecting its unique priorities.

Table 2. Reforming Information Policy in the Former Yugoslavia

Country	Incumbent Privatization	Regulatory Separation	Regulatory Depoliticization	Market Liberalization	Year of ICT Policy	ICT Promotion in Schools	Dedicated Ministry for ICT policy	EU Membership Status	Alignment with EU Telecom Regulations
Bosnia	✖	1999	1999	2006	✖	✖	✖	✖	Limited Progress
Croatia	2001	2003	2003	2003	2002	✓	✖	● 2004	Significant Progress
Macedonia	2000	2005	2005	2008	2005	✓	2006	● 2005	Significant Progress
Montenegro	2005	2001	2008	2004	2009	✖	2008	○ 2008	Some Progress
Serbia	✖	2005	2005	✖	2006	✖	2008	○ 2009	Little Progress
Slovenia	✖	2001	2001	2001	2001	✓	2001	● 2004	Complete

Source: (Henisz, Zelner, and Guillen 2005; Howard 2007; Banisar 2006; Howard and World Information Access Project 2007, Enlargement Countries Monitoring Report, 2009).

Note: EU Membership Status indicated as being pre-candidacy negotiations (✖), having officially applied for candidacy (○), being granted candidate status (●), or being a full member (●).

What Is the Recipe for Good Information Policy?

Slovenia's case would appear to present a puzzle. If best policy practices recommend establishing competition and liberalization and setting up an independent regulator that does its job, Slovenia has failed in every area. Even so, it still has high rates of Internet and other telecommunications technology use among its citizens, but these could all arguably be higher, if coverage were more complete, broadband services were more widely available, and prices were more affordable: all features associated with the introduction of competition into the telecom sector. Given Telekom Slovenia's near-predatory levels of acquisitions in neighboring countries' telecom sectors, however, the argument put forth here is that not liberalizing, regulating, nor allowing for competition has been a political strategy for Slovenia from before it joined the EU. Slovenia's overall economy may have benefited from the government supporting the growth of what has become regional telecom powerhouse, even if it has been at the expense of universal, affordable telecom adoption within its borders. This is, of course, a legitimate policy strategy, but one that is not possible for all states to employ. To wit: the mystery that remains is why the EU is allowing Slovenia to continue its monopolistic practices while it is a member state, while monitoring and enforcing telecom sector competition among the other potential candidate states.

Croatia appears to have gotten off to a delayed start on its privatization process, with the government ultimately selling the incumbent (to a neighboring monopolist) in a patently non-transparent manner. In addition, there is no one body that is charged with organizing or carrying out the country's e-Croatia program; this is not considered to be a policy "best practice," and in other countries has led to a lack of accountability, disjointed progress, or even unrealized projects (as is the case in Serbia, for example). Apparently this is not the case for Croatia, as a great deal of progress has been made in the areas covered by the program, including in education, science, culture, business, and government. In fact, Croatia's chapter on Information Society and Media has been closed, which means that all EU requirements have been satisfied, and its accession to the EU is expected to take place in 2010 or 2011. One contributing factor to assist in explaining Croatia's success, and the speed with which its policies and programs have been carried out, may have to do with societal factors: document after document refers to Croatia's pride in being the birthplace of Nikola Tesla, his presence is revered in the country, and science and technology are priorities for the state. The early development of a fiber optic telecom infrastructure following the war for independence, and the establishment of the CARNet network among universities across the country undoubtedly contributed to Croatia's rapid technology development and adoption among the populace.

Macedonia's progress regarding competition policy and liberalization continues to suffer from delays. It is seen as progress that a regulator has been established, and this regulator is widely recognized to be independent from government control, however it still suffers from understaffing. This has prevented Macedonia's regulator, to date, from carrying out any market analyses, which would be the first step towards enforcing competition and remedying market distortions. On the other side of this coin, Macedonia's government has been very pro-active regarding programs aimed at promoting Internet use within the country, and the Macedonian population has benefited a great deal from such projects, which were undertaken by both the government and by aid organizations: through them, competition was effectively introduced into the broadband Internet sector, prices dropped by 75%, adoption and uptake has spiked upward as a result, and all schools across the country now have computers and Internet access (along with technology-trained teachers to incorporate this technology into the pedagogy). Thus, Macedonia's policy experience has been rather bifurcated: the government has demonstrated delaying and foot-dragging tactics regarding competition policy and liberalization of the telecom sector, but has been pro-active at promoting telecom-related technology use among its citizens, which has led to Internet adoption rates that rival those in Croatia and greatly surpass those of its neighboring countries.

Montenegro has only been an independent country for a few years, and the lack of progress the country has made towards competition, liberalization, and regulation may be a reflection of this fact. However, in the two sectors that have seen competition, mobile phones, and more recently, broadband Internet, adoption rates are high among the populace. It is interesting to note that the instigation of a development project in Montenegro which was similar in nature to one that successfully introduced competition into the broadband sector in neighboring Macedonia, caused the incumbent, T-Mobile Montenegro, to cut its broadband rates by half across the country, and to announce a nationwide computers-in-the-schools program. Thus, although the rather young government has not been proactive in either promoting telecom-related technology use among its citizens or regarding competition policy and liberalization of the telecom sector, levels of telecom-related technology adoption are still advanced for the region.

Both Serbia and Bosnia remain in early stages of liberalization and privatization, and are struggling to establish an independent regulator. Both are suffering from low rates of telecommunications technology uptake within their countries, due to infrastructure that was destroyed in their respective wars, and continuing monopolist incumbents that charge high prices and have no incentive to offer improved services, nor to invest in infrastructural development. In both countries, the only sector that has been liberalized (although not privatized) is mobile telephony. Neither government appears to be prioritizing policies that would liberalize and privatize their telecom sectors, nor implementing programs that would promote telecom-related technology adoption among their populations.

Conclusion: Incentives and Priorities

This comparative analysis has provided in-depth evidence of the challenges facing newly formed states as they formulate strategic policies regarding the development of their telecom sectors and the promotion of telecom technology adoption among their populations. We have demonstrated that alternative paths to those recommended in the literature can be successful, as in the case of Slovenia, but its unique regional circumstances have allowed it to follow a policy path that did not (and still does not) prioritize competition, which means prioritizing overall economic growth over universal telecom technology use and affordability. We also found that society and culture can make a difference in telecom technology uptake, as is the case in Croatia, where a historical prioritization of science and technology promotes high levels of technology uptake, even in a situation of restricted competition in the telecom sector. We have demonstrated that a country that does everything “by the book,” according to the recommendations of multiple scholarly inquiries, might pay off, as in the case of Macedonia. Finally, we have demonstrated that the largest overall incentive to liberalize, introduce competition, and promote regulatory reform in these sectors, all of which lead to higher levels of economic growth and telecom-related technology adoption, is the prospect of becoming an EU member state. This is good news for all of the states in this geographical region, but less positive regarding transition economies located outside of the EU’s scope, such as the former Soviet states that are east of the Caspian Sea.

The prospects for EU membership are the primary force for policy restructuring, but it also seems that the beneficiary of such reform has been the regional country that has already been awarded EU membership. Indeed, state policy has substituted for the power of market transparency: in a region where several states withdrew from providing public telecommunications services, the one that remained benefited enormously.

Perhaps the two clearest lessons learned are that each state will pursue the telecom-related strategies that are in line with its overall economic and socio-political policy priorities, and that incentives matter a great deal in determining these priorities. If becoming an EU member is a realistic possibility, this provides a strong incentive for states to align their policies with those required by the EU for membership, as witnessed in the cases of Croatia and Macedonia, the only two EU candidate states. If the country remains scarred from recent wars and continues to face inter-ethnic challenges within its borders, reform of the telecom sector and promoting technological uptake remains low on the policy priority list, as in Bosnia and Serbia.

Creating independent regulatory bodies will continue to be a challenge for each of these states, due to the presence of regional incumbent powerhouses with greater business acumen and legal experience than the regulators themselves possess, as well as due to a lack of governmental support for the regulators' mission, whether in terms of insufficient funding or staffing, or the government's propensity to meddle or intervene in their affairs.

Policy priorities will differ across states, and may be reflective of the circumstances present in each state. Slovenia has opted to expand its regional influence and to create overall economic wealth for its economy by allowing its incumbent to dominate and become a regional powerhouse, perhaps at the expense of universal availability of services, the highest technology adoption rates, or the lowest consumer prices possible. Serbia and Bosnia, on the other hand, have not prioritized the development of their telecom sectors, but this may reflect a difficulty for war-torn economies to "get their houses in order" following such a devastating event. However, Croatia also faced war-related destruction, yet prioritized the re-building of its infrastructure immediately following the war, even capitalizing on the opportunity to build a nation-wide fiber-optic telecom network.

There are limitations to cross-country comparative research. Certainly the circumstances faced by each country as a result of Yugoslavia's dissolution—whether it was war-torn or emerged relatively intact—makes for a different starting point for each country, as would its date of independence. Ethnic composition within these countries can also greatly affect governmental policy priorities, and certainly the size of a country makes a difference. For example, Montenegro only gained its independence as a country in 2006, making it a late starter. It is also a tiny state, with a population approximately on par with the city of El Paso, Texas, which itself is the fourth largest city in that state. Given this, it becomes apparent that individuals or networks of individuals stand to make a greater difference on the national policy level when the population is quite small, whether this is to the advantage or disadvantage of the greater population. Societal particularities can make a difference as well, as evidenced by Croatia's historic emphasis on and prioritization of science and technology: five engineers at a university worked together to successfully establish a national educational and scientific telecom network, to which all academic and research institutions were connected within three years. The process was greatly aided when their professor was appointed deputy minister of science and was able to fund their work.

This case-level study intends to complement and further inform the numerous quantitative analyses on issues related to telecom policy for development. Even though each state being considered in this paper has taken a unique approach to specific policy decisions, many of the policy prescriptions that have arisen from the macro-level studies, which are predicted to have positive outcomes in terms of technological adoption,

are borne out within some of these countries, while conversely, the lack of their implementation is demonstrated to result in less positive outcomes in others. In addition, this paper gives empirical evidence for the argument that an independent telecom regulator, a liberalized market for consumer communications services, and the privatization of the national telecommunications operator are constructive policies for encouraging telecommunications technology adoption even while making the case that issues such as privatization and liberalization are far from black-and-white in reality.

References

AP Worldstream. 2006. "Slovenia Telecom buys 75 percent of Kosovo's Main Internet Provider." May 26.

Aparac-Jelušić, Tatjana. 2004. "The Internet in Island Communities in Croatia: Between Government Strategies and Reality." *International Journal of Information Ethics* 2:1-8.

Bennahum, David S., 1997. "The Internet Revolution." *Wired*, April. Available at http://www.wired.com/wired/archive/5.04/ff_belgrad_pr.html

Center for Democracy & Technology. 2000. "Bridging the Digital Divide: Internet Access in Central and Eastern Europe: Bosnia-Herzegovina." Available at <http://www.netdemocracyguide.net/international/ceeaccess/countrydetail.shtml#bosniaherzegovina>

Deutsche Presse-Agentur. 2008. "Slovenian Telecom Firm buys Bosnian Cable TV Operator." September 2.

Danish Ministry of Foreign Affairs. 2009. "Telecom Slovenia Wants to Enter Croatian Market." February 11.

Enlargement Countries Monitoring Report II. 2009. Supply of Services in Monitoring Regulatory and Market Developments for Electronic Communications and Information Society Services in Enlargement Countries. Available from http://ec.europa.eu/information_society/activities/internationalrel/dialogue_coop/enlargement/Enlargement%20Countries%20Monitoring%20Report%2020-%20June%202009.pdf

Eurostat. 2009. Eurostat Regional Yearbook 2009. Available at http://epp.eurostat.ec.europa.eu/portal/page/portal/structural_indicators/indicators/innovation_and_research

Garasic, Diana. 2003. "Contribution of the Globe Program to Computer Assisted Learning and ICT Use in Croatian Schools." Paper Presented at the conference "e-Learning in Science and Environmental Education," October 1-4, 2003, Tartu, Estonia.

Gerring, John. 2004. "What is a Case Study and What is it Good for?" *American Political Science Review* 98 (2): 341-354.

Harper, Paul. 2009. "Serbia Seeks to Liberalize Fixed Line Telecom." February 11. Available at <http://seekingalpha.com/article/119836-serbia-seeks-to-liberalize-fixed-line-telecom>

Hosman, Laura. 2010, forthcoming. "Policy Considerations from a Nationwide IT-in-Education Initiative: Macedonia Connects." *Journal of Information Technology and Politics* 7 (4).

Howard, Philip N., and Nimah Mazaheri. 2009. "Telecommunications Reform, Internet Use and Mobile Phone Adoption in the Developing World." *World Development* 37 (7): 1159-1169.

Hrovatin, Nevenka, Rok Basle, Damir Cibic, and Matej Svelj. 2005. "The Development of Broadband in Slovenia: Why is it Lagging Behind?" Paper Presented at 16th European Regional Conference September 4-6, 2005 in Porto, Portugal.

International Telecommunication Union. 2009. ICT Statistics Database. Available from <http://www.itu.int/ITU-D/icteye/Indicators/Indicators.aspx>

Kajic, Denis. 2006. Telecommunications in Bosnia and Herzegovina. November 26. Available at <http://see.oneworld.net/article/view/142977/1/>

Lijphart, Arend. 1971. "Comparative Politics and the Comparative Method." *The American Political Science Review* (65): 682-693.

Murdzeva Buleska, Natasha. 2009. USAID Macedonia Education Specialist. Interview with the author, February 25.

Novak, Marja. 2009. "Slovenian Telekom bids for Macedonian Cosmofon." Reuters. March 12.

Pale, Predrag, and Jasenka Gojšić. 2003. "Nationwide ICT Infrastructure Introduction and its Leverage for Overall Development." In *Annals of Cases on Information Technology*, ed. Mehdi Khosrow-Pour. Hershey, PA: IGI Publishing.

Petrovečki, Mladen, Vladimir Paar and Dragan Primorac. 2006. "Can Croatia Join Europe as Competitive Knowledge-based Society by 2010?" *Croatian Medical Journal* 47:809-824.

Prstavec, Ivana. 2008. "Lawsuits and Political Disputes Mar Slovenia Telekom Privatisation." Available from <http://incentraleurope.radio.cz/ice/article/100324>

SeeNews. 2006. "Slovenian Telco Pays 4.7 Mln Euro for 76% of Macedonia's On.net." March 20.

Šimić, Diana. 2007. "e-Croatia 2007: Fostering the Development of Information Society in Croatia." Presentation given at INFuture 2007: The Future of Information Sciences Conference, Zagreb, November 7-9.

Surculija, Jelena. 2003. "Country Report: Internet Regulation in Serbia and Montenegro." OSCE Organization for Security and Co-Operation in Europe. Available at www.osce.org/documents/rfm/2003/06/109_en.pdf

Szasz, Daniel. 2008. "Increasing Internet Penetration in Montenegro." Presentation given at Infifest Conference, Montenegro, September.

Ulcár, Manca. 2008. "Slovene Telekom buys Albanian Telecoms Operator." Reuters May 30.

Vehovar, Vasja, and Tina Zupanič. 2006. Internet and Slovenian Government 2006. Available from <http://slovenia.ris.org/index.php?fl=2&lact=1&bid=493&parent=13>

Vrana, Radovan and Ana Barbaric. 2007. "Improving Visibility of Public Libraries in the Local Community: A Study of Five Public Libraries in Zagreb, Croatia." *New Library World* 108 (9/10): 435-444.

World Bank. 2008. World Development Indicators. Data available from <http://web.worldbank.org/>



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Laura Hosman and Philip N. Howard

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