

KNOWLEDGE GAP GROWING IN INTERNET AVAILABILITY AND MOBILE PHONES: NORTHERN AND WESTERN EUROPE OUTPACING SOUTHERN AND CENTRAL EUROPE

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ABSTRACT: This research is a secondary analysis of Eurobarometer polls (#53 in 2000 and #71.2 in 2009), comparing nation states on the audience availability of certain news, information, and communication resources. Did Central and Eastern European nations “catch up” to Northern and Western European nations in audience communication resources? Or did those Central and Southern European nation states, as Knowledge Gap Theory would suggest, gain resources but at a slower pace than their Northern and Western counterparts? This study focused on mobile phone availability and usage, as well as Internet availability at one’s home, office, and community. Results show the gap growing between Northern and Western European nations when compared to Southern and Central European nations. This gap growth occurs regardless of whether one measures by absolute change or percent of possible change. The data also show that: 1) TV is a nearly ubiquitous home medium; 2) Germany’s mid-range and lackluster performance in home internet is almost entirely accounted for a lingering Cold War digital divide with East Germany; 3) as suggested by roughly even East and West German growth in mobile phones, land lines are not a necessary transitional stage for developing nations or areas, and many consumers are skipping or dropping them; and 4) as late as 2009 many Eastern and Central European internet users were compensating for the difficulty of obtaining home internet service with reliance on community internet sites such as cafes.

KEYWORDS: Knowledge Gap, Central Europe, phone, Internet

INTRODUCTION

Knowledge Gap Theory posits that over time information, information resources, and information technologies in all societies, nations, neighborhoods, and groupings grow, but the information “haves” gain faster than the information “have nots” (Tichenor, Donohue & Olien, 1970). The term “digital divide” may be regarded as a related concept. However, as one recent article pointed out (Bruno, Esposito, Genovese & Gwebu, 2011) there is a heated debate in academic circles about the term. While it is an evolving concept, most definitions specify access to and effective use of information and communication technologies. Those using the term will sometimes stress the global divide between industrialized and non-industrialized nations and others may use the term to indicate the social divide between information “haves” and “have nots” within a country. A few use the term for comparing those who use digital resources to engage and to mobilize in public life with those who do not.

Central and Southern Europe during the first decade of the 2000s presents an opportunity to test knowledge gaps and digital divides on a large scale. The collapse of the Soviet Bloc and Warsaw Pact was followed quickly by phenomenal global growth in digital communication resources, notably the Internet and expanded use of mobile phones.

This research is a secondary analysis of Eurobarometer polls, comparing nation states on the audience availability of certain news, information, and communication resources. Did Central and Eastern European nations “catch up” to Northern and Western European nations in audience communication resources? Or did those Central and Southern European nation states, as Knowledge Gap Theory would suggest, gain resources but at a slower pace than their Northern and Western counterparts?

LITERATURE REVIEW

William M. Brinton (1990) observed that media, particularly the medium of television, played an indispensable role in the political change that rolled across Central and Eastern Europe in the late 1980s. He wrote, “Television historians may address this question soon, but one thing seems certain: The revolutions we have seen are truly telerevolutions, not only visual images of extraordinarily high definition, but also high in terms of the collective consciousness.” Yet, television in its standard broadcast model of transmitter towers and home viewership would not be the form to dominate future change. As Schiller (2004) has noted, “Proliferation of new digital media have disrupted and destabilized what

had been discrete, largely oligopolized media markets.” Schiller documents how long-established state communication monopolies, both print and broadcast, have broken down under the technological realities of satellite and Internet resources. He shows what amounts to a race with new platforms and those who creatively use them on one side and global media conglomerates seeking to co-opt and wring profit from those platforms on the other side.

Jakubowicz and Sükösd (2008) pointed out that post-communist societies in Europe were subject to a broad array of historical processes--democratization, commercialization, professionalism in journalism, and massive access to digital and interactive media via the Internet and mobile devices--all in a compressed period of time starting in the 1990s. However, as Jakubowicz (2007: 265) and others (Zassoursky & Vartanova, 2000, Gourova et al., 2002; Vartanova, 2002) have stressed, the Central and Eastern European response to the burgeoning information society has been uneven and frustratingly slow in spots.

In Lithuania, 98 percent of those aged 16 to 24 use mobile phones. Even among the elder generations more than half of those aged 65 to 74 also use mobile phones (Nugaraitė, 2010).

In sharp contrast, Romania lagged behind the rest of the continent with only 33.4 percent Internet penetration in 2009. Most Internet hot spots are limited to the capital of Bucharest. Romanian mobile phones are numerous but may have Internet access limitations. Mobile phones outnumber TVs eleven to one, computers four to one, and fixed Internet six to one (Ulmanu, 2010).

While it may be said that the Internet generally diversifies the media landscape in young democracies and appeals to young people within them, this does not imply the erasure of digital divides or the elimination of knowledge gaps. The lingering mainstream media will still likely be in the hands of political and economic elites. Further, as EU candidate countries pushed forward in some areas, the established EU countries often pushed forward in nearly all areas and frequently at a faster pace. Thus, digital divides can and do linger and knowledge gaps grow.

Darbishire (2000) declared:

“It is now often said that the revolutions in Central and Eastern Europe didn’t really happen in 1989 or 1990, or at least they be no means fully happened. We can all say with hindsight how naïve it was at the time to think that totalitarian ideologies were done with in 1989 and that

'history was finished.' In fact, the transition away from communism is proving to be a much slower process... It seems clear that the so-called transitional process is moving at different speeds in different countries, according to a whole mix of political, economic, social, and cultural criteria" (62).

She noticed that media in the southern region follow the same political and economically staggered pattern, struggling to define forward and backward. One Albanian complained to her that the Balkans started on the road to Europe but found their way to Latin America (p. 62). Darbishire wrote, "In South-Central Europe, in the Balkans, the media is still developing, and the progress of the whole media environment is dependent on political, legal, and economic developments" (73).

The great complication and qualification of that analysis, however, is that the political and economic forces varied greatly across those Southern, Central, and Eastern European nations. The former Warsaw Pact nations had to work on dismantling totalitarian institutions. The Balkan wars took a toll on the former Yugoslav states. The growing financial problems of Greece and Italy motivated one news account to reference them as "two of Europe's most tangled and unresponsive political cultures" (Donadio, Povoledo, Pianigiani & Castle, 2011).

Were the Southern and Central European countries generally trailing their Northern and Western counterparts early in the 2000s? A tally of Internet access in 2003 indicates that indeed was the state of affairs. The EU median then was 45 percent of the population accessing the Internet. Slovenia was the only new member state approaching that number at 38 percent. Other percentages were: Estonia, 21; Czech Republic, 17; Latvia, 12; Poland, 12; Hungary, 11, Lithuania, 7; Slovakia, 4; and Bulgaria, 2 (Jakubowicz, 2007: 266).

METHODS

The researcher obtained from the Inter-university Consortium for Political and Social Research (<http://www.icpsr.umich.edu/icpsrweb/ICPSR/>) the following datasets:

- Eurobarometer 53: Racism, Information Society, General Services, and Food Labeling, April-May 2000 (Hartung, 2000).
- Eurobarometer 71.2: European Employment and Social Policy, Discrimination, Development Aid, and Air Transport Services, May-June 2009 (Papacostas, 2009).

The researcher is aware that the definition of Central Europe is a bit controversial and slippery. Milan Kundera defines it as in the center, culturally in the west but politically (after 1945) in the east. Shaped by centuries of cultural diversity, Central Europe is squeezed between Germany and Russia (Lisiak, 2010). Any nation-state designations to define Northern, Central, Southern, or Eastern Europe will have some arbitrariness. Nevertheless, within this research when such a division is needed, the author will set the dividing line using the EU9, a reference to the founding six European Community members (France, Belgium, Netherlands, West Germany, Italy, and Luxembourg) and adding Denmark, Ireland, Great Britain and Northern Ireland. This division has some precedent as it was used in the Eurobarometer studies – EU9 as compared to all other measured European nation states.

The non-EU9 in the 2009 survey were: Greece, Spain, Finland, Austria, Portugal, Sweden, East Germany, Bulgaria, Republic of Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia, Turkey, Croatia, and Macedonia.

HYPOTHESES

Hypothesis One is that, as predicted by Knowledge Gap Theory, from 2000 to 2009 (in the analyzed Eurobarometer studies) home Internet use and individual ownership of mobile phone will increase across Europe, but the increase will be fastest in the Northern and Western nations, increasing the gap between those nations and their Central, Eastern, and Southern European counterparts.

The 2009 Eurobarometer also has a “societal self-placement scale,” running from 1 to 10. The definition of societal placement was left to respondents. The survey asked, “On the following scale, step ‘1’ corresponds to ‘the lowest level of society,’ step ‘10’ corresponds to ‘the highest level of society.’ Could you please tell me on which step you would place yourself?” This, when combined with usage measures, allows for certain digital divide calculations related to Internet use at home, work, and elsewhere. Each usage question was scaled: everyday/almost everyday, once or twice a week, about once a week, once or twice a month, less often, or never. These were reverse coded so the usage scale ran from 1 never to 6 always/almost always.

The researcher expected, in *Hypothesis Two*, to find a strong positive relationship between the frequency of Internet usage and higher societal self-placement. In other words, those who use the Internet a lot will be those who see themselves in that higher socio-economic strata. Conversely, those who use the Internet rarely or never will more frequently be from a lower socio-economic

strata. Because it seems likely that those in higher status jobs will have better Internet service, and more need for it, the researcher expects this pattern will hold true for Internet use at home, work, and elsewhere.

FINDINGS

Generally, the European Knowledge Gap grew, as measured by 2000-2009 changes in both home Internet and mobile phones. The changes over time were calculated by both absolute change ($y - x$) and percent of possible change ($(y - x) / 100 - x$), using the 2000 percentage as x and the 2009 percentage as y . Spain, Italy, Portugal, and Greece were in the lower tier of home Internet growth in either method of calculation. Curiously, however, the developed nations of the United Kingdom, France, and Germany barely managed only mid-range performance in home Internet growth. The German numbers showed slower Internet growth in the former communist east than in the western part of the country. The same could not be said for mobile phones, suggesting that telephone-only landlines are not a necessary developmental step and many consumers in developing areas can and are skipping them. Parceling out Northern Ireland had no real effect on the British numbers for Internet and mobile phones. Overall, the fastest Internet home use growth was in the Scandinavian and Benelux countries (*Table 1*).

Country	2009	2000	Absolute Change	Percent of Possible Change
Netherlands	86	46	40	74.1
Sweden	86	48	38	73.1
Finland	79	28	51	70.8
Luxembourg	78	29	49	69
Denmark	83	46	37	68.5
Belgium	68	20	48	60
Germany	62	13	49	56.3
Ireland	65	20	45	56.3
France	62	14	48	55.8
Austria	61	17	44	53
Spain	55	10	45	50
United Kingdom	59	24	35	46.1
Italy	51	20	31	38.8
Portugal	37	7	30	32.3
Greece	32	6	26	27.7
<i>In-Country Splits</i>				
West Germany	65.7	14.5	51.2	60.0
East Germany	54.3	11.9	42.4	48.1
Great Britain	59.6	25.1	34.5	46.1
Northern Ireland	57.3	21.3	36.0	45.7

Table 1.
Changes in
Percent of
Home Internet,
Eurobarometers
2000 and 2009
(Hartung, 2000,
Papacostas,
2009).

The same nation state pattern generally held true for growth in mobile phones, except that Ireland and Austria experienced higher growth rates, far exceeding their home Internet growth. Thus, one can say that *Hypothesis One* generally was supported, as seen in *Table 2*'s country-by-country calculations.

Table 2.
Changes in
Percent of
Mobile Phone,
Eurobarometers
2000 and 2009
(Hartung, 2000,
Papacostas,
2009).

Country	2009	2000	Absolute Change	Percent of Possible Change
Ireland	92	55	37	82.2
Sweden	95	72	23	82.1
Denmark	92	60	32	80
Austria	90	52	38	79.2
Belgium	90	51	39	76.4
Netherlands	91	63	28	75.7
Luxembourg	92	69	23	74.2
Finland	95	81	14	73.7
Italy	93	74	19	73.1
Germany	82	39	43	70.5
France	83	54	29	63
Portugal	79	46	33	61.1
United Kingdom	83	59	24	58.5
Greece	79	54	25	54.3
Spain	77	56	21	47.7
<i>In-Country Splits</i>				
West Germany	82	39.0	43.0	70.5
East Germany	81	38.9	42.1	68.9
Great Britain	82	58.8	23.2	56.3
Northern Ireland	83	58.3	24.7	59.2

Hypothesis Two also was supported. Across Europe, as measured in the 2009 Eurobarometer, those who most frequently used the Internet also reported higher societal self-placement. This was shown through regressions comparing two self-reported items, frequency of Internet use and societal self-placement on the aforementioned scales. These regressions revealed a highly significant positive relationship between these variables, regardless of whether one was asked about use at home, work, or elsewhere (*Table 3*).

Location	Sum of Squares	F	Beta	t	P
Home	3923.966	1619.799	.262	40.247	<.0001
Work	3909.454	1604.281	.263	40.053	<.0001
Elsewhere	735.344	279.019	.108	16.704	<.0001

Table 3.

Regression: Societal Self-Placement and Internet Use, Eurobarometer 71.2 (Papacostas, 2009).

At the same time, one should note what strongly appears to be a “cafe exception” for nations outside the EU9. Mean frequency of Internet usage showed the expected digital divide at home and at work between the more developed EU9 and the less developed, or developing, remaining European nation states. The two groups, however, had nearly the same Internet usage rate at places outside the home or workplace (*Table 4*). The clear implication is that the Internet represents such a valued and important tool in people’s lives that some persons in lesser developed areas find creative ways to get online in libraries, cafes, schools, and shops.

Frequency of Internet Use	Mean	N	Std. Dev.	t	P
Home / EU9	4.43	7757	2.056	20.8677	<.0001
Home / Other	3.79	15075	2.263		
Work / EU 9	2.83	7228	2.286	11.1187	<.0001
Work / Other	2.48	15103	2.159		
Somewhere Else / EU 9	1.73	7722	1.466	1.5148	0.1298
Somewhere Else/ Other	1.70	16582	1.424		

Table 4.

Mean Frequency of Internet Use in Three Locations, Eurobarometer 71.2 (Papacostas, 2009).

Regarding social status, one certainly saw in 2009’s Eurobarometer 71.2 that those who acquire communication technology tend to be of higher self-reported status. As shown in *Table 5*, those who had computers and those who had Internet access averaged more than one social “step” higher than those who did not have those items. Ownership of a mobile phone showed the same pattern, though at not quite a full step. In fact, this held true for televisions, CD players, DVD players, computers, Internet access and mobile phones. All, except for TV, occurred at a p value of less than .0001 (*Table 5*). The relatively small number of “no TV” respondents suggests it is a characteristic of the very poor in each country, and not a distinction among European nation states.

Table 5.
Societal Self-Placement and Various Media Ownership, Eurobarometer 71.2 (Papacostas, 2009).

	Mean	N	Std. Dev.	t	P
Television	5.37	28205	1.668	3.2895	.0010
No Television	5.12	493	1.934		
CD Player	5.73	17491	1.558	47.6911	< .0001
No CD Player	4.80	11207	1.692		
DVD Player	5.66	19309	1.567	44.1931	< .0001
No DVD Player	4.76	9389	1.720		
Computer	5.75	17953	1.543	52.8440	< .0001
No Computer	4.72	10745	1.686		
Internet Access	5.82	15954	1.526	53.7859	< .0001
No Internet Access	4.80	12744	1.680		
Mobile Phone	5.49	24523	1.630	31.9630	< .0001
No Mobile Phone	4.61	4175	1.727		

Indeed, one should note that television ownership has largely dropped out of European knowledge gap or digital divide considerations. In the 2009 survey, identical percentages of respondents (98.1 percent in both EU9 and the other surveyed countries) indicated ownership of a TV in their household.

DISCUSSION

This study focused on mobile phone availability and usage, as well as Internet availability in one's home, office, and community. Data runs show the gap growing between Northern and Western European nations when compared to Southern and Central European nations. This work fits well with the Elvestad and Blekesaune (2008) findings about newspaper reading. They found, contrary to Hallin and Mancini (2004) and Norris (2002), that there are not newspaper-oriented European countries concentrated in the north and west, and TV/radio oriented countries in the South and East. Rather, across Europe time spent with other media forms generally correlated with increased newspaper reading. They wrote that this is largely explained by individual differences, but country-level factors, such as media availability, play a small but measurable role.

This Internet and mobile phone gap growth noted in this study occurs regardless of whether one measures by absolute change or percent of possible change. The data also show that: 1) TV is a nearly ubiquitous home medium; 2) Germany's mid-range and lackluster performance in improved home Internet is almost entirely accounted for by a lingering Cold War digital divide with East Germany; 3) phone-only land lines are not a necessary transitional stage for developing nations or areas, and many consumers are skipping or dropping them; and 4) Western Europeans, as shown in *Table 4*, use the Internet more at home

and work than their counterparts in Eastern and Central Europe; Internet use “elsewhere” is nearly identical. These results strongly suggest that, as late as the 2009 Eurobarometer, many Eastern and Central European Internet users were compensating for the difficulty of obtaining home Internet service with reliance on community Internet sites such as cafes.

This work fits well with three other examinations of digital divide issues in Europe. Lengsfeld (2011) used European Social Survey data and an econometric approach. He concluded, “in contrast to previous claims, gender and the place of residence do not mark major fault lines of the digital divide within Europe. However, education, age, and the main vocational occupation of the individual are relevant factors for segmentation in many countries” (155).

The reduced urban-rural digital divide noted by Lengsfeld may be a consequence of the phenomenon noted by Labrianidis and Kalogeressis (2006): the outmigration of young entrepreneurs from cities to semi-urban outlying areas. These new inhabitants often bring with them both finances and technical sophistication in information and computing technology.

One recent study strongly suggests that “user” in addition “country” must be considered when seeking to understand Europe’s digital divide. The cluster analysis used Eurostat survey data on Internet use in Norway, Sweden, Austria, the United Kingdom, and Spain. Roughly six in ten were non-users or only sporadic users of the Internet. Age and level of access were the most salient predictors. The young are more comfortable with the Internet, and those with greater access naturally are able to use it more (Brandtzaeg, Heim & Karahasanovic, 2011).

One can combine these various findings into one coherent pattern. As predicted by Knowledge Gap Theory, the gap between information “haves” and “have nots” tends to grow rather than shrink. However, as with television, eventually the mere hardware itself is no longer the driving force behind any digital divide. Rather, the divide become apparent in more nuanced terms such as number of channels or, in the case of the Internet, speed of access. Age remains a crucial factor in any digital divide, as the young who have grown up with the Internet feel most comfortable with its conventions and more fully exploit its possibilities. Social class is another divide. Those at the lower end of the socio-economic scale may still live in areas with diminished Internet access, but even if signals can be acquired, costs of hardware and software may slow acceptance and use. Once that hurdle is cleared, it seems likely that occupation creates a divide; those with lower SES are more likely than those with higher SES to be in jobs using information and communication technologies in significant amounts and in sophisticated manners.

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