Mobile Wireless in Canada: Recognizing the Problems and Approaching Solutions

November 2013

The CMCR Project's Wireless Report: Mobile Wireless in Canada: Recognizing the Problems and Approaching Solutions

The Canadian Media Concentration Research Project is releasing this draft working paper on the state of wireless markets in Canada today as part of a panel presentation given to the International Institute of Communications (IIC) conference on "The State of Competition in Canada's Telecommunications Sector". The conference is being held November 17 and 18th at the Ottawa Conference centre and we are delighted to offer our views and to debate the issue of whether or not mobile wireless markets in Canada are highly competitive or badly concentrated.

We argue in favour of the latter claim, while also offering a fairly comprehensive, long-term body of evidence that places trends in Canada in a comparative international context.

This study shows that Canada shares a similar condition with many, indeed, almost all countries that we have studied: high levels of concentration in mobile wireless markets.

Canada is not unusual in this regard, and indeed no matter whether we look at things from the perspective of 19 countries, thirty-four OECD countries or fifty-seven countries that account for four-fifths of the world's population, the answer is pretty much the same in all cases: concentration levels in mobile wireless markets are 'astonishingly high everywhere'.

The difference between Canada and elsewhere, however, is whether or not there is the resolve to do anything about this state of affairs? So far, the answer to that question is not promising, although there are some bright spots on the horizon and it is possible that they will light the way yet.

For the time being, however, the tendency amongst defenders of the status quo is to deny reality, even when incontrovertible evidence stares them in the face. This, however, is symptomatic of a bigger problem, namely that in Canada the circles involved in discussing wireless issues are exceedingly small and they like to hear the sound of one another's voices all too much, and their members do not look kindly on those who might rock the tight oligopoly that has ruled the industry from the get-go.

When by any conventional standard of mainstream economics, mobile wireless markets are remarkably concentrated, trained economists look the other way. When fundamentally new phenomenon are taking root in country after country around the world – i.e. the spread of national wholesale wireless carriers that now define the British and European mobile wireless markets as well as the fact that countries with four or more national Cellcos are in the firm majority, apologists for the industry either turn away or, worse, point to such entities as dying breed when nothing could be further from the truth.

The reality, however, as we have shown is that, while highly concentrated, there are new 'maverick brands' like T-Mobile in the US, Hutchison 3G in the UK, Hot Mobile and Golan Telecom in Isreal, and most famously of all, Iliad's Free in France. And there is some humour in this as well, as T-Mobile's advertisement clips on Youtube show quite brilliantly (see here and here, for instance).

"Maverick Brands" share many things in common, although Canadians might be forgiven for never having heard of such a thing:

- all have faced incumbents bent on giving them a still birth;
- all play the role of status quo disruptors, pushing down prices, driving massive growth in contract free wireless plans, unlocking phones, and doing their best to dig in for the long haul.
- they have all relied on the state for a fundamental ***public*** resource that underpins the entire mobile wireless set-up: spectrum, an immensely valuable public resource that governments grant privileges to use in return for – at least in theory – providing public services at a fair return rather than just filling the coffers of the state treasury.
- governments must choose, inevitably, between who will get access to this resource, and who will not. This is the unavoidable norm, and the Harper Government now stands in the position with respect to the upcoming 700 MHz spectrum auction.

Incumbents themselves have fought tooth-and-nail against not just new upstarts (TMUS, Wind, 3, Free, Hot Mobile, Freedom Pop, etc), but used every tool in their power to stare down democratically elected governments in the name of trying to preserve their own domination of the spectrum. In Canada, 90% of spectrum actively in use is held by three companies, as of November 14th, 2013: Rogers (41%), Telus (25%) and Bell (24%). The rest is scattered amongst Sasktel, MTS and a handful of "new entrants": Quebecor (Videotron), Wind, Mobilicity and Public (recently acquired by Telus).

The big three, not unusually, and much in the spirit of those who stand in a similar place in other countries throughout the OECD and around the world, go to great lengths to hold back the tide and defend their privileges. Last summer's "wireless wars" expressed this reality, as Bell, Rogers, and Telus fought on all fronts against what they perceived as a double-barreled threat from Verizon and the government's relatively newfound resolve to:

- foster more competition in Canada's mobile wireless market,
- drive down domestic and international roaming charges,
- and otherwise give Canadians access to world class wireless services .

This study underpins its analysis with a comprehensive, long-term and systematic body of data from the FCC, OECD, Ofcom, Wall Communications, CRTC, and many

other sources as cited, all of which universally support the same conclusion: namely, that Canada's mobile wireless market is a lackluster performer.

We show:

- wireless markets in Canada, whether measured by revenue, spectrum held, spectrum in use or subscribers, whether at level of the country as a whole, specific provinces or Canada's nine biggest cities – Toronto, Montreal, Vancouver, Ottawa-Gatineau, Calgary, Edmonton, Quebec City, Winnipeg, Hamilton -- are remarkably concentrated;
- in terms of standings in international league tables, Canada's wireless market, based on a composite score using price, penetration and speed, ranks 18th; the US ranks 9th;
- in terms of penetration, or access and use, matters are worse: Canada ranks 25, while on price it ranks 27th, yet despite all this Canadians are Number 1 when it comes to how much time they spend on the internet, how many GBs of data they upload and download, smartphone data they send and receive, use of Wikipedia, log onto Facebook, and watch the telly;
- Canada also ranks very highly when it comes to capital investment in its wireline infrastructure, no matter how you measure it and when measured for one, five, ten or more years;
- The same cannot be said of wireless despite the fact that Canada fared very well last year because Bell, Rogers and Telus flipped the switch and began rolling out in a substantial way LTE/4G networks. Stretch the time horizon, however, and that standing collapses and Canada falls toward the bottom third of the pack – 19th out of 28 places (accounting for 'ties').

Other findings emerge in the report too numerous to outline here. However, one thing that stands out is that those governments that stare reality in the face and act accordingly must stiffen their spine against the backlash that they will inevitably meet when they encounter some of the biggest, and most profitable, companies in the country. That is the lesson learned by governments and regulators everywhere, particularly as this study shows, in the UK, the US, Israel, France, with many others noted only in passing but widely recognized in the literature.

Whether or not people get the media, wireless and internet capabilities they need to live, love and thrive in the 21st century depends on nothing less than the right choices being made. Those choices now stare Canadians in the face. How we act, and how our government moves ahead, will set the baseline for how mobile wireless media in this country will evolve for at least the next two decades – the length of the licenses to be awarded in the upcoming 700 MHz spectrum auction – and probably for a lot longer than that!

Complete data sets behind all of our rankings are available on the CMCR project website under the "Wireless Report" tab. We would like to remind readers that this is a working draft and we would be delighted to hear constructive comments and

criticism that can help us improve the final iteration. Also, the report was written under very tight timelines, with the invitation to speak today at the IIC handed out just over a month ago. A few data sets remain to be uploaded, as a result, and no doubt there will be some editorial infelicities that will need to be corrected. Our best efforts have been made to ensure the accuracy of our data and the correctness of our interpretations. If, however, you find something you believe to be in error, please let us know and we will look into it, make sure that things are set aright when need be and thank you.

The Canadian Media Concentration Research project is directed by Professor Dwayne Winseck, School of Journalism and Communication, Carleton University. It is funded by the Social Sciences and Humanities Research Council and has the mission of developing a comprehensive, systematic and long-term analysis of the media, internet and telecom industries in Canada.

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Mobile Wireless in Canada: Recognizing the Problems and Approaching Solutions[1]

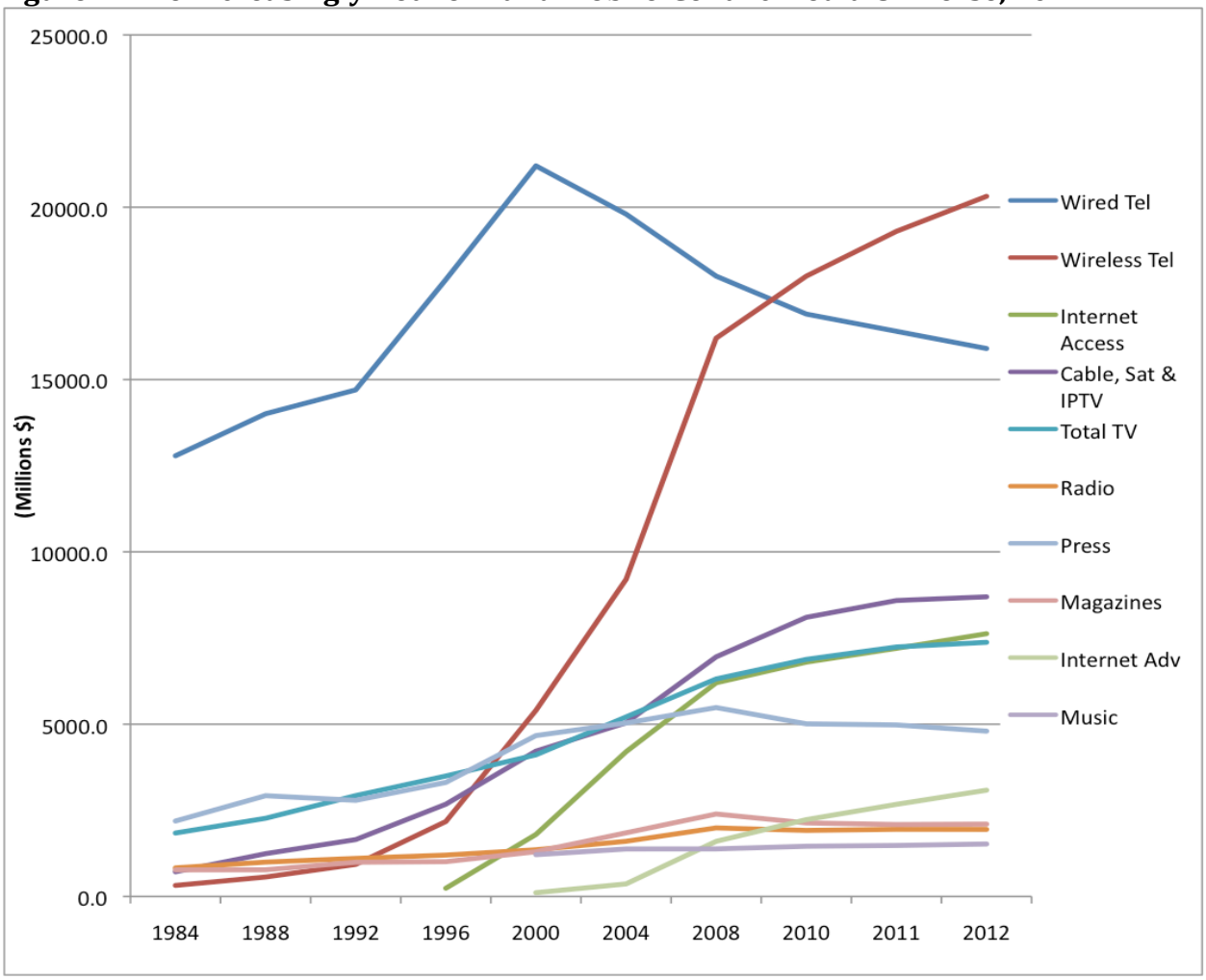
Introduction

Over the course of thirty years wireless services in Canada have gone through four successive generations of network technologies and personal communication devices. Hand-held devices have gone from being the size and weight of a brick to lightweight, powerful computers carried about in the palm of our hands, internet connected, deeply personal and socially powerful. Mobile wireless media are integral to contemporary life, with our everyday activities, love, the hurly burly of business and politics now all immersed in the wireless waves that connect us to one another, and to the rest of the world.

Mobile wireless services are also a cornerstone of the digital media ecology and the economy. With revenues of $20.3 billion in 2012, mobile wireless services account for just under a quarter of the $73.4 billion network media economy in Canada. The rate of growth for mobile wireless relative to other media and economy at large has also been enormous, and fast, breaking gallop only in the past few years, as the market matures and in the face of the fall-out of economic uncertainty in the wake of the global financial crisis, as Figure 1 below illustrates.

[1] I owe an incredible amount of thanks to a large number of people who pulled out all the stops to help me finish this study/report in an incredibly short period of time from being invited a month ago to give this paper at the International Institute of Communication conference in Ottawa, November 18, 2013. Let me start with research assistants from the School of Journalism and Communication. Caitlin Turner made all of the visuals for this report and the presentation. My appreciation for her non-flagging energy cannot be over-stated, and her skill at keeping all of the data sets in well-disciplined order is greatly appreciated. I am also very grateful to her partner, Connor Turner, who stepped away from his Amardillo Studios to apply his web and data visualization skills to this project in its final stages and as time was fast slipping away. Ben Klass from the University of Manitoba and Lianrui Jia stepped up to some of the data collection. David Ellis, a long-time consultant specializing in media and internet issues, and instructor at York University, pulled data, ran the numbers, and painstaking assembled the penetration, price and speed tables. Teaching assistants Emily Hiltz and Henry Guardado helped pick up the slack. The Canadian Spectrum Policy Research group at Ryerson University, Greg Taylor, Catherine Middleton and Paul Goodrick, shared their knowledge and essential research materials with me. Paul and Louise Budde at Budd Communications and Kevin MacDonald at Loxcel prepared datasets on short notice and mindful of an academic researchers' limited budget. Others at the CRTC and Industry Canada offered help where they could, as did principle researchers at the OECD, and George Sciadas of Statistics Canada was a helpful and sage guide, as always. Thanks, too, to Hank Intven for the invitation to present, and to Jim Patrick and Donna Lachance of the IIC organizing committee for their generous help and support in terms of allowing several Carleton University students to attend. And finally, my partner, Kristina, deserves a huge thanks for having the patience of a saint and a deep well of love and for standing by me every step of the way.

Figure 1: The Increasingly Network and Mobile-Centric Media Universe, 2012



Source: Canadian Media Concentration Research Project.

Revenues for mobile wireless services overtook those of wiredline services in Canada in 2009 (CMCR, 2013); two years later the cross-over took place at the international level (ITU, 2013). In short, more and more of our lives is being immersed in a wireless centric world, and this is only going to continue for the foreseeable future.

As Cisco (2013) estimates, mobile and mobile data traffic "will grow 13-fold from 2012 to 2017, a compound annual growth rate of 66%". The numbers in Canada are impressive as well, albeit more modest, with mobile and mobile data traffic expanding by 85% in 2012 and projected to grow 9-fold in the next five years, "a compound annual growth rate of 57%". Decisions taken now will shape the wireless media environment for decades to come. The 700 MHz spectrum auction licenses will run for twenty years, with the likely prospect that the grant will continue in perpetuity, if the past three decades is any guide,

and as is the case, for example, currently in the United Kingdom, for better or worse (Ofcom, 2012). A lot is at stake.

For some, things are unfolding as they should. Church and Wilkins (2013), for instance, note "Canadians' love of smartphones and high rates of data usage", claiming that these "are a direct result of the rollout of high-speed networks" (p. 19). Unneeded government intervention, they argue, only threatens to derail the good things already coming down the tracks. This is a view shared by others who see the status quo as not only adequate, but cause to celebrate (Nordicity, 2011; Nordicity/CWTA, 2013; McTaggart, 2013).

Independent analysis and critics, on the other hand, are not so sure (Middleton, 2011; Benkler, 2010; Geist, 2013; Nowak, 2013; Seaboard Group, 2013; OpenMedia, 2013), and nor am I. While no doubt true that for those who have smartphones, being able to access the internet, their lovers, friends and family from anywhere, anytime, and through an ever expanding galaxy of devices is useful, convenient and fun, a lifeline really. And maintaining complex modern mobile lives no doubt involves a great deal of data – the bits and bytes that bind us together as a people, we might say (Goggin, 2011).

This is crucially important because wireless services are not commodities in general, but communication, and means of communication are things of culture and sociality; they are public goods from a social point of view because of this and the infinite capacity to share stories and talk without depleting the well from which they come. From an economic point of view as well, the same thing about wireless as a public good arises, given the fact that the whole set-up of the wireless industry rests upon a platform of public resources – spectrum, most vitally, with enormous wealth being created but with little sign of that wealth being equally or even equitably shared – as we shall see.

Canadians are extensive users of almost all media. In fact, they have always been, but not always with the best facilities at their disposal. Historically, postal facilities fared poorly in Canada relative to those in the US and Britain. This stunted social correspondence and the development of the press as result. In comparison, social correspondence and the press flourished in the US and the UK by the mid-19th century because of the universal and affordable postal infrastructure that supported them (see Starr, 2004; John, 2010; Osborne & Pike, 1991).

Similarly, despite claims that telephone facilities in Canada were systematically under-developed, yet still expensive relative to the US and *some* parts of Europe, Canadians were amongst the most talkative people on the planet by the turn-of-the-20th century, as witness after witness told the Government Telephone Inquiry convened by the Liberal Government of Prime Minister Wilfrid Laurier in 1905 (Canada, 1905). In Canadian cities, the "number of calls per subscriber was more than double that in the cities of Great Britain, Germany, Australia, and the US" (Mavor, 1917, pp. 91-94; also see Babe, 1990; Winseck, 1998, pp. 121-138).

Canadians were a talkative and communicative group a century ago; we still are today. Such state-of-affairs is, thus, not even remotely unique to smartphones and broadband mobile data; it is not due to the 'roll-out high speed networks', as defenders of the status quo suggest. The drive is on the demand side; it is habitual. High-speed networks tap into that reality, not the other way around. The big three Cellcos -- Rogers, Telus and Bell -- tap into our cultural habits at prices governed by their desire to generate the most ARPU, but not necessarily in the most responsive and socially useful and inclusive ways.

Indeed, the better argument is that, just as discontent a century ago led to the Government Telephone Inquiry, as well as publicly-owned telcos on the prairies and municipal telcos across the land, Canadians use their phones as much as they want regardless of price – to a point – because of their innate insistence that such things are social necessities rather than luxuries (Pike & Mosco, 1986), and on the basis of habits that apply to all kinds of media – a marketers' dream, perhaps, but no reason to exact what some euphemistically refer to as a "consumer surplus" on the grounds that Canadians would pay even more for their phones if pressed (Nordicity/CWTA, 2013).

Indeed, as Table 1 indicates, Canadians talk and communicate a lot by every-and-any media at their disposal. Indeed, when it comes to broadband and mobile media and internet use, tallying up the rankings for the measures shown in Table 1 indicates that we are number 1 relative to the thirteen countries shown.[2]

[2] Countries included on the grounds that they are OECD countries and that a full-set of data was available for them across the range of measures included in Table 1. Similar results emerge when comparing Canada to the twelve largest media economies in the world: the United States, Japan, China, Germany, the United Kingdom, France, Italy, Brazil, Canada, Australia, South Korea and Spain. Note that Canada also has a large media economy, the ninth largest in the world (see Winseck, 2013).

Table 1: Media + Broadband Use and Rankings in Select OECD Countries, 2012

Media + Broadband Use and Rankings in Select OECD Countries, 2012

OECD Country Ranks	Online Min/ User/Month (Rank)	IP Traffic/ Capita (GB) (Rank)	Smart Phone Data/Mo/User (MB) (Rank)	Tablet Data/ Mo/Device (MB) Rank)	Online Video Viewing/Mo (min) (Rank)	TV Viewing Min/Day (2011) (Rank	Facebook (% Pop) (Rank)	Wikipedia Rank	Overall Rank
Canada	2	3	2	8	3	3	2	2	1
UK	3	4	5	2	2	4	2	4	2
Korea	4	1	1	1	1	6	10	6	3
US	1	2	7	12	4	1	2	1	3
Japan	8	5	6	4	1	6	11	1	5
Italy	12	9	13	6	6	2	6	2	7
France	5	5	3	3	7	8	5	5	4
Spain	7	7	4	5	8	5	7	5	6
Germany	6	6	12	7	5	7	9	4	7
Australia	11	5	9	10	11	10	3	3	8
New Zealand	12	6	8	11	12	9	4	3	10
Chile	9	8	11	9	9	13	1	1	9
Mexico	10	10	10	13	10	12	8	2	11

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OECD Country Ranks	Online Min/ User/Month	IP Traffic/ Capita (GB)	Smart Phone Data/Mo/ User (MB)	Tablet Data/ Mo/Device (MB)	Online Video Viewing/Mo (min)	TV Viewing Min/Day (2011)	Facebook (% Pop)	Wikipedia Rank/Top Websites	Overall Rank
Canada	2478	36	316	508	1488	248	53	7	1
UK	2238	26	304	991	1870	246	52	9	2
Korea	1800	48	528	1544	2842	231	21	16	3
US	2580	40	201	382	1308	293	53	6	3
Japan	1314	18	232	957	2842	231	14	6	5
Italy	1110	8	61	644	1208	257	38	7	7
France	1674	18	315	970	1094	209	39	10	4
Spain	1428	12	306	724	989	243	37	10	6
Germany	1476	13	72	533	1299	216	31	9	7
Australia	1116	18	141	469	670	193	49	8	8
New Zealand	1110	14	174	464	666	205	45	8	10
Chile	1176	11	78	479	765	165	54	6	9
Mexico	1128	5	104	352	710	165	33	7	11

Sources: OECD (2013) *Communications Outlook*; Cisco *Visual Networking Index -- Country Profiles*. http://www.cisco.com/web/solutions/sp/vni/vni_forecast_highlights/index.html; Comscore (2013) US Digital Future in Focus 2013 (end 2012).http://www.comscore.com/Insights/Presentations_and_Whitepapers/2013/2013_US_Digital_Future_in_Focus; Comscore (2013) Europe Digital Future in Focus 2013; Comscore (2013) UK Digital Future in Focus; 2013 Canada Future in Focus; 2013 Spain Future in Focus; 2013 France Future in Focus; 2013 Brazil Future in Focus, http://www.comscore.com/Insights/Blog/2013_Digital_Future_in_Focus_Series. Internetworldstats (2013) Facebook Stats for 2011-2012. http://www.internetworldstats.com/facebook.htm.

This *is* a good news story, but long cultivated habits and Canadian's desire for, and enjoyment of, the ability to communicate with one another, with the best stuff available, should not be confused with the notion that Canadians are getting good value for their buck. Prices, as we shall see, are high in Canada and penetration low relative to other OECD countries no matter how we look at them, although in several instances conditions in Canada are better than in the United States (Wall Communications, 2013; CRTC, 2013, p. 200). That, however, should be cold comfort for anyone striving for better than finishing near the bottom of the pack.

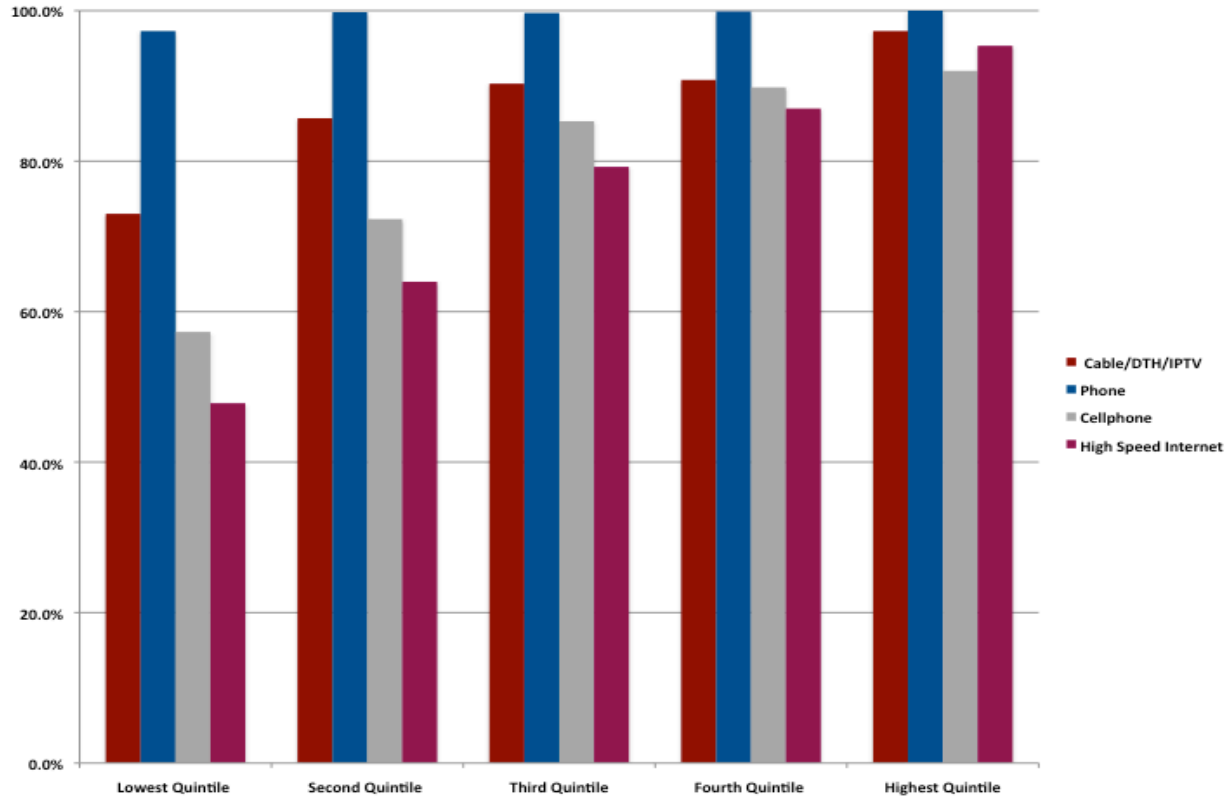
Mobile wireless services are the cornerstones of increasingly mobile, highly individuated lives, the means through which people conduct business, to be sure, but also the vehicles through which we assert our identities and maintain social connections. They are part of the fabric of everyday life and the media environment in which we live (Goggin, 2011). As such, it is essential that mobile wireless services conform to our communicative habits and the ideals of trying to create an open media fit for an open and democratic society in which not just competitive markets and healthy economies thrive – essential as those are -- but

where values of freedom of expression, autonomy and democracy flourish. This means that mobile broadband wireless connectivity must be seen as more than a luxury good, where tethered devices are locked to networks and infrastructure providers who play the role of gatekeepers over applications, technological, pricing and service innovations, and some uses that are privileged versus those that are discouraged (think of the extensive use and low levels of bandwidth caps which set Canada apart from all other OECD countries, except Iceland, Australia and New Zealand, see OECD *Broadband Portal*).

Rotary phones were unlocked from wireline networks in the late-1960s in the United States, and a decade later in Canada. In both cases, this simple move of letting people buy and plug their own phones into standardized wall jackets met staunch opposition from the incumbent carriers. Three decades later, and now well into the 21st century, we are still waiting for our 'wireless carterphone', while the plug-and-play lego-land view of networks imagined in the 1980s and 1990s were subsequently progressively put into place around the world or wiredline networks and as the foundation of the internet in the 1990s and early-2000s (Frieden, 2008; Wu, 2010; Benkler, et. al.; 2010; Huber, 1993). On a happier note, and with respect to the first point – untethered phones -- we are getting part-way to where we want to be courtesy of the CRTC's (2013a) National Wireless Code, but there is a very long way to go yet.

Beyond this, and while defenders of the status quo might not like to shine a bright light on the following fact, income inequality and the digital divide are still persistent features of the network-centric digital media universe. They are not narrowing, or disappearing, but mutating in light of new and emergent conditions. Figure 1 below illustrates the point.

Figure 2: Household Access to Information and Communication Technologies by Income Quintile, 2011



Source: Statistics Canada (2012). *Survey of Household Spending* in 2011.

It is not necessary to dwell on each and every aspect illustrated by Figure 2, except to say that, of most relevance to this paper, wireless connectivity remains elusive for many. 40% of households in the lowest income bracket go without, while more than a quarter of those on the next rung up the income ladder are in the same position. If prices were not an issue, affordability would be high, while penetration levels would be as universal as plain old telephone service (POTs). High-speed internet access is worse, with less than one-half of the poorest households having access, and more than a third in the second tier likewise on the 'wrong side' of the digital divide. At the opposite end of the income scale, in sharp contrast, cellphone and high-speed internet access are nearly universal, or at least well-above 90%.

In short, while there are indeed things that distinguish Canadians from their international peers, it does not follow that all is well across the land. Triumphalist discourses are the last thing we need at this juncture. Instead, we need a critical interrogation of the facts on the ground, and attention to the reality that while markets, capital investment and economic forces are absolutely crucial, they are not the beginning and end point of discussions.

We must keep this point front and centre because too often the discourse hews excessively to the values of the marketplace without looking up to realize that, while not gainsaying the importance of the market, communication is vital to contemporary life – always has been, and likely always will be (Habermas, 1984). As more of our lives are immersed within the mesh of mobile wireless broadband connections, the more the politics of wireless will heat up. Debates over concentration, capital investment, penetration, Gigabytes, prices, speed and smartphones are not just about markets, technology and policy, although they must be firmly grounded in an understanding of those domains, but the development of a good communication system fit for a good society.

This is too often lost in the 'wireless wars', especially amongst the defenders of the status quo who take a myopic view of the wireless- and internet- centric media world, blinders on, focusing only on one thing at a time, and too often making a fetish of markets, all the while ignoring the fact that communication is central to life and connected to everything else. Such blinkered views are especially problematic because wireless markets in Canada are highly consolidated and integrated across many media, telecom and internet markets. As a result, something that is an issue or a problem in wireless easily becomes a problem of TV and even journalism. Journalists who have to check their smart phones at the door and be issued new ones – or at least have tech support rejig their monthly plans -- before traveling abroad to cover a breaking story, as is the case at the *Huffington Post*, for instance, to avoid the sky-high international roaming charges levied by the big three -- Roger, Telus and Bell -- are being hobbled. In other words, international roaming charges become a constraint on the free flow of news, to say nothing of an inconvenience and added expense for business people and tourists.

The Wireless Wars and the Damnation of International Comparative Studies: or the OECD as the Canadian Cellco Industry's Jilted Lover

It has become a bit of a sport in the past few years amongst incumbent wireless companies and defenders of the status quo to dismiss international comparative studies of wireless services, especially those done by the OECD. We will have ample room to offer plenty of examples of such efforts below, but the main point to be made now is that there are too many studies and reports that *consistently* rank Canada at the low ends of the 'global league tables' to be so easily dismissed: OECD, Ofcom, FCC, ITU, Wall Communication, to name just the most prominent.

Complaints about these studies have a Johnny-come-lately feel to them. Back in the 1990s and the turn-of-the-21st century when the OECD was ranking Canada highly, and lauding its policy-makers for their early embrace of competitive wireless markets, and for smartly using the policy and regulatory levers available to them to help generate viable competitive markets, Canada was the darling of the world. Everybody applauded, including those here at home (OECD, 1996).

The US and Canada were leaders in fostering competition and open networks. The passage of the *Telecommunications Act of 1996* in the US, and promotion of the convergence policy and local telephone competition in 1996-1997 by the Liberals in Canada, spurred rivalry between the incumbent telephone and cable companies, while using the lure of a liberal network access regime and network unbundling to attract new entrants.

Wireless competition was also pioneered in Canada from the outset, with the Liberal Communications Minister Francis Fox using a beauty contest between contenders to hand out not just one cellular license in 1983, but two: one for the incumbent telcos, the other for Rogers/Cantel.[3] Fast-forward to 1995, and four new PCS licenses were handed out, once again not by auction but beauty contest. This time two new entrants – Microcell and Clearnet PCS – were the 'chosen ones', given three times the PCS spectrum (30MHz) as their incumbent counterparts, Roger and Bell, who each received 10 MHz each. Spectrum caps were installed in 1995 and 1999, respectively, and additional spectrum set-aside to limit the incumbents' control of essential resources and to foster more competition when the time was right. Concentration levels plunged, the press of competitive forces increased, and the adoption of cellular services expanded fast as prices fell sharply (Industry Canada, 2010; OECD, 1996; Taylor, 2012). Cellphones went from being the near exclusive tool of business*men* as women increasingly picked up their own.

The OECD praised Canada, along with the US, UK, Australia, France, Germany and Sweden, for "taking advantage of PCS technology to go beyond duopolies" to foster new third and fourth competitive cellcos (p. 16). As its 1996 *Mobile Cellular Communications* report stated bluntly, "The available evidence is unambiguous[:] competition is driving the growth of personal communication" (p. 12). Monopolists and duopolists are "cream skimmers", it chided (p. 12). Year-after-year, Canada ranked in the top eight versus its bottom of the pack standings year-after-year today because it recognized these facts and dealt with them accordingly (OECD, 1996, p. 19).

And Canadians basked in the glow; others followed: Finland, Denmark, Sweden, Norway and Japan embraced competition between incumbent telecom and cable companies *and* unbundling so that newcomers could compete without having to build their own networks -- as the U.S. and Canada had done. These measures were also extended to mobile wireless service, and competition ramped up. Policies that originated in wireline telecoms in the US and Canada (and to a lesser degree, the UK) in the 1980s and 1990s were leveraged in one country after another through a wave of regulatory liberalization as well as the export of

[3] After 1997, Fox went into the executive suites at Rogers until 2003, and has sat as a Liberal appointment in the Senate since 2005 (see here). On another point, the first half of the 1990s did indeed see lean years for Rogers, with operating profits behind those at Telus and Bell by a quarter to a third, respectively, but after that, and until the present day, the gap has disappeared and all three have been enormously profitable. Operating profit for the big three between 1995 and 2012 has been double that of industry in general: 18.1 percent vs 8.9 percent (Corporate Annual Reports; Statistics Canada Summary Table - Operating profit margin by industries.

telecommunications and media regulatory regimes that took the US and Canadian "models" as their guide, with a huge boost added in 1997 when ninety countries adopted the World Trade Organizations *Basic Telecommunications Agreement* and accompanying Regulatory Reference Paper (Melody, 1997; Cowhey & Aronson, 2009, pp. 149-206).[4]

At the same time that Canada was enjoying its place in the sun, however, something happened. While the open, competitive network model and regulated markets approach was being embraced around the world, and especially in Europe, Australia, New Zealand (European Parliament, 2002), it was falling out of favour here, with strong pressure exerted by the incumbents to wall off wireless services from such rules altogether, as if this emergent domain was terra nulles where the 'old rules' no longer applied. Rules adopted at the end of the 1990s to foster local telephone competition were sunset, incumbent cable and telephone companies fought tooth and nail against open access regimes that aimed to provide third party internet access, and dragged their feet. Competition was stunted as a result. Crucially, instead of adapting unbundling to wireless services, the incumbents, now including a firmly entrenched Rogers in control of 40-50% of all the available spectrum, walled off the field from these measures just as the wireless market was coming into full-swing, as if it was they alone who should define the path of development, sans any rules. The CRTC willingly complied (see CRTC, 2012, fn6 for a reprise of the Commission's forbearance path).

In short, the early- to mid-2000s saw what we might call a "regulatory flip". Just as the rest of the world embraced the good things Canada and the US had to offer, the two countries abandoned ship and battoned down the hatches. The incumbents began fighting a rear-guard battle that continues to this day and which took on a hysterical pitch this past summer when all this history disappeared in a fog of bombast, fallacious arguments, and dubious studies that purported to find the truth, but one that had little sense of its objects of analysis – communication, telecommunications history, or the political economy of the wireless- and internet-centric media world.

And as Canada and the United States back-peddled, largely because regulators and policy-makers were captured by those whose power they were supposed to be curbing rather than abetting, or out of an inability to steel their spine in the face of intransigent incumbent bluster, they slid backwards in international rankings, the details of which will be relayed more fully below. The regulatory switch from regulated markets to markets uber alles -- which simply meant handing over control of the levers of power to industry – also handed the reigns over to others in the global league tables.

In concrete terms, Canada's position at the top of the ranks in wireless, wiredline and broadband in the late-1990s and early-2000s collapsed, while others who deepened their

[4] Parenthetically, several individuals at Industry Canada, Michael Tiger and Doris Mozes, played key roles in 'exporting' the Canadian model, and in conceptualizing and writing the WTO telecoms agreement.

commitment to using regulation to build and maintain viable markets – Denmark, South Korea, Sweden, Japan, Finland, Iceland, Norway, , for instance – mostly stayed right where they were: at the top of the league. At the same time, newcomers filled the empty places where Canada and the US had once stood: France, Estonia, the UK, Iceland, and so on (OECD, 2013; FCC, 2012; European Parliament, 2011, pp. 54- 61; Benkler, et. al., 2010, pp. 85-88;). Of course, things are not entirely to one side, as we shall see. When it comes to capital investment in wiredline infrastructure, for example, Canada still fares very well by international standards, but that, again as we shall see, is a rare exception set against an overwhelmingly bleak story of mediocrity and decline.

It was only once Canada's place in the sun began to set in during the last decade that the tune amongst observers in this country went from cheers to jeers, with "consultants" like Nordicity (2011) and Goldberg and Associates (2011) trying to sully the methods of the OECD and others, with the incumbents and their hired guns piling on (e.g. Church & Wilkins, 2013), financial analysts leaning in (Fan; Ghose) and journalists seemingly none-too-eager to know about the finer details of this stuff but being all-too-willing to parrot the incumbents' party line (Corcoran, Ladurantaye, Trichur, Houpt, O'Brien).[5]

To be sure, OECD, FCC, ITU and other international comparative studies (Cisco, Ookla, Ovideo, etc) miss certain characteristics of the Canadian wireless, wireline and internet industries. But the same complaint could be made of *every* country, but there is no reason to believe that Canada, or the US for that matter, are being singled out for ill-treatment. The idea that some details are overlooked misses the point that standardized tools do this by design and, that the same methodological rules apply to everybody. Moreover, it is not that these tools are concocted by aloof Mandarins in Geneva who are unfamiliar with the realities of what lies across the Atlantic.

In fact, a leading figure behind the development and constant efforts to improve the OECD data is one of Canada's top statisticians, George Sciadas, who, among other things, designed the use and access studies for Statistics Canada's *Household Internet Use Studies* and *Connecting Canadians* series. Furthermore, this is not a one-man show and, as the FCC (2012) and Ofcom (2013), for instance, observe, they, along with their counterparts from across the EC countries, as well as from Industry Canada, are constantly working hand-in-glove with the OECD to make the best set of comprehensive data possible. Workshops to this end are a regular occurrence, and unlike the incumbents and the consultancy industry that has grown fat on their contracts, there is little in it for the OECD, the FCC, Ofcom, etc. to torque the numbers one way or another.

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[5] Parenthetically, Christine Dobby at the *National Post* as well as Nick Kyonka, Simon Doyle and other writers at the *Wire Report* appear to me to have distinguished themselves with the capacity for independent thought and analysis rather than following corporate press releases and strking a faux sense of balance that typically elaborates on the press release with a few comments from industry insiders and financial analysts, followed up, perhaps, with a token nod to 'critical voices' tucked in towards the end.

In sum, much of the criticism in Canada is facile, self-serving and intended to muddy the waters more then generate insight in the public interest of Canadians. Perhaps the FCC put it best in its latest International Broadband Data Report, "*The best currently available* data set comparing the United States to other countries along a number of metrics . . . [is] from the OECD" (*emphasis mine*, p. 8).

Wireless Concentration in Canada: The Real World

The function of the present report, however, is not to defend the OECD, or anybody else for that matter. Instead, first and foremost it is a response to a 19-country study by Jeffrey Church and Andrew Wilkins from the School of Public Policy at the University of Calgary that concludes that "*there is no 'competition problem*" in Canada (*emphasis theirs*) (p. 5). We disagree.

As we show, Church and Wilkins' own evidence demonstrates quite the opposite. We also show that extending the analysis beyond the 19 countries they select to include all thirty-four OECD countries, and all of the countries covered in the main source that underpins their own study – Bank of America Merrill Lynch's *Global Wireless Report* – for a total of 57 countries, leads to the irrefutable finding that levels of concentration in wireless markets are, with few exceptions, "astonishingly high everywhere" (Noam, 2013, pp. 13-18), including Canada.

As we show, this is true whether we look at the evidence nationally, internationally, provincially or within Canada's largest cities. Furthermore, it is true regardless of the measure we use to calculate market share: revenues, subscribers, spectrum holdings, or spectrum actively in use. While Church and Wilkins do not think that there is any role for government to do anything about the current state of affairs, there is scope aplenty and very good reasons to do so, as well as a great need.

Church and Wilkins (2013) throw down the gauntlet on page one in reference to critics who allege that concentration is high, service expensive and quality poor in Canada relative to its international peers with the provocative message that "What everybody knows is wrong" (p. 1). In fact, everybody is not wrong. Concentration levels in Canada are very high, while ranging from moderately-high to sky-high in every country they study, except the US (which is at the high end of the moderately concentrated scale), and in all but five of the 57 countries we survey: India, Pakistan, the US, Russia and Brazil.

Many of the other claims that Church and Wilkins make are wide of the mark as well. Notably, their claims that countries with four or more national wireless companies are a rare and dying breed, is confounded by the evidence. There are *examples* of consolidation that have reduced the number of carriers in *some* markets, notably in the UK where the merger of Orange and T-Mobile in late 2010 reduced the number of *national wholesale wireless carriers* from five to four. However, countries with four or more national Cellcos

are in the solid majority. More countries have fourth national wireless carriers than those without (BAML, 2013; OECD, 2013; GSMA, 2013).

Church and Wilkins' claim that critics' who allege a litany of wireless woes in Canada – low penetration levels, high prices, excess profits, and so on – are wrong (also see Nordicity, 2011; 2013; McTaggart, 2013; Globerman, 2013). Yet, the best available evidence shows that Canada is at best a middle-of-the-pack performer and occasionally in the bottom quartile of comparisons on some specific measures relative to OECD countries, on the basis of both OECD and FCC data (see below). The best that the incumbents and defenders of the status quo are able to show is that Canada occasionally ranks better than the United States on *some* criteria (Wall Communications, 2013; CRTC, 2013, p. 200).

Yet, as we will see, the comparison with the US is increasingly inapt, as the US puts its house more in order, particularly in wireless, and sees its international rankings climb as a result (the US ranks 9th out of 33 OECD countries versus Canada, which still languishes at 18th, on our composite wireless ranking). Canada fairs much better in terms of capital investment, but here, too, the evidence is mixed. It ranks at the top of the league tables for investment in wireline infrastructure (3rd out of 32 when accounting for 'ties') but near the bottom third of the rankings when it comes to wireless infrastructure (19th out of 28th when accounting for 'ties')(see below).

To develop our analysis, this study does several things. First, we use three key sources of evidence, supplemented by others as cited: (1) the OECD's *Communications Outlook* and associated data sets that go along with that report; (2) the Bank of America Merrill Lynch *Global Wireless Matrix* (BAML Report hereinafter); and (3) the latest edition of the FCC's *International Broadband Data Report*. We also use the CRTC's *Communication Monitoring Report* and other CRTC data sets; publications and data sets from Statistics Canada,[6] and Ofcom's *International Communication Monitoring Report* are also used. Other sources are used on an as needed basis, and are cited throughout the pages ahead.

Using these sources we assess Canada's standing relative to its international peers in terms of:

- market concentration on the basis of revenue and, for Canada, its provinces, and nine biggest cities, overall spectrum holdings and amount of spectrum actively in use by each of the operating wireless companies;
- capital investment (on a per capita and per communication path basis for wireline and as a proportion of revenue for both wireless and wireline);
- penetration levels;
- price;

[6] Quarterly telecommunications statistics 56-002-XIB; Teleecommunications in Canada 56-203-XIE; The Canadian Cellular Service Industry: Historical Statistics Communications: service bulletin 56-001-XIB

- speed

Multiple indicators are used for each of these measures, and a composite score tallied for each country and each measure and used as a basis for ranking countries relative to one another. Standardized time frames are also used, versus what appears to us to be a strong tendency to choose time frames that best comport with researchers' desired conclusions. In contrast, we use standardized comparisons based on the most recent year, while examining trends over five, ten and as many years as the available data permits. This is typically from 1997 onwards when using the OECD data sets, but 2000 or 2006 for the BAML *Global Wireless Matrix*, depending on the country. After establishing composite scores and country–by-country rankings and showing trends across time, we scaffold upwards to give a view of Canada's wireless market as a whole and its place within the broader network media ecology. The picture does indeed have some bright spots but overall it isn't pretty.

Crucially, we go well beyond the 19 countries that Church and Wilkins select to analyze conditions in the thirty-four countries that make up the OECD. We then add all of the fifty-plus countries covered by the BAML *Global Wireless Matrix* that underpins Church and Wilkin's study, yielding a sample of 57 countries in total, and which cover just under four-fifth's of the world's population. Church and Wilkins 19 countries, in contrast, covers just ten percent of the world population, and about sixty percent of the OECD population.

Wireless Markets are Highly Concentrated Almost Everywhere

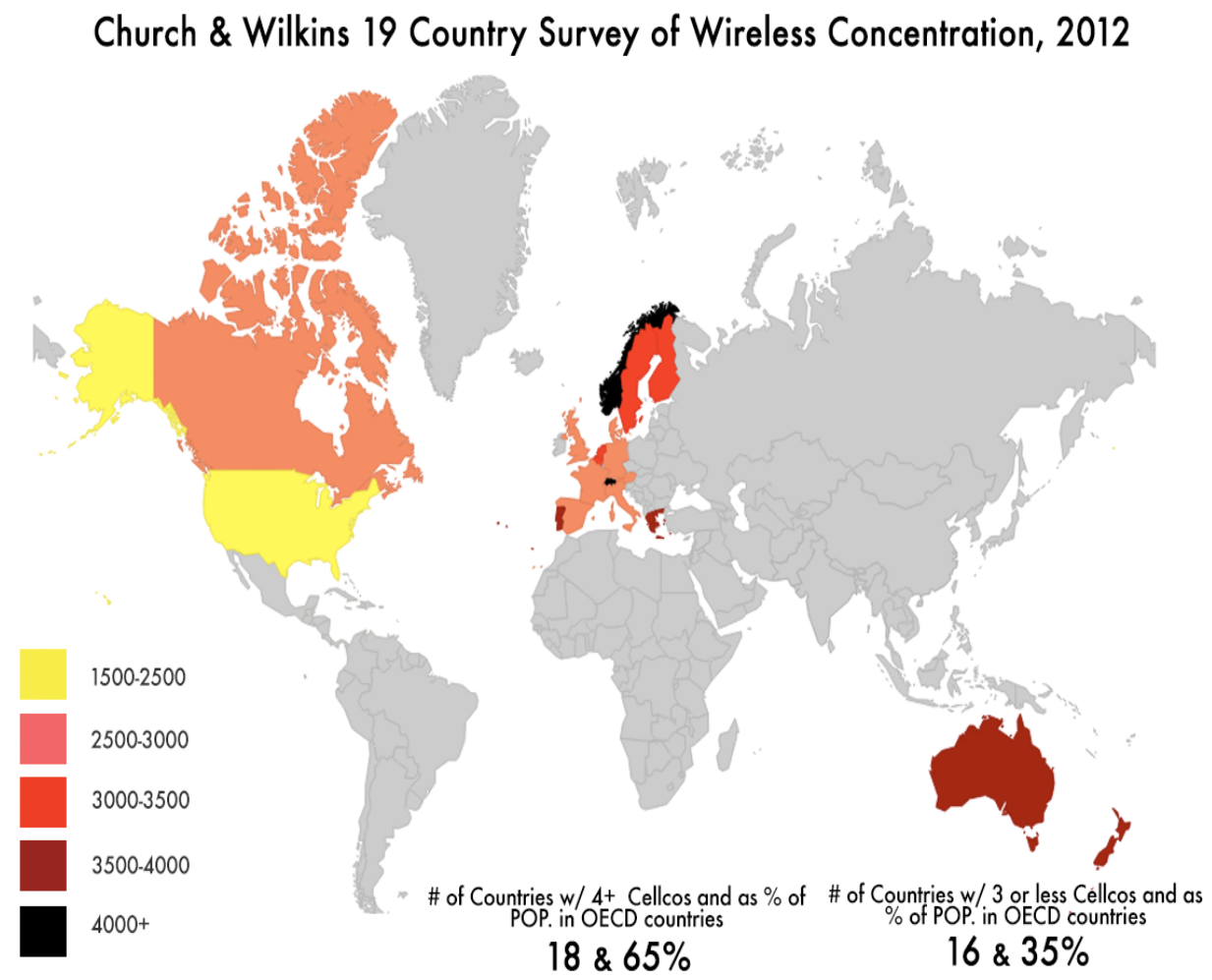
Church and Wilkins present their comparative analysis of 19 countries as a good news story for Canada. As they note, mobile wireless services in Canada are less concentrated than most of their international peers, with Canada tied for 6th place out of 19 along with Spain, just behind France but ahead of the UK. In other words, Canada ends up on the 'good' end of the scale relative to those at the opposite end of the spectrum. They also claim that while the Canadian Government is engaged in a quixotic pursuit to cultivate conditions that might allow a fourth national wireless competitor to emerge, "4th Carriers", or "Challenger Brands" as the industry and marketers call them, are a rare and dying breed. They also state that there appears to be "natural limits on the extent of competition" and, if there is a 'magic number', it does not appear to be four or more (Church & Wilkins, 2013, pp. 28-34, see Table 5, especially and surrounding discussion). We agree that there may be 'natural limits on the extent of competition', but draw radically different implications from it.

Despite Church and Wilkins claim that there is no wireless competition problem in Canada, their own evidence contradicts their headline claims. Of the 19 countries they survey, every single one of them, except one, falls into the highly concentrated category by the standards of the HHI used by the United States Department of Justice, Federal Trade Commission and the FCC. Instead of supporting their claim that there is no wireless competition problem in Canada, there evidence shows that concentration in wireless markets is "astonishingly high everywhere", as Eli Noam (2013, p. 13) puts it, including Canada. The only country that

does *not* to fit such a designation is the United States, which slips just below the bar with an HHI score of 2425 (BAML, 2013).

Map 1 below depicts this state of affairs based on the 19 countries included in the Church and Wilkins studies using data from the same source they use: the Bank of America/Merrill Lynch *Global Wireless Matrix*.

Map 1: Church & Wilkins 19 Country Survey of Wireless Concentration, 2012



Source: BAML (2013). *Global Wireless Matrix*.

In addition to concentration levels in wireless markets being "astonishingly high" in all but one of the 19 countries they survey, a review of the evidence from the BAML report, the Canadian Media Concentration Research (CMCR) project, and CRTC shows that wireless markets have been highly concentrated for a long time. This is an important point because,

as even Church and Wilkins (2013) observe, competition "does not mean perfectly competitive, but rather that there is not a . . . durable exercise of market power" (p. 3, fn 19 and p. 22). If that is one of the criteria, and it is, then there is a problem: concentration levels have been high for the entire history of mobile wireless services in Canada since its inception thirty years ago. Much the same applies elsewhere, with some modest oscillation between the upper bands of moderate concentration and high concentration in the past decade. The "natural limits to the extent of competition" that Church and Wilkins (2013) highlight certainly is not tantamount to the restoration of the natural monopoly regime of days past, but are we in the presence of natural oligopoly? If so, we need to act accordingly.

There are clear policy levers and regulatory measures that can and are being used to deal with this reality, in Canada and around the world, as we will see below, in contrast to what Church and Wilkins' caricature as quixotic, ad-hoc intrusions by the government, which they hyperbolically characterize as being tantamount to the expropriation of capital, as if the Harper Government had somehow torn a page from Karl Marx's *Capital*. In fact, the Government's policy is dealing with real world realities but which Church and Wilkins try to explain away in favour of a 'do nothing' approach. Far from a quixotic misadventure, as they like to cast things, dealing with the reality of highly concentrated wireless markets is common; in fact, it is the norm around the world (OECD, 2013, p. 21).

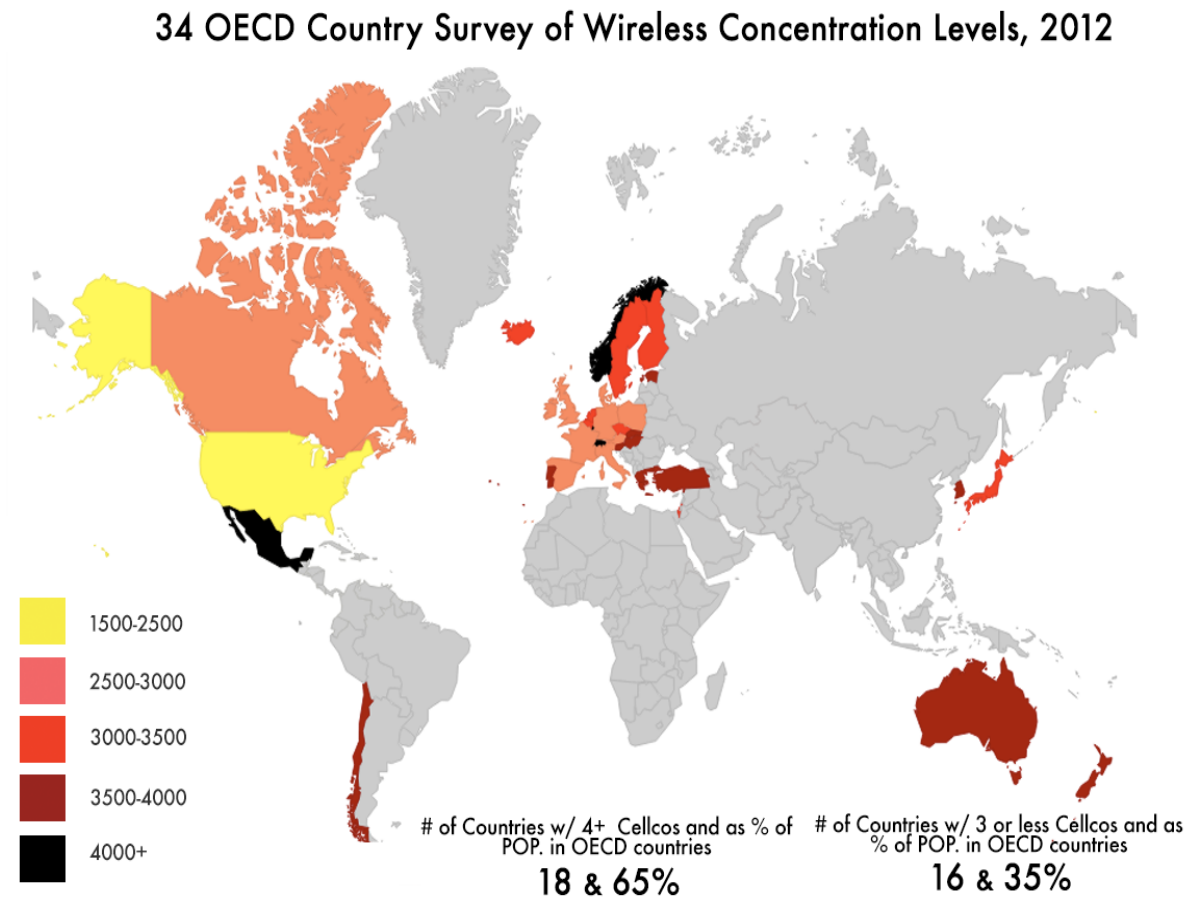
Church and Wilkins (2013) evidence also contradicts their headline claims when it comes to the issue of "4th Carriers", or "Challenger Brands". While they claim that these entities are a rare-and-dying breed (pp. 28-34), their evidence indicates otherwise. Indeed, 10 out of the 19 countries they canvass have four or more cellcos. That slim majority is actually a bigger majority when we take account the populations that live in the 19 countries they survey: 55% of the population that lives in these ten countries have four-or more nationally competitive cellcos; 45% do not.

Looking further afield to the thirty-four countries that make up the OECD instead of just the 19 countries the Church and Wilkins' study zeroes in on, what do we find?

The evidence provides strong support that wireless markets are highly concentrated in all 34 OECD countries, except the United States. Eighteen of these countries, comprising two-thirds of the OECD population, however, have four or more national cellcos. Sixteen have three or fewer. In sum, whether we look at Church and Wilkins' 19 countries or the 34 OECD countries, concentration is high everywhere, while four or more national wireless companies are the norm. This is true in either absolute terms or on the basis of population. In sum, the vast majority of people who live in OECD countries have four or more national cellcos at their service.

Map 2 below illustrates the points with respect to the 34 OECD countries using the BAML data for 2012, filling in the OECD countries not covered by that report with 2011 OECD

data.[7] The Canadian evidence is from the Canadian Media Concentration Research project datasets which, parenthetically, line up consistently with the results of the BAML report, even though the latter report unexplainedly under-states the size of the wireless market in Canada and the revenues of Rogers, Telus and Bell. The report states revenues for the Canadian wireless market of $18.7 billion for 2012 versus $20.3 billion reported by the CRTC. It also cites revenues for Rogers, Telus and Bell of $6,719 million, $5,3367 million and $5,197.4 million, respectively, for 2012 when these companies' annual reports cite figures of $7,280 million, 5,845 million and $5,573 million – roughly a half-billion dollar difference in each case. Church and Wilkins either did not notice this discrepancy, or chose to ignore it. This discrepancy is not an exceptional case – as we will see further below – and we use the BAML report with caution for just such reasons.

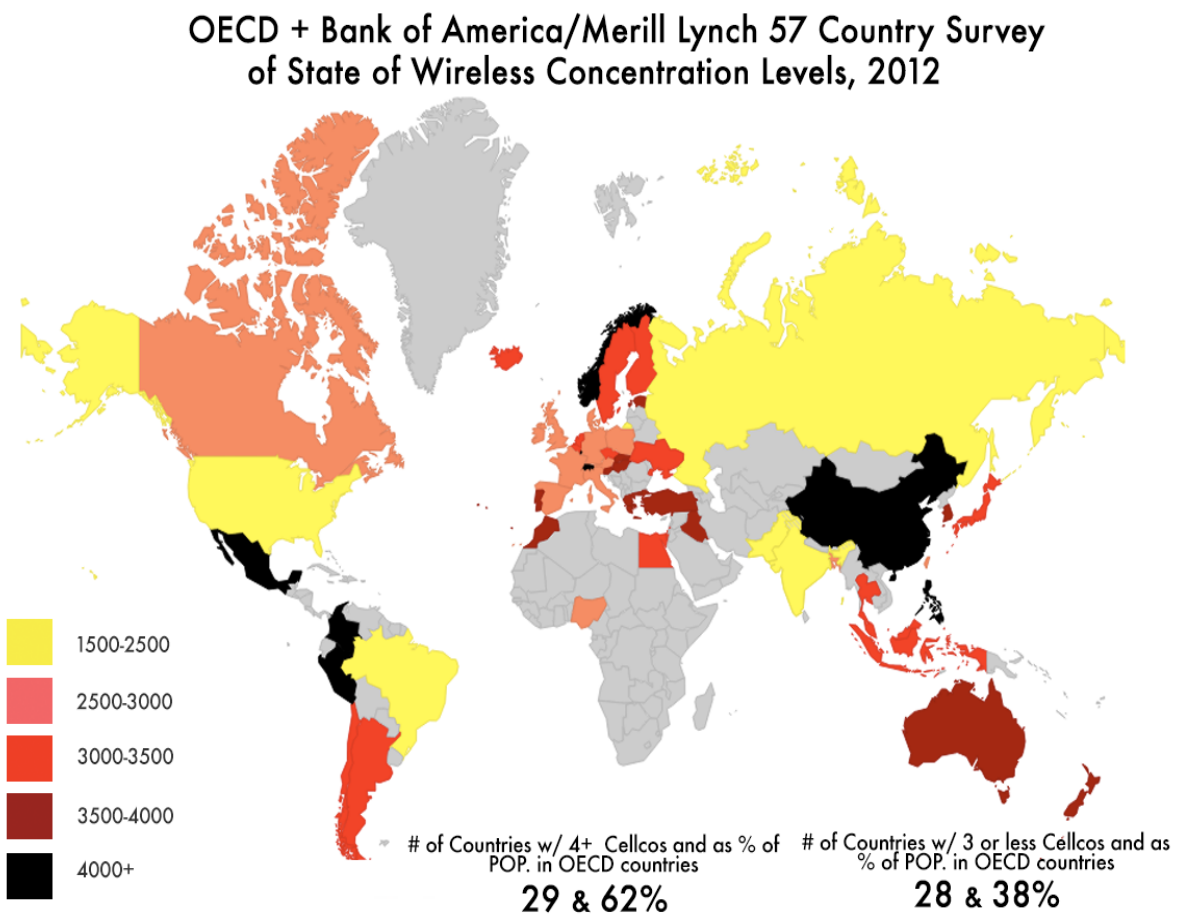


Source: BAML (2013) *Global Wireless Matrix*; OECD (2013). *Communications Outlook*, Table 2.3.

[7] Data for Iceland is from a custom-prepared report for the author by Budde Communication (2013), while the UK data is based on the sources outlined below.

Lastly, zooming out to compare concentration levels across all 57 countries included in this study makes the finding that wireless markets are almost always highly concentrated even more emphatically: there are only five countries where wireless markets are not heavily concentrated. Yet, even all of these countries, except one (India), fall just beneath the high-end of the HHI scale by the US Department of Justice's (2010) HHI thresholds whereby an HHI >er than 2500 constitutes a highly concentrated market. Those five exceptions, in rank order, are: India, Pakistan, US, Russia and Brazil.

Map 3 below depicts the results, with the colour red designating countries with highly concentrated markets. The more intense the red, the higher the concentration. Yellow coding depicts those with moderately high levels of concentration, and black is for those where concentration is sky-high, i.e. above 4,000.



Source: BAML (2013) *Global Wireless Matrix*; OECD (2013). *Communications Outlook*, Table 2.3.

According to the BAML *Global Wireless Matrix*, India has the most competitive telecoms landscape in the world, with six national players, and an HHI score of 1750. Pakistan is next with five cellcos and an HHI of 2239. The United States is third, with four large national players – Verizon (37% market share), AT&T (33%), Sprint (15%), T-Mobile (11%). Leap and MetroPCS are smaller regional players with a combined market share of 5%. Russia and Brazil are next in line, respectively. Twenty-nine of the 57 countries we cover, which account for 62% of the total population of these countries, have four or more cellcos; 38 percent of the population live in countries that have only three.[8] In sum, most people in the world live in countries with four or more cellcos.

We should also bear in mind that, in the UK, the Competition Commission, Office of Fair Trading and Ofcom set the HHI bar lower than in the US and work with a 'twitchier' dial regarding the magnitude of change needed to raise alarms. In the UK (and Europe), the standard for a "highly concentrated" market is 2000 or more (versus 2,500 in the US). In the US, a merger has to move the dial more than 200 points before anti-trust regulators kick in, while in the UK they get twitchy when the dial swings upward 150 points or more (Ofcom, 2012, p. 13, fn 27). If we looked at the world through British lenses, then, there are *no* competitive wireless markets . . ., except India.

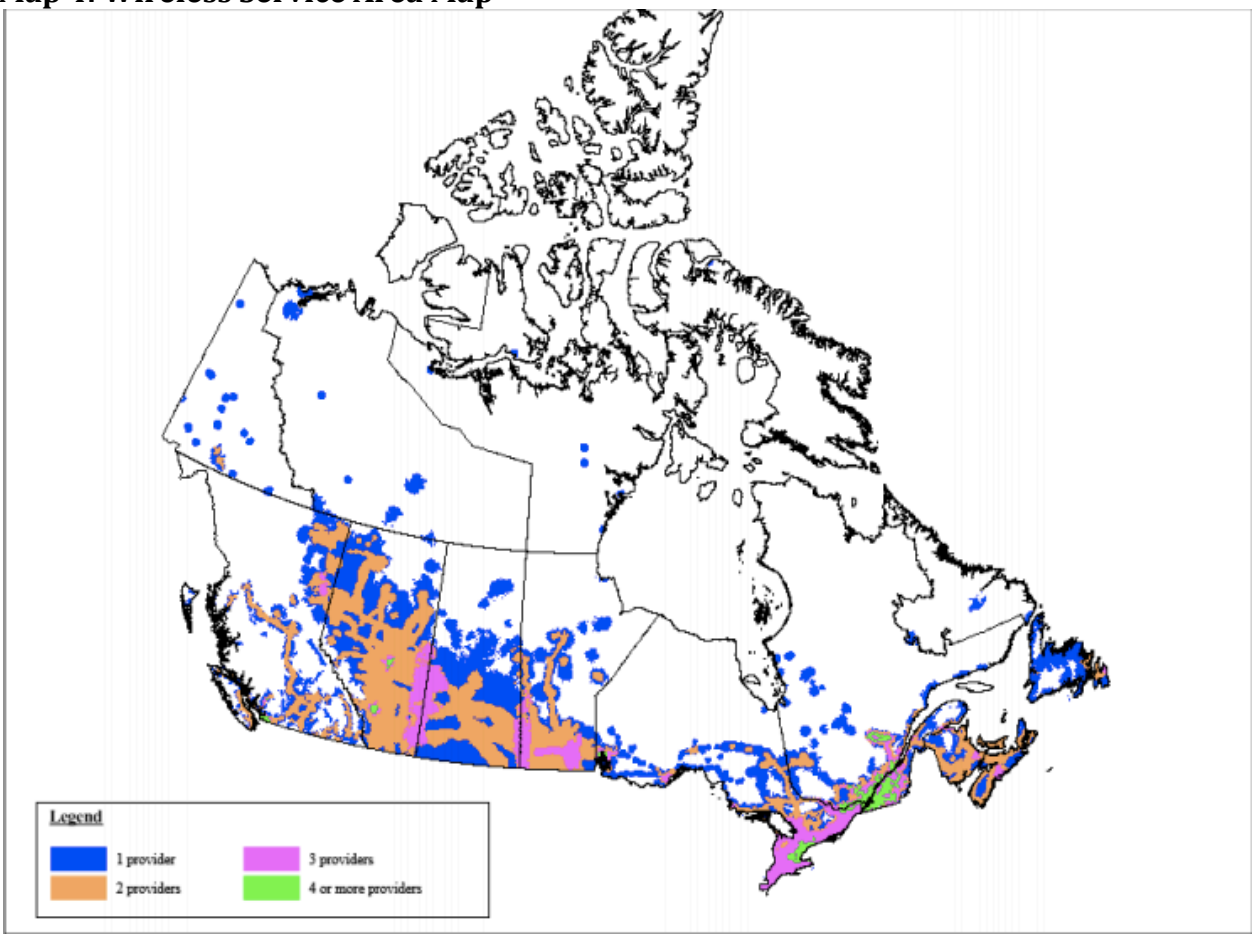
That, however, seems hard to square with the rabble-scrabble mode of mobile wireless development in the Global South, where, according to the GSMA[9], for instance, Vietnam, Tanzania, Kyrgyzstan, Brazil, Indonesia, Cambodia and Nigeria have seven-to-nine cellcos each; there are thirteen in Russia, while India had fifteen – twice the number reported in BAML's *Global Wireless Matrix*. War-torn Afghanistan has six (GSMA, 2013).

The State of Wireless Markets in Canada

Climb down from international comparisons to more closely examine conditions in Canada, not just on the basis of revenues, but spectrum holdings and actively deployed spectrum as well as subscribers, and the portrait takes on an even more definite shape. Concentration levels are high across the country on the basis of these measures, at the national level and within provinces and cities, and have been this way for a long time. The following wireless service area map depicts where service is available and how many competitors exist within each area of the country.

[8] These 57 countries account for four-fifths of world population, i.e. 5.5 billion people out of 7 billion (World Bank).
[9] The association for the mobile industry worldwide.

Map 4: Wireless Service Area Map

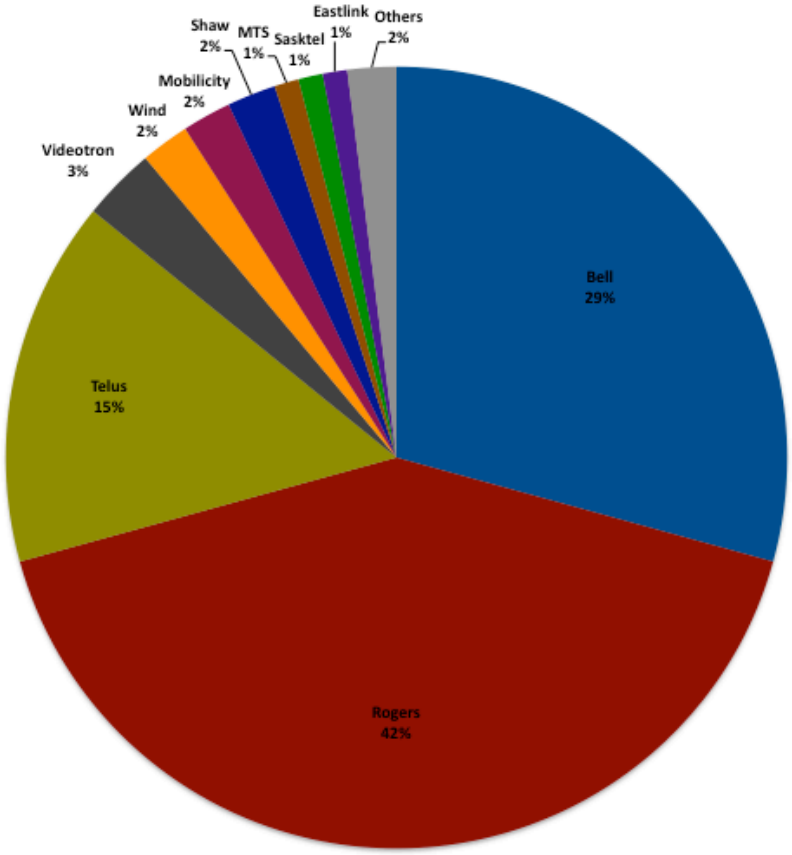


Source: CRTC (2013). *Communications Monitoring Report*, p. 168.

The map shows that much of Canada is not covered at all. It also shows that only a very narrow band of the country has more than three players.

Additional evidence further girds the case. In terms of total spectrum holdings, the big three control the lion's share by far: 86%. Rogers single-handedly has 42% of the available PCS, AWS and GBRS spectrum, while Bell has 29% and Telus 10%. Several small companies trail far behind with 1 – 3% of the available spectrum (Canadian Spectrum Policy Research, 2013). Tighten the focus further on spectrum in use (i.e. active antenna), and the big three control 93% of the channels/antenna in active use. In either case, concentration levels with respect to *the* essential resource underpinning wireless markets – spectrum, which cannot be stressed enough, is a public good held in trust on behalf of citizens -- *are* high by either the CR4 or the HHI. The HHI scores on both measures – spectrum holdings and spectrum actively in use -- is well into the highly concentrated range at 2,775 and 2,890, respectively. The two diagrams in Figure 3 below illustrate the points.

Figure 3: Summary of Spectrum Holdings by Wireless Service Provider



Sources: Canadian Spectrum Policy Research, 2013; Loxcel, 2013.

The same is true if we look at the provincial level on the basis of subscriber share, as Table 2 illustrates. While the national HHI score in 2012 based on revenues was 2,873, this was surpassed in every single province, except Quebec. In short, whether we look at things from the vantage point of the country as a whole, or individual provinces, the answer remains the same: wireless markets in all areas of Canada are highly concentrated. Table 2 depicts the point.

Table 2: Market Share based on Subscribers, by Province, 2012

Province	Bell	Telus	Rogers	New Entrants	Other	CR2	CR3	HHI
BC	18	40	39	3	0	79	97	3454
AB	23	50	24	3	0	74	97	3614
SK	10	10	9	0	71	81	91	5322
MB	5	9	33	0	53	86	95	4004
ON	28	20	44	6	1	72	92	3157
QC	33	28	29	10	0	62	90	2814
NB	58	23	19	0	0	81	100	4254
NS	54	29	16	0	0	83	99	4013
PEI	58	27	15	0	0	85	100	4318
NL	73	25	2	0	0	98	100	5958
TER	90	0	0	0	10	100	100	8200
Average	36	26.1	23	22	62	80.1	96.1	4090.8

Source: CRTC (2013). *Communications Monitoring Report*, p. 167.

As Table 2 shows, Quebec is at the lower end of the market consolidation scale. While there has been a downward drift in concentration since 2008 nationally, the pace of change has been greater in Quebec. Unlike in many other areas of the country where two of the big three stand out in front of the pack, in Quebec, Bell (33% market share), Rogers (29%) and Telus (28%) all have large market shares, but Quebecor/Videotron has also become a quite significant rival since entering the market after acquiring spectrum under the 'new entrant' provisions of the AWS spectrum auctions in 2008. Its share of the market grew to 5.3% in the four years since.[10] Wind and Mobilicity have also picked up about 4.7% market share between themselves, as well. As a result, three dominant players plus Quebecor and two smaller players have created a more competitive market structure, even if the HHI is still at

[10] Based on the number of channels in service, Quebecor/Videotron appears to hold a greater share of used spectrum in Montreal and Quebec City, with 11.5% and 17.5% of the active channels, respectively, compared to 9.4 and 10.3%, respectively, for Bell.

the high end of the scale (2742). If there is any vindication of the viability of the "4th mobile wireless carrier" strategy in Canada, Quebec is it.

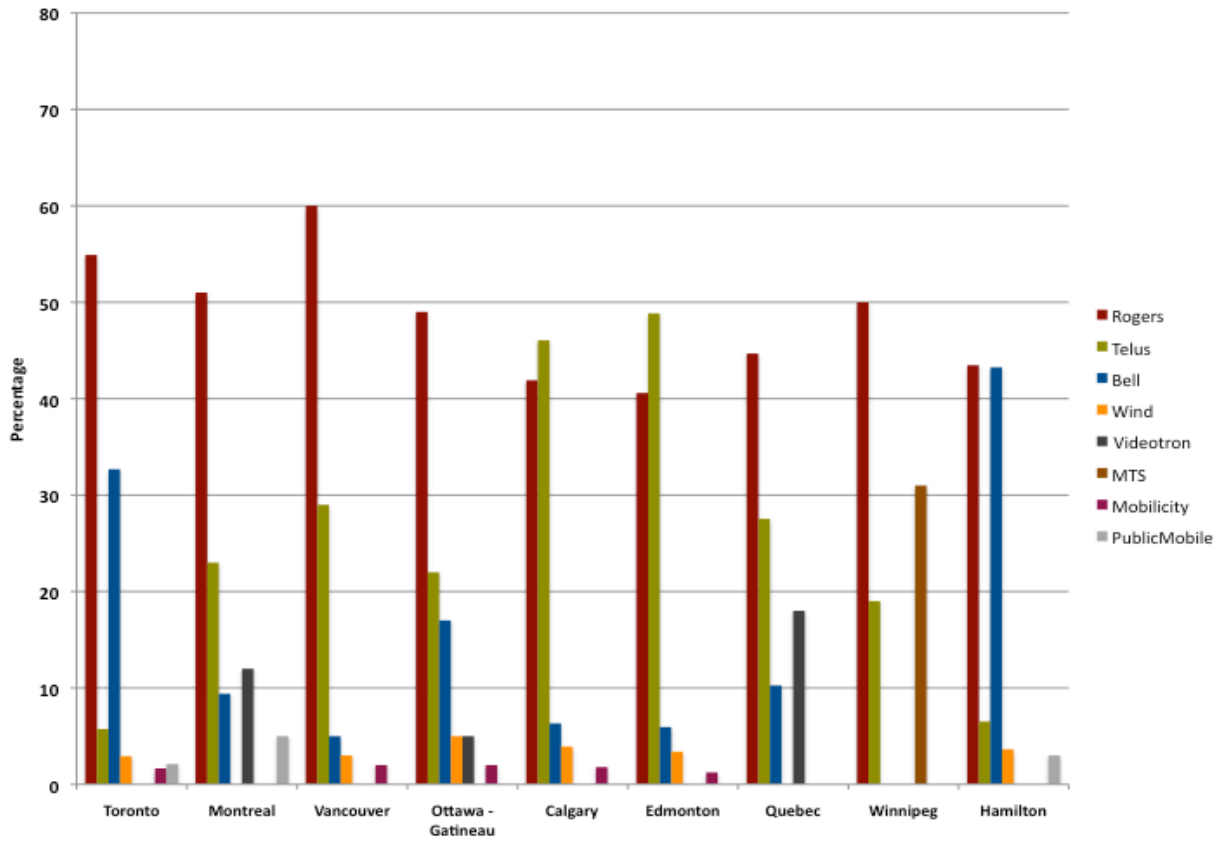
Outside of Quebec, however, this kind of market structure is unusual. It is not possible to break out the data in terms of revenues or subscribers by wireless company and city, but we can use antenna counts as a proxy to arrive at a rough approximation of conditions in the nine biggest cities across the country. Indeed, if we zoom in on these cities – Toronto, Montreal, Vancouver, Ottawa/Gatineau, Calgary, Edmonton, Quebec City and Winnipeg, Hamilton[11] -- we find that the city with the closest market structure to conditions in Quebec is Ottawa/Gatineau. There are six wireless companies actively deploying spectrum (based on active antennas) in the city: Rogers (49% of channel capacity), followed by Telus (22%), Bell (17%), Videotron (5%), Wind (5%) and Mobilicity (2%). The HHI in Ottawa/Gatineau is still substantially higher than the Quebec average at 3247, but it is relatively low compared to the other big cities in the mainly English-language parts of the country.

Concentration levels in these cities sits at the very high end of the range, with HHI scores outside of Ottawa ranging from a low of 3,600-3,700 in Hamilton and Winnipeg, 3,900 in Toronto, 4,100 – 4300 in Calgary and Edmonton and with Vancouver at the top of the scale at 4,369. This is likely due to the fact that there is a strong tendency for some combination of two of the big three cellcos to dominate in Canada's major cities, with Bell and Telus sharing facilities in a rough division of the country into Canada East (Bell) and Canada West (Telus), although both possess their own scaled down facilities in certain cities. This is the case, for instance, with respect to Bell in Vancouver and for Telus in Toronto (Loxcel, 2013).

Figure 4, below, illustrates the point.

[11] These cities were chosen because this is the number of cities that it takes to reach half of the Canadian population. Canada has a bimodal population split. Half of it is very heavily concentrated and easy to reach; the other half more challenging, but much of the land is uncovered. According to the OECD, Canada's population density is not thin and widely scattered but rather tightly knit, with half the population settled in just 16% of the landmass versus the OECD average of half the population occupying just under 20% of the land in most countries.

Figure 4: Share of Spectrum in Active Use (Antenna) in Canada's Largest 9 Cities, 2012



Source: Loxcel, 2013 (based on data current as of November 14, 2013).

One additional point to be made with respect to the above figure is the presence, for instance, of some entities that hold spectrum, such as Shaw, but which have forsaken any intention to actively deploy such services on their own. Indeed, Shaw has tried to swap its spectrum with Rogers, a move that has been stymied by the government's refusal to give its blessing. While Church and Wilkins (2013) single this out as another capricious act by the government, the government's actions are nothing of the sort. Instead, those actions reflect the reality that spectrum holdings in Canada are very highly concentrated and the belief that, if competition has a hope in hell of succeeding, it is essential that new entrants secure access to this key resource. Indeed, it is a 'do or die' situation and thus the government's stance is highly rationale, despite the attempts by Church and Wilkins, the big three and their other defenders to paint it otherwise.

Moreover, recalling that one of the conditions for determining market power is whether large market shares are transitory or long-lived, the fact that Rogers has held between 40 and 50% of the available spectrum since receiving its first set of licenses back in 1983 –

another indication that market power in the Canadian wireless market is not only real, but entrenched (Industry Canada, nd; Canadian Spectrum Policy Research, 2013).

What's a Regulator to Do? Telecoms Regulatory Toolkit for the 21st Century: Tool #1, Importance of Cultivating Competitive Markets and 4 or More Cellcos

The above realities leaves us with a choice: bury our heads in the sand, as Church and Wilkins and other defenders of the status quo would have us do, or deal with reality as it is, as the FCC, DOJ, UK Ofcom, NZ, Australia, EC currently do, and as Industry Canada, the CRTC, and the current government have once again begun to do with greater conviction relative to the early years of the 21st century, and as independent analysts and critics such as Michael Geist, Open Media, Peter Nowak, the Public Interest Advocacy Centre, the Seaboard Group, the Canadian Spectrum Policy Research group (Ryerson University) and as many others who know this area well advocate (Shade, Shephard, Crow, Sawchuk, etc.). Indeed, there are clear policy levers and regulatory measures that can and are being used, and far from ad-hoc intrusions tantamount to the expropriation of capital, as Church and Wilkins (2013) state time and again, they should be used. Real world policy deals with the real world as it exists rather than how some observers might like it to be.

The Fourth Player as Holy Grail (or Why a Strong "Maverick Brand" is a Good Thing)

By now, two things stand out in sharp contrast to the main lines of thought in Church and Wilkins' paper, and those generally who dislike the Government's wireless policy. First, fourth competitive national cellcos are not a rare and dying breed, but actively making a go of it in a tough slog against dominant players, with strong governments at their back in many cases. Indeed, far from being a alien invention of the Harper Government, four or more carriers, and explicit policies that do everthing possible to ensure their survival, is a tried and tested policy norm, albeit not one without flaws. Moreover, countries with four or more cellcos are simply more plentiful than those without, whether measured nominally or by population.

Capital intensity and scale are undoubtedly important for world-class mobile wireless networks, as Church and Wilkins (2013) stress, but such things must not be overplayed. The reality is that capital intensity is not so high as to preclude more than four national wireless providers in most countries. In addition, it is exactly the over-exaggeration of capital requirements that girded the 'natural monopoly' regime in Canada, the United States and most countries worldwide well past their due date, if they were ever the inevitable feature they were often made out to be in the first place (Babe, 1990; Melody, 1997; John, 2010).

Canadians strung together 1000s of telephone companies in the 1910s; and these indy telcos were vitally important to extending the social reach and business utility of the telephone. At the heights of the early competitive telephony era (circa 1911 and 1916),

their numbers tripled from 600 to 1,700, and they served one-half of all subscribers. Bell managed to hang on to the other (better) half. The number of Canadians with phones at home nearly doubled in just five years (BRC, 1918, pp. 10-11; Bell, 1916; Babe, 1990, pp 121-126; Winseck, 1998, p. 132). Backwoods treckers with antennas strapped to their backs and mesh networks are their counterparts today.

The UK: Promoting Four National Wireless Wholesale Companies

Claims about the need for scale and the high capital intensity of the wireless sector have recently been dealt with explicitly in several cases. Instances in which such claims have been exaggerated, and specifically come wrapped in nationalistic flags, have been rejected (AT&T + T-Mobile in the US), while others that have promised more competition through greater consolidation have been given the green light (Orange + T-Mobile in the UK).

The latter is of particular importance because while consolidation of the number three and four players did raise concentration levels, the deal was simultaneously made contingent upon the new entity, Everything Everywhere (EE), handing over *a quarter* of it combined LTE/4G spectrum to the new fourth ranked player: Hutchison 3G. The move met with a hew and cry from Vodafone (the #1 player) and O2 (Telefónica) (the #2 player), which disagreed with the merger of Orange and T-Mobile vehemently to begin with. They raised their voices again when it was clear that Oftel had earmarked EE's divested spectrum for Hutchison 3G. Vodafone and O2 needed the 'beachfront spectrum' themselves, they argued, to roll-out broadband 4G wireless services across the nation -- pleadings that, while not falling completely on deaf ears, were sternly rejected by Ofcom. European competition authorities chimed in with similar views (US, Department of Justice, 2011; Ofcom, 2012).

Ofcom's response to Vodafone and O2's pleadings are instructive: "Our policy aim is to promote competition in mobile markets primarily through national wholesale competition" (p. 2), it declared. And further,

> . . . we have concluded that the *highest source* of risk relates to the failure of a fourth national wholesaler to win the spectrum it would need . . . to be . . . a credible national wholesaler . . . . We recognise that there *is some risk* that this concern could arise through the failure of one of Everything Everywhere, Vodafone or Telefónica to have sufficient spectrum to be credible after the Auction but we consider that this risk is much lower. This is for a combination of reasons: first, since it is less clear that additional spectrum is needed for them to be credible, and second, even if it is, it is less clear that these national wholesalers would be unable to acquire sufficient spectrum [to meet] . . . future mobile competition and award of 800 MHz and 2.6 GHz to mitigate the risk. The balance between these two factors differs for these national wholesalers but we consider the overall effect is similar (*emphasis added*, Ofcom, 2012, pp. 67-68).

Continuing, Ofcom observed that: "The *main concern* is that there will be fewer than four credible national wholesalers; and a *lesser concern* is that even if there were at least four credible national wholesalers, one or more will be at a disadvantage" because unable to acquire the advanced spectrum they need to "compet[e] across a wide range of services and customers" (p. 2).

Church and Wilkins, and the big three Canadian incumbents want to turn this order of things upside down so that Ofcom's lesser concern becomes Canada's dominant one. That special pleading should be treated for what it is, and rejected. Just like current conditions in Canada, Ofcom had a very clear choice between cultivating Hutchison 3G as a viable fourth player by giving it access to the valuable public resource and linchpin of the entire mobile wireless market – spectrum – or giving it to Vodafone, O2 or EE – each of which promised to build world-class broadband mobile wireless networks in return if they were the 'chosen one'. Ofcom, instead, resolutely chose to do the former, standing firm in the face of strong pressure to do the opposite. The Government of Canada now stands in the exact same spot that Ofcom did two years ago, and all indications are that it intends to stand pat – which is, as should be clear, an entirely defensible position.

Ofcom had to choose between another opposing set of interests as well. For years, it has fostered conditions conducive to MVNOs as well as smaller regional and local interests, but it took the opportunity of its consultation on spectrum policy to make it explicit that this support did *not* include using spectrum policy to ensure their survival. In other words, MVNOs were great, but the first priority was to do everything in its power to ensure the viability of four national *wholesale* wireless carriers, and in this case that fourth cellco was Hutchison 3G. Using all of the powers at its disposal to ensure that there were four strong national *wholesale* wireless companies, Ofcom argued, would serve the needs of MVNOs well. As Ofcom stated bluntly, "Our policy is to promote competition in mobile markets primarily through national *wholesale* competition" (*emphasis added*, Ofcom, 2012, p. 3).

Canadians might be forgiven for not knowing that such policy priorities and that something called a 'national wireless wholesale regime' even exists in the UK, given the incumbent's rhetoric, much journalistic coverage that slavishly follows that rhetoric, and studies such as Church and Wilkins that give no hint that such possibilities even exist. Furthermore, the UK is not alone.

National wholesale wireless regimes are being used as one tool in the regulatory tool-kit to offset the 'natural limits to competition', as Church and Wilkins put it, in many countries. In fact, "mandated wholesale access is the rule and a key driver for competition . . . across the European Union area" (OECD, 2013, pp. 41-42). That Church and Wilkins do not even broach the notion that the *national wireless wholesale regime* is standard policy across *all* of Europe is either misleading or a sign that they are not as familiar with the terrain as they ought to be.

Before moving on to similar recent events in the United States, it is perhaps useful to sum up some of the qualities of the regulated wireless markets approach adopted in the UK, five of which stand out:

1. the UK regulators' lower HHI thresholds are stricter than those in the US, and miles apart from the idiosyncratic approach to such things adopted by the Competition Bureau and CRTC here in Canada;
2. Incumbents will fight tooth-and-nail against efforts to cultivate as many strong players as possible, but in the UK, Ofcom felt that consolidation could, simultaneously, allow EE to become a strong competitive disciplining force against the much larger Vodafone and Orange, while giving Hutchinson's 3 access to highly sought after LTE spectrum that would allow it to roll out a nationwide fourth wholesale wireless network.
3. The composition of the UK wireless market in terms of the nationality of capital within it is unique: Vodafone (British), O2 (Spanish, Telefónica), EE (France Telecom/Orange + Deutsche Telecom); Hutchison's 3 (Hong Kong).
4. The external pressure applied by a continental trade and communications policy framework, i.e. the harmonization that takes place between UK and EU regulators.
5. The need for all political institutions and actors – governments, ministers, telecom and media policy-makers and regulatory chiefs, etc. – to steel their spines in the face of dominant players who will do everything within their powers to preserve their dominant market positions. This is what Ofcom did in the face of much bluster and pressure from Vodafone and O2, and even EE.

In summary, the UK has the advantage it would seem of the multinational character of the capital that stands behind the wireless industry in the country. The British state welcomes capital investment, but sets substantial targets for service roll-outs, regulates wholesale rates and fills in the whitespaces where no coverage exists with significant investments. The idea of the 'fourth' national wholesale wireless provider is well-established. MVNOs are actively encouraged because they help to extend the market to those not served well by the dominant players' focus on higher ARPUs. And where all else fails, the UK government's Mobile Internet Project (MIP) has a budget of $177 million to build out mobile broadband wireless networks to reach areas of the country where 'the market' will not (Ofcom, 2012).

The US: The Department of Justice and the Aborted AT&T T-Mobile Merger

The UK Government and Ofcom allowed the merger of Orange (France Telecom) and T-Mobile (Deutshe Telecom) on highly conditional grounds—i.e. the divestiture of one-fourth of the new entity, EE's, LTE/4G spectrum holdings to Hutchison 3G. In the United States, policy-makers and regulators pursued the same objective but through different means. In contrast to the course of events in the UK, the Department of Justice, with seven US states (California, Illinois, Massachusetts, NY, Ohio, Pennsylvania and Washington), rejected the

proposed amalgamation between AT&T and T-Mobile (TMUS) -- the second biggest and fourth biggest wireless players in the US, respectively -- outright. Why?

The D0J examined the nationwide competitive impact of the proposed transaction. It also looked closely at each of the firms involved, notably TMUS, and their specific roles within nationwide and local markets. Lastly, it zeroed in on 97 cities in which AT&T and TMUS competed head-to-head.

According to the DOJ, assessing the nationwide competitive effects of the AT&T and T-Mobile deal was essential. This is because the big four US cellcos' compete on technology, prices, service plans and device offerings in cities across the nation. Network technology and standards are national in scope as well. A national reach also means simplified pricing and service plans for customers, while large business and government clients typically seek "a mobile wireless provider with a nationwide network" (pp. 10-12). Smaller regional players are great, the DOJ intimated, but their limited subscriber reach and market share, and lack of spectrum and quick access to devices, neuters their effect (US, DOJ, 2011, p. 3).

The DOJ also cast TMUS as an important innovator, having chalked up a number of "firsts" in the national market: "the first company to roll out and market a nationwide network based on advanced HSPA+ technology" and to offer "Android handsets, Blackberry wireless e-mail, the Sidekick (a consumer "all-in-one" messaging device), national Wi-Fi 'hotspot' access, and a variety of unlimited service plans, among other firsts" (US, 2011, p. 14). TMUS self-styled 'challenger brand' strategy also meant that it offers "disruptive' pricing' plans" that Verizon and AT&T have no desire to match (US, 2011, p. 14). Furthermore, and of particular importance, TMUS has set a goal for itself to "make smart phones affordable for the average US consumer" and to set prices for mobile broadband data plans that 'the big guys won't match' (US, 2011, p. 15). In other words, TMUS was plying the 'lower end' of the market and bringing new customers in, or offering more to those under-served by AT&T and Verizon, for example, in their relentless pursuit of high-end users and, thus, higher ARPUs.

AS TMUS put it in its own internal documents

> . . . as a challenger brand . . . we will attack incumbents and find innovative ways to overcome scale disadvantages. TMUS will be faster, more agile, and scrappy, with diligence on decisions and costs both big and small. Our approach to market will not be conventional, and we will push to the boundaries. . . . TMUS will champion the customer and break down industry barriers with innovations . . ." (quoted in US, DOJ, 2011, p. 14).

Turning to individual cities, the DOJ cast a wary eye on the fact that competition in the 97 cities across the US in which AT&T and TMUS compete head-to-head would be lost if the two combined. The cities represent half the US population. The AT&T-TMUS merger would

have raised already high HHI scores to above 3000 in all but two of the 97 cities examined, as well: Seattle, Washington and El Paso, Texas. Similarly, HHI scores would have risen between 200 and 1,400 points in all of the 97 cities selected for close examination except Toledo, Ohio and Grand Rapids, Michigan.[12] The good people of LA, would have been especially hard hit by the demise of TMUS, with their local HHI (2380) rising sharply from the moderately concentrated zone firmly into the highly concentrated one with a post-merger HHI of 3174 (US, DOJ, 2011, Appendix B). The elimination of TMUS as a real rival to not just AT&T, but Verizon and Sprint in cities across the country as well was too much for anti-trust regulators.

Finally, the DOJ cast a wary eye on claims that the combined entity was necessary to achieve the scale and spectrum required to build 'world class wireless networks' for the benefit of all Americans. The DOJ did not reject such claims entirely but, like Ofcom, it saw such concerns as a lower priority than keeping T-Mobile alive as a strong independent fourth, nationwide competitor. On this matter, the DOJ and Ofcom were joined at the hip. The DOJ also made short shrift of the nationalist pleadings made by AT&T to the effect that what is good for AT&T – the ability to amass the spectrum and scale needed to build 'world class neworks' -- is good for America (United States, Department of Justice, 2011, p. 91; Sturke & Grunes, 2012, p. 205). On that ground, if anybody was expanding the reach of the market, it was TMUS, for reasons set out above. Seeing the writing on the wall, AT&T and TMUS folded, and went back to competitng against one another.

The effects of stopping the AT&T – TMUS merger dead in its track have been important. For one, playing to its 'challenger brand' identity, it has taken the lead on opening up to MVNOs which has, in turn, driven Verizon, AT&T and Sprint to do the same. Cheaper prices and the emergence of a more robust approach to marketing prepaid plans is another result, where before, as in Canada, the standard line has been that consumers did not want them (OECD, 2013, p. 24). Indeed, as Forbe's puts it, denied a merger with AT&T, TMUS instead cranked up innovation instead. At the front of such initiatives are a raft of smartphone data plans that are nowhere to be found in Canada. This is a crucial point as VoIP and imessage style "apps" are increasingly substituted for legacy-proprietary WSP services. Moreover, like MTS & Wind in Canada, but not the incumbents, TMUS does not charge data overages, but throttles users after reaching specified limits. As a result, advertised prices are likely to be closer to the real prices that subscribers pay at the end of the month.[13]

T-Mobile's recent television advertisements doubles-down on the point, while infusing their "maverick brand" message with much humour, as clips on Youtube show (see here and here). In the second link, T-Mobile's touts its new standard rate plans that come with unlimited international data roaming to 100 countries. While such things are obviously good news for consumers, the accumulated results are starting to have an effect on the

[12] That the merger would have raised HHI scores by more than 200 points was important because changes of this magnitude in already highly concentrated markets are seen as particularly worrisome.
[13] I am especially grateful to Ben Klass for his guidance and research assistance on this point.

Unites States' standing in the international league tables, as well, where it ranked 17th in 2012 in terms of pricing and 11th overall. In contrast, Canada ranked 27th for pricing and 18th overall, based on our composite examination of OECD penetration, pricing and speed data for wireless services (OECD, 2013, *Broadband Portal*; FCC, 2012).

Also crucial, especially from the Canadian view, the rapid growth of MVNOs and prepaid subscriptions in the United States is moving that country closer to the rest of the world, while leaving Canada further on its own and laying bare the dubious assertion – which serves as a centerpiece in Church and Wilkin's (2013) as well as two recent Nordicity (2011; 2013) studies – that prepaid plans are somehow foreign to the North American wireless mentality. What the US results suggest, however, is that the lack of prepaid plans (and MVNOs) is a barometer of weak market forces, rather than some ill-explained cultural predisposition against pre-paid wireless plans. The OECD (2013) is emphatic that this is exactly the point (pp. 21-22).

Ultimately, the transactions on both sides of the Atlantic – the embraced merger between Orange and T-Mobile to form EE in the UK and the failed merger between AT&T and T-Mobile in the US -- displayed a unity of purpose despite their opposite results: every rational tool of the state and regulators would be used to foster conditions that would either keep a strong competitor alive (TMUS in the US) or give a new fourth player a hand up the ladder, while playing midwife to the birth of a third big player closer in size and scale to the other top 2, while trying to ensure that MVNOs could flourish as well on the back of the national wholesale wireless regime. The end game was similar in both the UK and US, as well: better *national* wireless markets, greater technological, pricing and service innovation, broadening the market, extending high-speed networks across the country and maintaining a viable national fourth player.

The 4+ Competitive National Cellcos Model Around the World: France and Israel

As we have seen, countries with four or more national cellcos are the norm, not the exception. There are many other examples to choose from to illustrate why this model is being pursued. It is neither possible nor necessary to canvass them all, but a brief review of Iliad/Free in France as well as Hot Mobile and Golan Telecom in Israel help to illustrate the achievements of the model, as well as the continued obstacles and pitfalls that remain in their path.

Following in the footsteps of Canada and the US, France adopted network unbundling in 2001, but a weak regulator and an indefatigably intransigent France Telecom blunted the desired effect. That is, until the European Union intervened in 2003 to force a change in events. These actions were ultimately extended to all regulators across Europe, requiring companies with *significant market power* to offer open network access based on regulated

prices, technical standards and other conditions (European Parliament, 2011, pp. 54-61).[14]

Once these changes took hold, competition increased greatly. By 2008, France Telecoms' share of the broadband market had fallen to 47%. Iliad (Free) and SFR/Neuf Telecom had 24 and 22 percent market share, respectively, while Numericable-Completel held 5.5% of the market. Free began building its network in 2000, but efforts accelerated after 2003 as the new regulatory climate took effect. Crucially, France Telecom responded by ramping up investment and lowering prices. Free now also offers a bundled quad play of services, including "100Mbps service to the home, digital TV with HD and the ability to create your own private television channel for others to watch, unlimited voice telephony throughout France and to 70 other countries, . . . and secure nomadic Wi-Fi access wherever one's laptop or Wi-Fi-enabled phone is within range of the Freebox of any other Free subscriber in the country, for USD32.59 PPP a month" (Benkler, et. al., 2010, p. 86, 153; OECD, 2011b, p. 54). It's effect on the wireless market in France is lauded by all, except by Canadian observers bent on maintaining the status quo, and offering few if any glimpses over the horizon to see what others are doing that could be profitably adopted in Canada.

After meeting staunch resistance during its initial five years, Free now seems to have carved out a place for itself within the existing industry, with considerable encouragement from Arcep, the French regulator, which "is encouraging operators to invest in their own infrastructure but also to share costs and investment between one another" (Infrastructure sharing is France's FTTH route, 2011). A key part of cementing its position within France's telecoms market has been Iliad's ability to leverage its wireline networks and customer base to introduce mobile using a mix of wi-fi and cellular to create a more or less seamless blanket network that partially distributed capital costs among customers. In addition, a strong commitment to infrastructure sharing by the industry, backstopped by Arcep, has ensured that tower sharing and roaming agreements between iliad and Orange/SFR have been more forthcoming than in Canada. As a result, Free gained an 8% market share of mobile wireless subscribers in its first year, 2012 (Free, 2013).

Four other points stand out about the French experience in the past decade, and especially in the last five years. First, and similar to the US and UK where strong fourth players have sought to extend the market 'downscale', so to speak, prepaid, no-commitment plans are becoming standard. As with Canada, such things were virtually unknown before the arrival of Free Mobile, but in 2012 there were nearly 35 million SIM-only subscribers. Handsets are no longer tethered to specific providers or contracts, while sales of untethered devices increased from 3 to 15 percent in 2012 (Iliad, 2013). Thus, while Church and Wilkins (2013) suggest that there is a "relative lack of interest in pay-as-you-go" (p. 16), the more

[14] This and the following paragraph pull directly from Winseck (2012). New Zealand's Ultrafast Broadband Plan: Digital Public Works Project for a Network Free Press in the 21st Century or Playfield of Incumbent Interests?

likely reason is such offerings are not a central part of what is on offer (also see Nordicity/CWTA, 2013; Nordicity 2011).

Second, Iliad/Free is not only disrupting conventional wireless markets with more affordable offerings, untied phones and no contracts, but also driving investment in 4G networks. It has surpassed its required coverage targets and also adding momentum for other players to do the same (Iliad, 2013), countering claims by Telus, Rogers and Bell that new players will have a deleterious effect on rural citizens by forcing the incumbents to retrench in their core service areas to meet the 'unfair' advantage handed to new entrants by the state (McTaggart, 2013).

New entrants are innovating, with the aid of wise spectrum policies, in other ways too. Thus, for example, the OECD (2013) points to the emergence of another mobile wireless operator in France that uses unused broadcast spectrum ("white spaces") and innovative user authentication techniques to allow subscribers to connect freely via WiFi and fixed networks to the mobile wireless services of their choice. As a result, "overnight, the mobile customers of the new provider could access more than four million hotspots without needing to log on to those networks or enter passwords", states the OECD (p. 23).

Third, new entrants in France such as Free have not only increased the country's rankings in the international league tables overall, even if it still lags in wireless, and made "markets significantly more competitive and encouraged new innovation" (OECD, 2013, p. 23), they have served as examples for others to emulate. This is notably so in Israel, where Golan Telecom became the *fifth* mobile wireless operator after entering the market in 2012, along with another new entrant Hot Mobile, an existing cable company that uses a combination of equipment from a previous operator and leased equipment. Both present themselves as 'challenger brands', with substantially more affordable prices relative to existing players (Cellcom, Pelphone, Partner (Orange)). GT especially has shaken up the market, with two things critical to its disruptive impact: *effective regulation*, especially of mobile termination rates and reasonable access to shared broadband fibre facilities and, second, the fact that its pricing strategy follows the Free model closely with unlimited service for $25 (USD) a month (OECD, 2013, pp. 43, 205).

Need for Clear Policy and Regulators with a Spine: Expanding the Regulatory Remit from the Edges-In

In sum, it is clear that while concentration in mobile wireless markets is very concentrated almost everywhere, there is no shortage of countries with four or more cellcos. Indeed, it would seem that if Israel, along with so many others are able to sustain that many players, that the decisive factor is not the size of the market so much as the effective determination of policy makers and regulators to make it happen. That is the clear lesson from each of the examples discussed above: the UK, US, France and Israel. The OECD (2013) stresses exactly

this point: "Policy makers and regulators have a vital role to play in ensuring sufficient competition" (p. 16).

The absolutely critical factors in whether or not regulators and policy-makers will rise to the task, however, is if they have the skills to do so, and the fortitude to stand down well-entrenched interests who will fight their efforts every step of the way. And at the heart of that issue is if they will be able to face the fundamental realities of the political economy of communication, namely that there *will be* a struggle over the distribution of critical and scarce resources, and in this respect two things stand out: spectrum and essential facilities.

Bringing this back for the remainder of this study primarily to issues directly focused on Canada, two questions emerge? Do the CRTC, Industry Canada and the government-of-the-day have the independence of mind, and the ability to steel their spine, to do what it takes in the face of incumbents – Rogers, Bell and Telus – who will resist challenges to the status quo with all their might, as the lessons of last summer so amply demonstrate? And second, is there really a need to do so, and if so, and doubling back to the first question, what needs to be done?

With respect to the first question, the 'regulatory flip' spoken of early in which the CRTC beat a hasty retreat from the innovative network unbundling regime it put into place in the 1990s after, roughly, 2002, when open access and unbundling rules were effectively gutted and competition between incumbent telecom and cable companies made the norm (Benkler, et. al. 2010. pp. 136-7). So, too, do the long line of decisions from 1994 through to the present day that have turned mobile wireless services into a regulatory no-man's land stand as a striking portrait of a lack of resolve to meet reality head-on (see, for instance, fn 6 in CRTC, 2012 reprising this history).

As Yochai Benkler (2010) and colleagues at the Berkman Centre put it gently a few years ago, the Canadian regulator has not so much abstained from taking up the baton, but rather withdrawn early after initially taking promising steps and, at the same time, implementing the regulation of wholesale rates for wireline facilities that are amongst the highest in the OECD. Furthermore, as Benkler et. al. put it, Canada looks like a case "where the concern for incumbent investment incentives" keep it from implementing the types of measures that have been so effectively used, for example, in the UK, France, Sweden and, more recently, New Zealand and Australia with strikingly positive effects (p. 162). All of which leads the authors to characterize the CRTC as "hesitant" (p. 162).

The record of half measures continues. Thus, for example, at the same time that the CRTC decided to open consultations on a mandatory wireless code, which it ultimately did adopt, and which is set to take effect next month, it found that wireless markets were sufficiently competitive that rate regulation was not required – although that decision was made by interim acting chair Len Katz as incoming chair J.P. Blais assumed the mantle (CRTC, 2012). A sense of hesitancy and old ways still hang about the Commission, however, as well in

relation to its upcoming essential services consultation focused on wholesale access for wireline services, but which explicitly excludes questions about a wireless wholesale regime (CRTC, 2013c).

Of course, it may be that the CRTC is holding its fire as it lines up a separate inquiry into essential facilities and a national wireless wholesale regime to be held when the time is ripe. Whether it does or does not will determine where it stands in relation to the UK and Europe where, as we have seen, the promotion of national wholesale wireless operators are *de rigueur*, and have been for nearly a decade. Perhaps the idea of a national wireless wholesale regime marks the outer limits of the possible in Canada?

On the other hand, there is an apparent appetite emerging within the CRTC, Industry Canada and the government to expand the realm of the possible. Indeed, while one might think that the wireless industry might celebrate the fact that the CRTC and government have forsaken the national wireless wholesale regulatory regime, they are in fact, up in arms about a list of active items on the agenda that claim represent a stunning expansion of intrusive measures, although they are nothing of the sort, notably:

- the National Wireless Code that is set to kick into effect next month (CRTC, 2013b);
- the fact that domestic roaming charges are on the regulatory agenda and the CRTC's recently opening of an examination of international roaming charges (CRTC, 2013a; CRTC, 2013b);
- last year's decision by the Government to relax foreign ownership rules "for companies that have less than a 10 percent share of the telecommunications market", even though such rules continue to be far more restrictive in Canada than nearly every other OECD country, except Israel, Korea and Mexico (OECD, 2013, p. 46);
- the government's rejection of Telus' bid to acquire Mobilicity in June 2013 (Canada, 2013);
- and the spectrum set aside rules for new entrants in the 700 MHz spectrum auction (Industry Canada, 2013).

So, What's the Problem Anyway?

Despite the evidence of high concentration, not just in Canada, but everywhere, yet with many other countries seemingly taking steps to improve the situation, one might still ask, what is the problem anyway. Is it that prices are too high, not enough people with access, or something else? In other words, is there really a problem that needs solving?

The answer is yes, there is not just a single problem but a cluster of substantial ones that seriously impede what Canadians like to do: communicate. Indeed, as shown at the very outset of this paper, Canadians are yakky and communicative nation, although the divides between people on the basis of income and how it shapes the communicative opportunities

available to them are great. There is also ample evidence to show that conditions in Canada are out of line with those in many other countries in terms of three basic measures that are commonly used to assess these kinds of questions: penetration (usage levels per capita, or household, typically), pricing and indicators of the quality of services available such as speed (OECD, 2013; FCC, 2012; Benkler, et. al., 2010; Ofcom, 2013; CRTC, 2013).

The fact that Canadians like to talk and communicate a lot suggests that we use as many means of communication at our disposal as possible. And every means at their disposal, it would appear as Figure 1 at the outset of this paper showed. Indeed, when it comes to broadband and mobile media and internet use, it bears repeating, we are number 1.

Penetration, Prices, ARPU and Profits

The OECD's data on wireless and wireline broadband, use, access and prices from the tables compiled in its *Communications Outlook*.

Serious problems in Canada. Wall Communications Report is good enough as it goes, but limited to 6 countries. Main headlines there are this. That on the thirteen measures for which full data from all six of these countries is reported, Canada ranks in the middle (i.e. ranks third or fourth out of six) in eight cases and at the bottom of the pack on the rest of the measures. For the highest-end quad play packages of wireless, wireline, broadband internet and DTV, it is tied in the middle with Australia and Japan, far behind the UK and France, whose services are $35 to $75 cheaper per month, yet still ahead of the even more expensive suite of media, telecom and internet services in the United States ($224 versus $177 in Canada)(Wall Report, 2013; CRTC, 2013, p. 200). Confined by its restriction to just six countries, the best that Bell, Rogers and Telus can claim is that the situation in Canada is better than in the United States and that wireless rates have fallen since 2008.

Both statements are true, but the comparison to the United State is hardly edifying given the US's middle-of-the-pack ranking of 17th place based on a composite measure of OECD and FCC pricing data. Canada ranks 27th. Table 3 shows the results for all 33 countries for which both data sets offer a complete set of pricing data (the FCC drops Belgium, hence the 'missing 34th country').

Table 3: Final Composite Wireless Ranking: Penetration, Speed, Price, 2011-2012 (33 Countries)

Country	Penetration per 100 Population (OECD)1	Advertised Download Speed (OECD)[1]	Price: Monthly Plan and Cost per GB of Data (FCC)[2]	Composite Rank
Denmark	5	1	4	1
Finland	1	7	12	2
Sweden	2	8	10	2
Norway	8	5	15	4
Poland	15	3	11	5
Korea	4	4	22	6
Austria	18	9	7	7
Japan	7	15	15	8
Australia	3	23	12	9
United States	6	15	17	9
Luxembourg	9	29	3	11
Slovenia	30	11	2	12
Iceland	12	30	1	12
Czech Republic	20	17	8	14
Germany	27	11	8	15
Slovak Republic	28	14	5	16
Estonia	11	26	14	17
Canada	25	2	27	18
Ireland	14	21	22	19
France	23	17	18	20
Italy	21	13	25	21
Turkey	32	21	6	21
Spain	19	19	21	21
Switzerland	17	26	18	24
Greece	24	6	32	25
New Zealand	10	24	28	25
Portugal	26	10	30	27
United Kingdom	13	30	24	28
Netherlands	15	25	31	29
Hungary	33	19	20	30
Israel	22	32	26	31
Chile	31	29	29	32
Mexico	34	32	32	33

Sources: OECD Broadband Portal; FCC, *Third International Broadband Data Report.*

Table 3 also opens the lens further to show ranking based not just on price, but speed and penetration as well. Based on this broader set of measures, Canada stands is in the bottom half of the thirty-three countries surveyed.

Defenders of the wireless status quo in Canada argue that these pricing comparisons are flawed because the mix different types of usage patterns, i.e. post paid subscriber plans where consumers have long term contracts and pay a monthly bill versus prepaid pay-as-you-go plans which, until recently, have been far more popular in Europe than they have been in Canada or the United States. Given that there are so few prepaid subscriptions in Canada relative to the rest of the world means that international comparisons are not very useful, they say (Church & Wilkins, 2013; Nordicity, 2011). This is fundamentally wrong.

The lack of take-up of prepaid plans in Canada is primarily a problem of supply not demand (OECD, 2013, pp. 21-22). As we saw above, prepaid, no-commitment plans are becoming standard in many countries, notably the UK, France, Israel and, most significant in light of cultural, market and geographical proximity, the US, especially since TMUS doubled down on its 'challenger brand' image after the DOJ foiled its bid to merge with AT&T. the rapid growth of MVNOs and prepaid subscriptions in the United States is moving that country closer to the rest of the world, while leaving Canada further on its own and laying bare the dubious assertion – which serves as a centerpiece in Church and Wilkin's (2013) study as well as recent Nordicity (2011; 2013) studies – that prepaid plans are somehow foreign to the North American mentality.

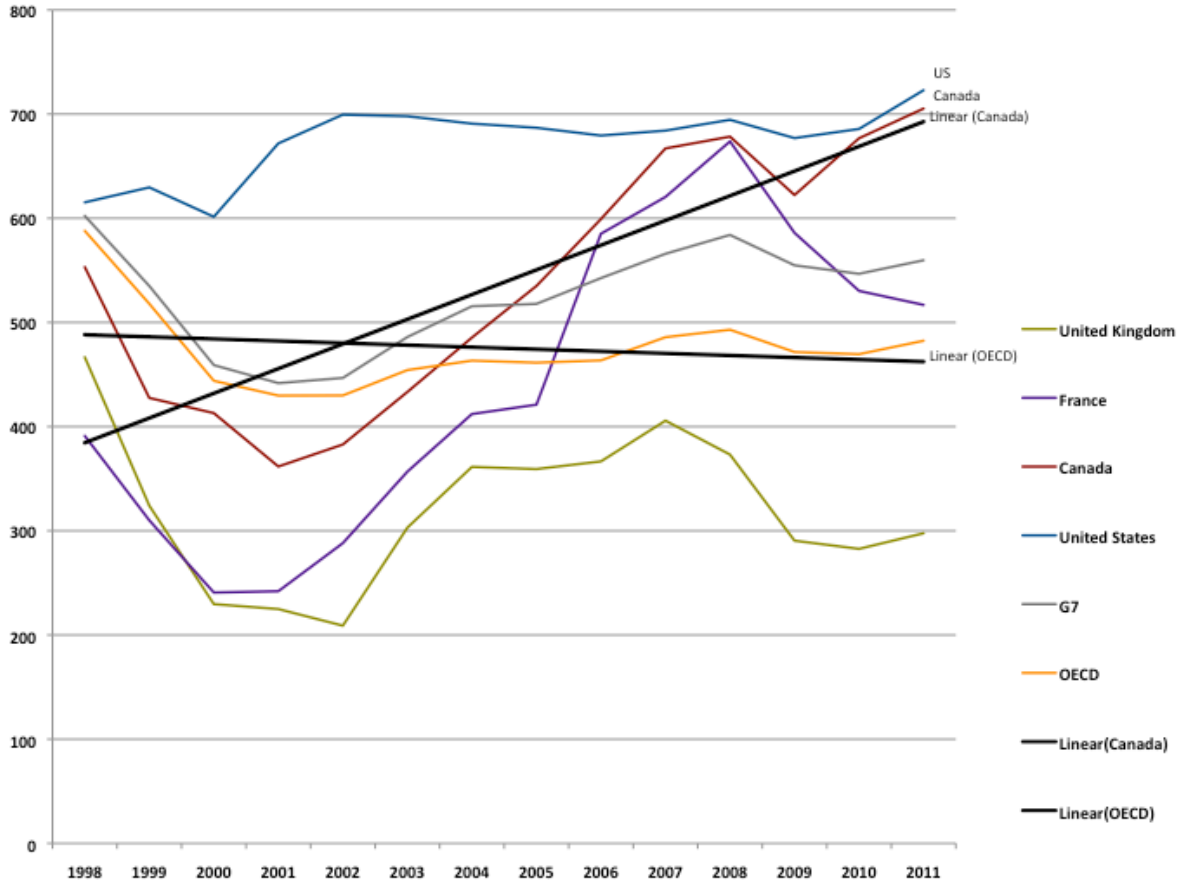
The same is true of France, where, similar to how things now stand in Canada, contract free wireless plans were virtually unknown before Free Mobile arrived; by 2012 nearly there were 35 million SIM-only subscribers and Free had cornered 8 percent of the market in its first year as a mobile wireless operator (2012) – compared to the total 5-6% acquired by all of the new entrants in Canada combined – Wind, Quebecor, Publicity, Mobilicity -- after half-a-decade of tepid policy measures and intransigent incumbents bent on keeping the wireless market their only tightly-knit domain. What these results suggest, especially in the US, is that the lack of prepaid plans (and MVNOs) in Canada is a barometer of weak market forces, rather than ill-explained cultural predispositions against pre-paid wireless plans.

In short, the relative lack of prepaid plans in Canada is not reason to squelch attempts to compare Canada with the rest of the world, however, but a sign that "the low end" of the market is being neglected as Rogers, Telus and Bell keep their eyes fixed on the big prize: higher ARPUs. In Church and Wilkins' world, and by extension the incumbent interests they have chosen to defend, the poor don't matter, while in the OECD and FCC's data, and our vision of the world, they do.

That Canada is out of line with global trends is not only shown by its mediocre standing in the Wall Report and its even less edifying rank in the combined OECD and FCC dataset that we have compiled (i.e. 27th place, as shown in Table 3 above), but also in terms of ARPU, an acronym that stands for "average revenue per user", the holy grail of big three – Rogers, Bell and Telus, and indeed an industry standard, albeit one that is pursued more single-mindedly by some (dominant players) than others (challenger brands).

And while Church and Wilkins are right that ARPU is not a perfect proxy for price, it is indicative of prices and, moreover, what consumers pay at the end of the month. When we take this as our measure, Canadian's cellphone bills are rising faster, much faster, year-after-year, than the OECD or G7 countries, or most other comparable countries, such as France and the UK but not in the US – a point that is consistent with CRTC (2013) findings and the Wall Report (2013). In fact, while ARPU is rising sharply in Canada it is gradually *declining* across the OECD, as Figure 5 shows for the period from 1998 to 2012.

Figure 5: Average Revenue Per User (per Annum): Canada vs OECD, G7& and Select Countries, 1998-2012



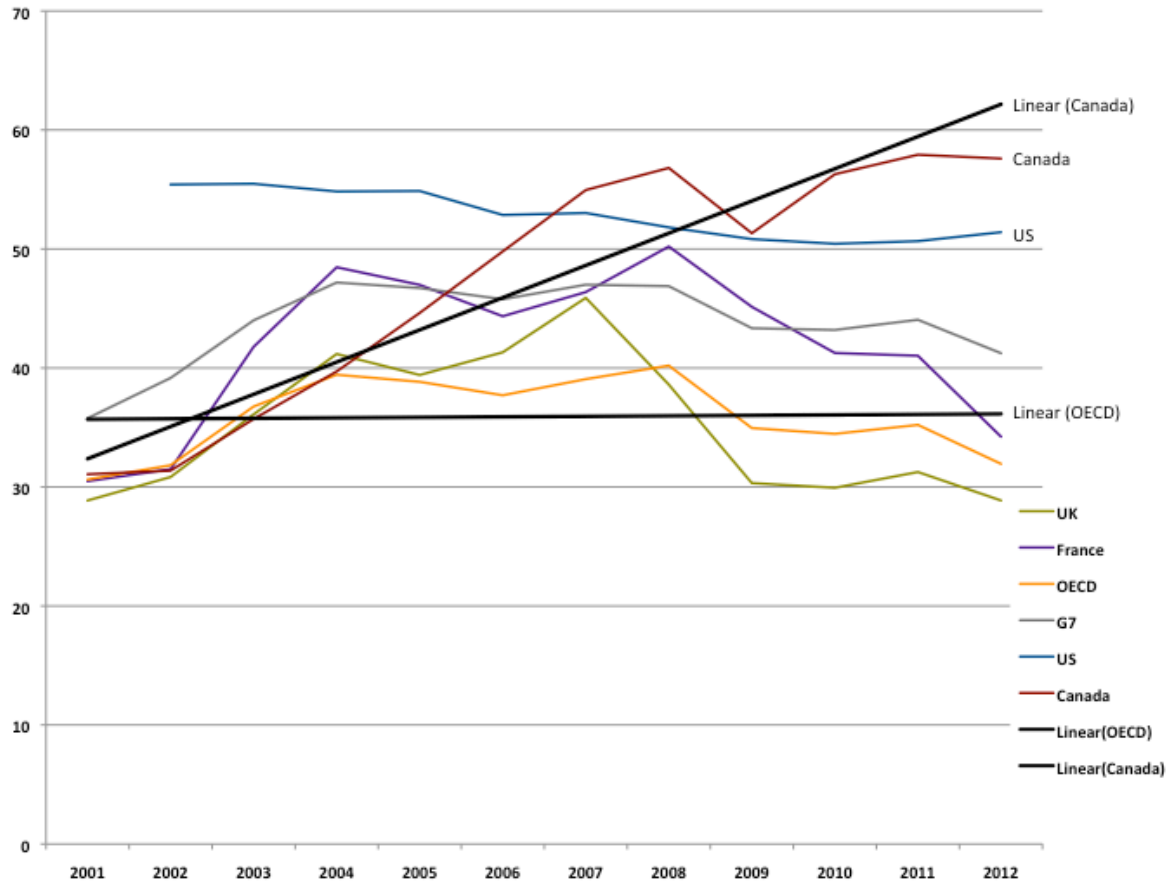
Source: OECD (2013). *Communications Outlook*.

Figure 5 is worth pausing to examine further a moment. Several things stand out, in addition to the obvious opposing trends between rising ARPUs in Canada and steadily declining ones on average across the OECD. Note, for example, the UK, where consumers pay about forty percent of what Canadians pay. Note too the sharp drops in pricing in the UK and France as competition ramped up, and new fourth players cemented their place in the market. Note, too, that there's a slight hiccup, when Canadian cellcos girded for the

arrival of new entrants, then once again let their prices – or ARPU, to be technical – soar once it became evident that Wind, Publicity and Mobile would be merely gnats on the backside of elephants, and easily foiled through a thousand and one ways to inflict damage on new comers where capital intensity is high and control over essential facilities dear.

Switching the source to the BAML *Global Wireless Matrix* does not change the story one iota. It is worthwhile showing to illustrate the point.

Figure 6: Average Revenue Per User (per month): Canada vs OECD, G7& and Select Countries, 2001-2012



Source: BAML (2013). *Global Wireless Matrix*.

The same is true whenever we use the BAML report on each of the measures studied, but we have chosen not to for reasons outlined earlier and because it only extends back to 2001, under the best of circumstances, and often times just to 2006. The OECD datasets typically go back to the mid- to late-1990s.

As we showed at the outset of this study, the idea that we need to take account of use is absolutely correct, but the high levels of use in Canada are not an explanation of high ARPU but rather (1) a historical fact of Canadian life and (2) consistent across wireless, internet and, indeed, almost all media. Talking of 'consumer surplus', as Nordicity's (2013) study for the Canadian Wireless Telecommunications Association (CWTA) – the industry association representing the big 3 – does is a smokescreen for what economists call price inelasticity, i.e. a willingness to pay dear for things close to one's heart, or that are considered to be a basic necessity of life (Pike & Mosco, 1986).

Communication is one of those basic things of human life. And remember, based on tallying up our use of different media – by GBs uploaded and downloaded, time spent watching the telly or on the internet, watching videos online (porn), using smartphones, tablets, and so on and so forth -- Canadians are, as we said, at the very beginning, Number 1. Smartphone adoption as a percentage of users may be high in Canada, as Church and Wilkins say it is, but taking the extremely low base of users in Canada as the denominator and concluding that because so many existing users are taking up smartphones the big three are doing a wonderful job meeting Canadians' needs is misleading, for two reasons.

First, the take-up of smartphones *everywhere* is taking place fast, and so even if the data means what Church and Wilkins (2013) assert it does, it is misleading because the gap is very likely to be fleeting. Second, and more importantly, the real evidence of the current state of affairs is indicated in Table 3 above: Canada ranks 25th out of 33 countries on the measure of penetration.

Furthermore, as we illustrated earlier, there is little reason to be sanguine given the gaping divides between the upper and lower ends of the income scale when it comes to who does and does not have a smartphone, i.e. 40% of those in the lowest income quintile go without, while a quarter of the next rung up are in the same position, compared to a penetration rate of 92% for those in the upper income bracket (see Figure 2 above). That this can pass as serious commentary in Canada is an index of the poverty of the discussion, and it is not only present in studies like those of Church and Wilkins and Nordicity, but run-of-the-mill amongst too many of our supposedly topflight journalists. It is more than a tragedy of market forces, it is a poverty of public discourse that does little to aid people's ability to understand what are immensely difficult issues to get to the nettle of. If you think reading cellphone contracts is hard, try looking at spectrum data, or even getting it! Canadians deserve better.

However, even for the hard of heart, the issues are not just of inequality but also real commercial pressures. For example, there is very strong pressure being placed on wireless carriers to lower there roaming charges in Europe, by Latin American trade agreements, and, especially by Chinese and Indian cellcos who are exerting strong pressure on their counterparts in the rest of the world to drop their termination rates. That international rate settlement issues are one of the premier issues in telecommunications is as old as the

International Telecommunication Union (est. 1865), and that remains true today (Melody, 1997).

In fact, the pressures are becoming more acute as Canadian companies compete and work with Chinese and Indian businesses that pay international roaming charges that are often 1/10th those, and *less*, than in Canada, the US and other OECD countries. The pressure to harmonize roaming rates downwards, steeply, is great, and serious consideration is now being given to making it a front-burner international trade issue that ought to be taken up within the WTO in ways that expand upon existing agreements covering telecoms, media, internet and ecommerce. As the OECD (2013) observes, "a growing number of industry leaders recognise that high prices for international mobile roaming as detrimental to their relationship with their customers, and a significant barrier to trade and travel in OECD economies" (p. 21).

Far from the politics of wireless being driven by radicals, public interests and tenured professors, the realpolitik of global capitalism is bearing down on Canada's cellcos with full force. The government's actions are being driven by a confluence of such forces, and any suggestion that it is pandering to the masses and playing populist politics is oblivious to the array of political, economic and cultural, to say nothing of technology itself, that are making the cellcos' positions more and more precarious.

Yet, as if to demonstrate how tone deaf the big three cellcos are to all this, this is how Mirko Bibic, BCE's Executive Vice President and Chief Legal & Regulatory Officer, responded to the CRTC's examination of international roaming charges and request for information that it needed to do so: "While the Companies are providing the requested information, we believe the Information Requests themselves and any related process the Commission may be considering are without legal foundation. . ." (Bibic, 2013, p. 2).

Bibic may be right, legally speaking, but on all of the other grounds in play, that is doubtful. Yet, perhaps Bibic sees the writing on the wall? The CRTC does seem to have a bit of fire in its belly with J. P. Blais at the helm, and the stirrings across the government outlined above may be a bit of twitchiness in the industry. The European Commmision is moving to abolish roaming charges altogther. Perhaps Bibic, and the "other companies" he is obviously speaking on behalf of in his letter, as the manner of address makes clear, fear that Canada might be next in line?

The 'pricing problem' in Canada is not limited to just mobile wireless services, or domestic and international roaming charges, but reaches across the board. Poor conditions in terms of wireless are aggravated by the fact that Canada ranks just as poorly on wireline services as well as an overall composite view that brings both mobile wireless and wireline services together to give us a picture of the whole. Tables 4 and 5 do just this.

Table 4: Composite Wireline Ranking: Penetration, Speed, Price (34 Countries), 2011-2012

Country	Penetration per 100 Population (OECD)[1]	Rank by Actual Mean Download Speeds (FCC)[2]	Rank by Mean Cost of Monthly BB Plans (FCC)[2]	Rank by Composite of 6 Price Baskets (OECD)[1]	Final Wireline Rank
Korea	4	1	2	1	1
Denmark	3	6	10	6	2
Germany	9	12	1	8	3
Estonia	22	7	3	4	4
Japan	17	5	9	5	4
Netherlands	2	3	16	18	6
Sweden	12	2	4	21	6
France	5	18	5	20	8
Iceland	7	10	8	24	9
Switzerland	1	4	34	14	10
Belgium	10	8	18	18	11
Finland	14	20	7	13	11
United Kingdom	8	24	14	8	11
Slovak Republic	31	15	15	2	14
Austria	19	23	13	10	15
Czech Republic	29	13	11	16	16
Luxembourg	13	9	22	26	17
Israel	20	27	12	12	18
Hungary	28	21	20	3	19
Norway	6	16	23	31	20
Portugal	26	11	24	17	21
Canada	11	19	26	25	22
United States	15	14	30	27	23
Slovenia	23	25	31	7	23
Italy	27	31	6	23	25
Greece	24	30	19	15	26
Poland	30	26	21	11	26
Australia	18	22	28	22	28
Spain	21	17	27	33	29
New Zealand	16	28	29	27	30
Ireland	25	29	25	30	31
Turkey	34	33	17	29	32
Chile	32	32	32	32	33
Mexico	33	34	33	34	34

Sources: OECD; FCC.

Table 5: Composite Wireless + Wireline Ranking, for Penetration, Speed, Price (33 Countries, 2011-2012

Country	Final Wireless Rank	Final Wireline Rank	Final Top-Level Rank
Denmark	1	2	1
Korea	6	1	2
Sweden	2	6	3
Japan	8	4	4
Finland	2	11	5
Germany	15	3	6
Estonia	17	4	7
Iceland	12	9	7
Austria	7	15	9
Norway	4	20	10
France	20	8	11
Luxembourg	11	17	11
Czech Republic	14	16	13
Slovak Republic	16	14	13
Poland	5	26	15
United States	9	23	16
Switzerland	24	10	17
Netherlands	29	6	13
Slovenia	12	23	18
Australia	9	28	19
United Kingdom	28	11	21
Canada	18	22	22
Italy	21	25	23
Portugal	27	21	24
Hungary	30	19	25
Israel	31	18	25
Ireland	19	31	27
Spain	21	29	27
Greece	25	26	29
Turkey	21	32	30
New Zealand	25	30	31
Chile	32	33	32
Mexico	33	34	33

Sources: OECD; FCC.

The long and short of it is, no matter how we look at it, or the sources we use, Canada's telecoms ecology is flagging, badly. To be sure, there are those who point to last year's high levels of investment in wireless infrastructure, as the big three turned up the heat on the role of 4G/LTE networks. Those who applaud them for doing so are right. It needs to be done. However, put things into a longer perspective, and what we see is flat spending against rising revenues. This means two things.

First, removing the blinkers to look beyond yesterday to examine trends over the last five, ten and for however long data can be had – since 1997 for the OECD data – and something else emerges. Thankfully, it is a mixed picture for once, and not so unrelentingly bleak. Let's start with the good news.

On capital investment in wireline infrastructure, Canada does remarkably well. Indeed, it ranks third out of thirty-four OECD countries. Table 6 shows the results of our analysis of the data based on three measures of wireline network investment – capital expenditures as a percentage of revenues, on a per connection basis and a per capita basis – and across a time frame the encompasses one, five and ten year views as well as one that goes back as far as 1997 when the available data set from the OECD begins.

The idea of using fixed time frames is important in the exercise because of the very strong tendency in the literature to cherry-pick years to suit the outcomes desired. While that might make good news for clients, it is junk science. The underlying data sets are available for all of these steps, or will be shortly, on the CMCR website under "The Wireless Project" tab (as is the case for all of the data being recited here and which underpins all of our tables, figures, charts and graphs).

There is no gainsaying the data and the resulting ranking achieved with respect to investment in wireline infrastructure. It is *the* bright spot in all of the data we have gathered with respect to concentration, investment, penetration, price and speed, and credit is due where credit is due. It is also an outlier.

Table 6: Composite Ranking of Capital Investment in Wireline Infrastructure, 1997-2012

Wireline	Composite Rank Telecom Capex/Revenue (OECD)	Composite Rank Public Telecom Capex/total Com Access	Composite Rank Public Telecom Capex/Per Capita	Composite Wireline Rank Investment
Australia	9	1	2	1
Netherlands	4	6	5	2
Canada	6	3	7	3
Denmark	8	5	4	4
Switzerland	17	2	1	5
New Zealand	3	7	10	5
US	17	4	3	6
Luxembourg	14	8	6	7
UK	10	10	9	8
Iceland	19	8	8	9
Slovenia	9	13	14	10
Sweden	7	18	13	11
Chile	1	14	24	12
Japan	20	9	11	13
OECD	16	13	12	14
Belgium	16	15	15	15
France	21	11	17	16
Slovak Republi	2	22	26	17
Italy	15	21	16	18
Korea	15	19	19	19
Ireland	26	12	16	20
Greece	11	23	21	21
Spain	23	16	17	22
Norway	24	17	18	23
Poland	5	27	29	24
Israel	25	23	20	25
Portugal	21	24	23	26
Czech Republic	18	28	22	26
Hungary	13	29	28	27
Turkey	9	32	30	28
Finland	28	24	20	29
Austria	22	26	24	29
Mexico	12	31	30	30
Germany	29	25	25	31
Estonia	27	30	27	32

Sources: OECD.

That the portrait that emerges with respect to wireline infrastructure is an outlier is immediately apparent as soon as we turn the focus to investment in wireless, using the same methods just described, but with the addition of the BAML *Global Wireless Matrix* given that Church and Wilkins (2013) are so chuffed about what they see as Canada's stellar performance when it comes to the capital intensive business of investing in wireless

infrastructure. The problem with their interpretation, however, is that it is limited to one source – the BAML report – and to one year. We combine that report with OECD data and, as per our usual method, take snapshots across time and tally them up to show the results. And those results, as Table 7 shows, are less than edifying, with Canada, rather than being at the top of the heap as Church and Wilkins would like us to believe but languishing in the bottom third: 19th out of 34 countries and well below the OECD average. This is not the stuff of world class mobile wireless infrastructure builders.

Table 7: Composite Ranking of Capital Investment in Wireless Infrastructure, 1997-2012

Wireless	Composite Rank Mobile Capex (OECD)	Composite Rank (BoA) Mobile Capex	Composite Mobile Rank (OECD+BoA)
Japan	1	3	1
Slovak Republic	3	3	2
Turkey	4	5	3
Czech Republic	6	6	4
Austria	2	11	5
Mexico	7	7	6
Italy	9	7	7
Belgium	11	7	8
Greece	10	12	9
Finland	16	6	9
Israel	8	14	10
Hungary	12	12	11
Korea	23	2	12
Chile	5	20	12
OECD	20	6	13
Estonia	14	14	14
Norway	13	16	15
Luxembourg	15	15	16
France	18	13	17
New Zealand	26	5	17
Australia	17	15	18
Germany	31	1	18
Denmark	28	8	19
Canada	27	9	19
Portugal	34	4	20
Ireland	19	19	20
US	30	10	21
Netherlands	25	16	22
Sweden	22	19	22
Poland	21	21	23
UK	33	11	24
Spain	32	18	25
Switzerland	35	17	26
Iceland	29	29	27
Slovenia	24	24	28

Sources: OECD.

No matter how we slice things, Canada is a poor performer on specific measures and regardless how far out we stand back to gain a proper gauge of things. However, there is one thing upon which Rogers, Telus and Bell to excel: profits. One might believe otherwise after reading Church and Wilkins study, where they hone in on the free cash flow of Rogers wireless services since the mid-1980s to tell a story of long, low profit, and sometimes even profitless years, followed by some recent years in the sun.

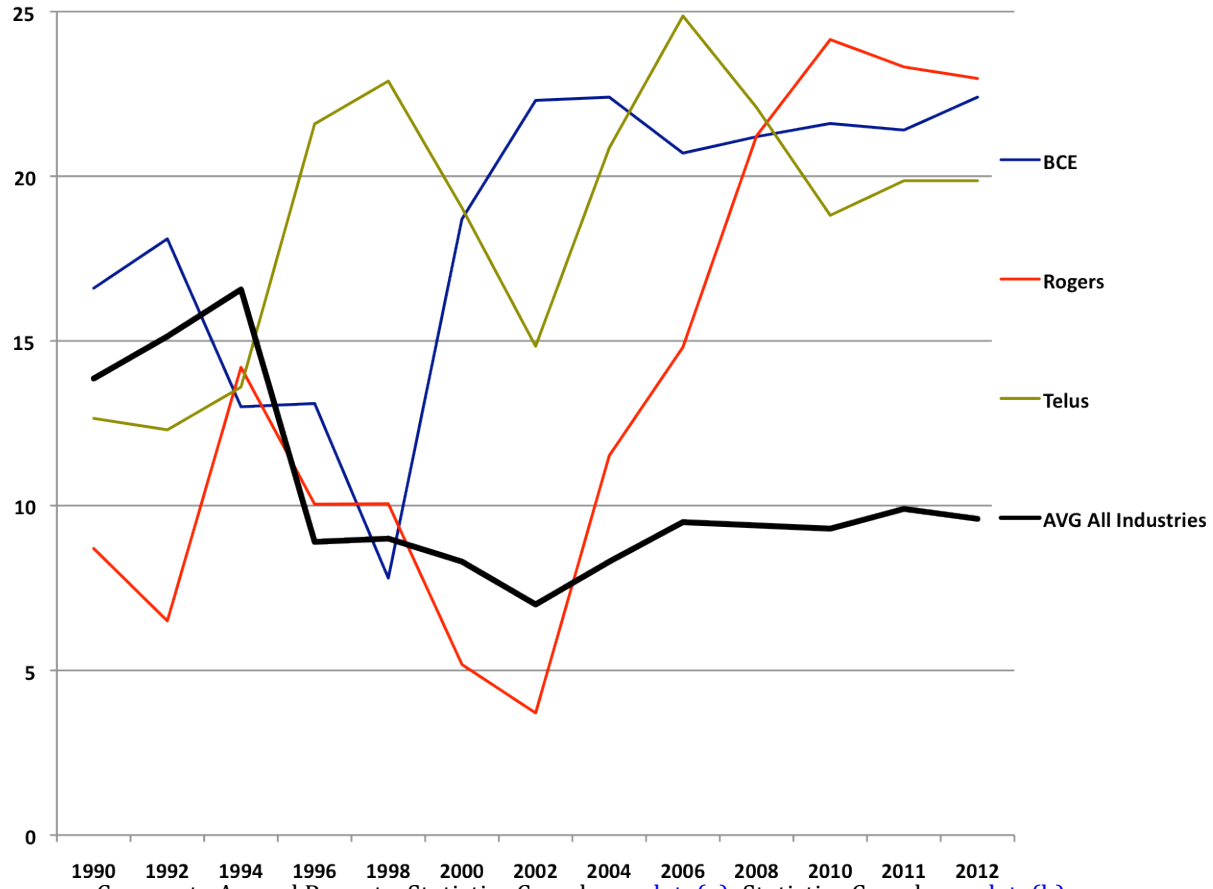
The story is bogus. Rogers is not typical of the big three but rather the one that had to lay out the deepest investments when it was the outsider rather than the insider it has become in order to breakdown the entrenched position that Canada's telephone companies had built up of a century. Thus, over a successive series of technological innovations – i.e. four generations of wireless network technology and accompanying devices – not one three decade long single product 'lifestyle' as they misleadingly suggest, Rogers had to plow in very substantial investments to breakdown the calcified telco monopolies across the country. It succeeded, even though profits were slim before the turn-of-the-21st century, not just by industry standards but by the average of *all* industries in Canada. In Church and Wilkins telling, that Rogers has raked in 'supranormal' profits in recent years is not a sign of dominant market power and cause for concern, but rather the company's just reward for its years in the risky wilderness.

The problems with this are account are too many to recount here but a few indications will help to set the tone. First, the data they rely upon is unavailable to anyone other than themselves, or at least not to independent scholars and the public generally so that they can pick away at the numbers to see what they discover. It's a closed data set. But that's just a technical issue, albeit a hugely important one and one that mars the analytical landscape from one media issue to the next, with Industry Canada and CRTC workers often eager to help but fearful of giving away the farm when it comes to 'commercially sensitive data. The extent to which helpful workers at both organizations were consulted during the course of research for this project, but their timidity in handing out what is needed, is striking, and all the more compounded by the fact that at the same time all hands on deck are needed, the Government's cutbacks to Industry Canada are cutting deep and disabling critical skills and insights when we need them most.

But back to the case at hand with respect to profits in the wireless industry, and at Rogers, Telus and Bell specifically. For one, it is a mistake to generalize from Rogers a tale about Telus and Bell and the wireless industry as a whole. While Rogers may have indeed have had a very hard go of things in the early years, this was not the case for either Telus or Bell, whose operating profits have been well above Rogers and the average for *all* Canadian industries since the first spectrum licenses rolled off the government printing presses in 1983. That might be a bit of an exageration, since the data at my disposal only runs to 1990. Ever since that time, however, operating profits for Bell and Telus have been at or well-

above those across all industries in Canada year-after-year except for Telus in 1990, 1991 and 1994, when they fell slightly short. Ever since that time, they have consistently been two- to two-and-a-half average industrial profits, with Rogers finally joining the fold as of 2006, albeit already having enjoyed many many years of healthy profits in the meantime, i.e. between 1990 and 2005, Rogers' average operating profits were 9.1%, just under the average for all industries of 10%. Since 2005, Rogers, Bell and Telus's have averaged operating profits of 20.1%, more than twice the healthy 9.3% enjoyed by the rest of the country's industries. Figure 7 below illustrates the point.

Figure 7: Operating Profits, Rogers, BCE and Telus vs Canadian Industry Average, 1990-2012

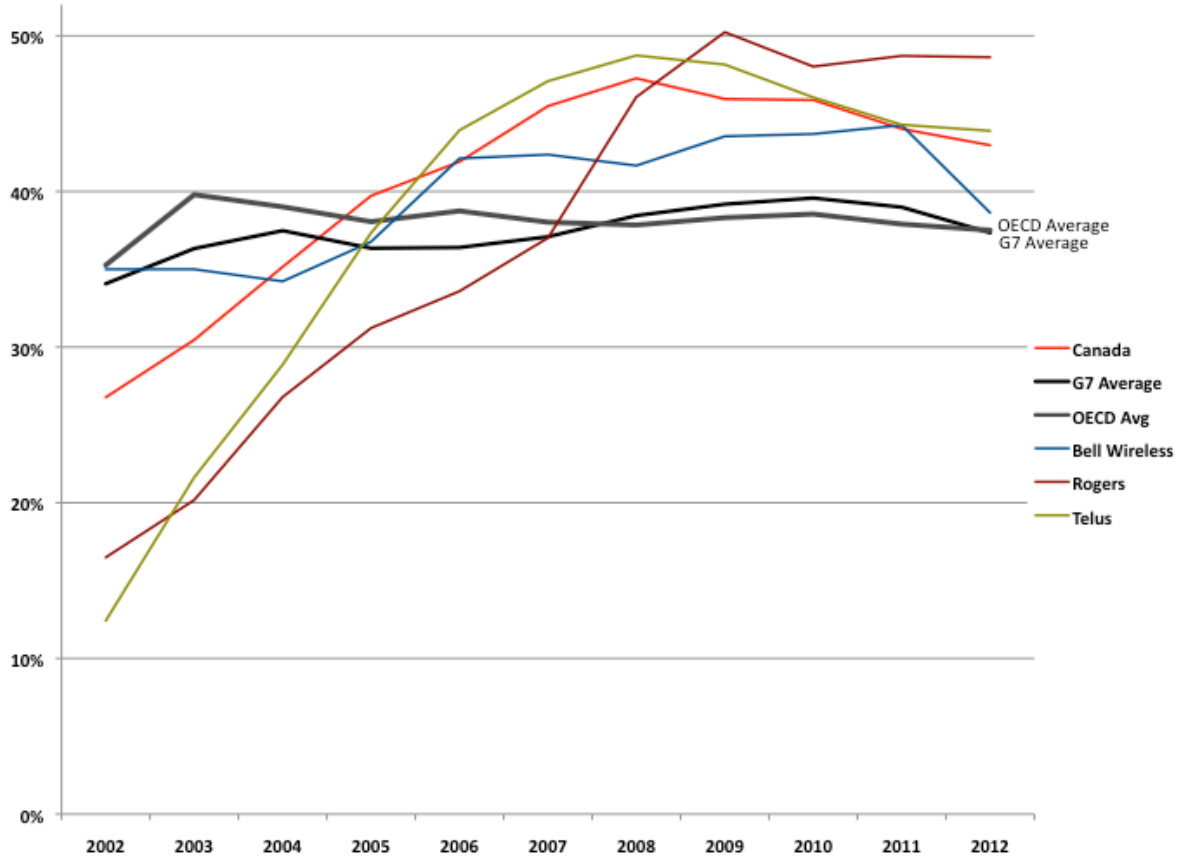


Sources: Corporate Annual Reports; Statistics Canada, no date(a); Statistics Canada, no date(b).

Church and Wilkins pick one measure of profit – free cash flow – for one company – Rogers -- and generalize to the industry as a whole. This is wrong. Figure 6 above clearly shows teh weakness of such claims when considered on their own merit and especially when seen up against the standards for prevailing operating profits for industry as a whole.

The story stays pretty much the same regardless of whether we look at things from operating profits, return on equity and, the incumbent's favourite, EBITDA. Moreover, it is not simply the case that Telus, Bell and, to a slightly lesser extent, Rogers have accumulated high levels of profits for a very long time, and relative to the average of all other industries in Canada, but by international comparative standards too. Figure 7 illustrates the point.

Figure 8: Bell, Rogers, Telus & Canada EBITDA vs OECD + G7



Sources: Corporate Annual Reports; Statistics Canada, no date(a); Statistics Canada, no date(b).

Conclusion and Where to Go from Here?

This study has shown that Canada shares a similar condition with many, indeed, almost all countries that we have studies: high levels of concentration in mobile wireless markets. Canada is not unusual in this regard, as we have seen, and indeed no matter whether we look at things from the perspective of 19 countries, thirty-four or fifty-seven the answer in pretty much all cases is the same: concentration levels in mobile wireless markets are 'astonishingly high everywhere'.

The difference between Canada and elsewhere, however, is whether or not there is the resolve to do anything about this state of affairs. So far, the answer to that question is not all that promising, although there are a few bright spots on the horizon and it is possible that they will light the way yet.

For the time being, however, the tendency is to deny reality, even when incontrovertible evidence stares observers in the face. This, however, is symptomatic of a bigger problem, namely that in Canada the circles involved are exceedingly small and they like to hear the sound of one another's voices all too much and do not look kindly on those who might rock the tight oligopoly that has ruled the industry from the get-go. When by any conventional standard of mainstream economics, mobile wireless markets are remarkably concentrated, trained economists look the other way. When fundamentally new phenomenon are taking root in country after country around the world, the point to dying breed. The reality, however, as we have shown is that, while highly concentrated, there are new 'maverick brands' like T-Mobile in the US, Hutchison 3G in the UK, Hot Mobile and Golan Telecom and most famously of all, Iliad and Free in France.

These companies share many things in common: All have faced incumbents bent on giving them a still birth; they have all played the role status quo 'sh*t disturber', pushing down prices, driving massive growth in contract free wireless plans, unlocking phones, and doing their best to dig in for the long haul. They have also all relied on the state for a fundamental ***public*** resource that underpins the entire mobile wireless set-up: spectrum, an immensely valuable public resource that government grant privileges to use in the return – at least in theory – to do things that serve the public well rather than just fill the coffers of the state treasury. Governments have had to choose, inevitably, between who will get access to this resource, and crucially who will not. This is not exceptional, it is the unavoidable norm, although one could be forgiven for not having a clue about any of this for several reasons.

One, the incumbents themselves have fought tooth-and-nail against not just new upstarts (TMUS, Wind, 3, Free, Hot Mobile, Freedom Pop, etc), but gone as far as the conceivable might in trying to stare down democratically elected governments in the name of trying to preserve their own domination of the spectrum. In Canada, 90% of spectrum actively in use is held by just three companies as of November 14th, 2013: Rogers (41%), Telus (25%) and Bell (24%). The rest is scattered amongst Sasktel, MTS and a handful of "new entrants": Quebecor (Videotron), Wind, Mobilicity and Public (recently acquired by Telus).

The big three, not unusually, and much in the spirit of those who stand in a similar place in other countries throughout the OECD and around the world to hold back the tide and defend their privileges. Last summer's "wireless wars" were simply the expression of that reality, as Bell, Rogers, and Telus fought on all fronts to what they perceived the double-barreled threat of Verizon and the government's relatively newfound resolve to foster more competition in Canada's mobile wireless market, to drive down domestic and international roaming charges, and to otherwise give Canadians access to world class

wireless services whereas now, as this study shows using comprehensive, long term and systematic date from the FCC, OECD, Ofcom, Wall Communications, CRTC, and many other sources as cited, Canada's mobile wireless market is a lackluster performer.

We show:

- wireless markets in Canada, whether measured by revenue, spectrum held, spectrum in use or subscribers, or at level of the country as a whole, specific provinces and Canada's nine biggest cities – Toronto, Montreal, Vancouver, Ottawa-Gatineau, Calgary, Edmonton, Quebec City, Winnipeg, Hamilton -- are remarkably concentrated;
- in terms of standings in international league tables, Canada's wireless market, based on a composite score using price, penetration and speed, ranks 18th; the US ranks 9th;
- in terms of penetration, or access and use, matters are worse: Canada ranks 25, while on price it ranks 27th, yet despite all this Canadians are Number 1 when it comes to how much time the spend on the internet, how many GBs of data they upload and download, smartphone data they send and receive, use Wikipedia, log onto Facebook and watch the telly;
- Canada also ranks very highly when it comes to capital investment in its wireline infrastructure, no matter how you measure it and when measured for one, five, ten or more years;
- The same cannot be said of wireless despite the fact that Canada fared very well last year because Bell, Rogers and Telus flipped the switch and began rolling out in a substantial way LTE/4G networks. Stretch the time horizon, however, and that standing collapses and Canada falls toward the bottom third of the pack – 19th out of 28 places (accounting for 'ties').

Numerous other findings emerge in the report too numerous to outline here. However, one thing that does stand out is that it is those governments that stare reality in the face and accordingly, while stiffening their spine against the backlash that they will inevitably meet when they encounter some of the biggest, and most profitable, companies in the country. That is the lessons learned by governments and regulators everywhere and whether or not countries with democratic governments get the media, wireless and internet capabilities they need to live, love and thrive in the 21st century depends on nothing less than the right choices being made. Those choices now stare Canadians in the face. How we act, and our government moves ahead, will set the baseline for how mobile wireless media in this country will evolve for at least the next two decades – the length of the licenses to be awarded in the upcoming 700 MHz spectrum auction – and probably for a lot longer than that!

Final Words: Coming Soon.

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