



August 2013

An Assessment of Spectrum Auction Rules and Competition Policy

by Steven Globerman





August 2013

An Assessment of Spectrum Auction Rules and Competition Policy

Steven Globerman

Contents

Summary	❖	5
1 Introduction	❖	6
2 Spectrum auction rules and related policies	❖	9
3 Competition, consumer welfare, and efficiency	❖	14
4 Market structure and competition in the Canadian wireless sector: some evidence	❖	17
5 Evaluating the case for competitive handicapping	❖	22
6 Ensuring workable competition	❖	28
7 Summary and conclusions	❖	32
References	❖	34
About the author	❖	37
Acknowledgments	❖	37
Publishing information	❖	38
About the Fraser Institute	❖	41
Editorial Advisory Board	❖	42

Summary

This paper addresses the Canadian government's controversial limits (or caps) on the blocks of spectrum that can be acquired for the upcoming auction of 700 MHz spectrum on January 14, 2014. Large Canadian carriers (TELUS, Bell, and Rogers) have expressed concern over Verizon's possible participation in the auction. While the perceived scenario of Verizon acquiring one or more smaller wireless carriers and then successfully bidding for prime spectrum has garnered national attention, the broader issue of whether the policies being implemented by the government are in the interests of Canadian wireless customers is equally significant. This paper argues that preventing large incumbent carriers from unduly restricting competition in the future can and should be addressed through the Competition Act, rather than through "handicapping" the competitive process, including spectrum auction caps.

1 Introduction

Spectrum is a critical input to the production of communication services. The radio portion of the electromagnetic spectrum spans a specific range of frequencies over which signals can be transmitted. Since the range of frequencies is fixed and limited, frequencies must be allocated to ensure against signal overlap and interference. Auctions are now used in Canada and many other countries to allocate this scarce input to individual carriers.

For the upcoming auction of 700 MHz spectrum, recently announced to take place on January 14, 2014, the Canadian government is imposing a limit (or cap) on the blocks of spectrum that can be acquired by eligible bidders and their affiliates. A similar limitation on spectrum acquisition will be imposed in a future auction of 2500 MHz spectrum.¹ As a practical matter, the rules establishing caps on the acquisition of the spectrum put up for bid limit the amount of spectrum that can be acquired by each of the large, incumbent wireless carriers. The intended purpose of the caps is to make it easier for entrants and smaller existing competitors to acquire spectrum in order to strengthen competition in Canada's wireless sector.² The rules for the upcoming auction represent a continuation of the government's policy to make spectrum more cheaply available for smaller carriers with the goal of promoting the emergence of a fourth large carrier to compete against the existing incumbent carriers.³

In its announced licensing framework for the 700 MHz band, the policy objectives of the government are set out as follows: 1) Sustained competition in the wireless telecommunications services market so that consumers and businesses benefit from competitive pricing and choice in service offerings; 2) Robust investment and innovation by wireless telecommunications carriers so that Canadians benefit from world-class networks and the latest technologies; and 3) Availability of these benefits to Canadians across the country, including those in rural areas, in a timely fashion.⁴

-
- 1 Sections of spectrum are called "bands" which, in turn, are subdivided into "blocks."
 - 2 In the 2008 auction of 105MHz spectrum, Industry Canada set aside spectrum that could be bid on only by new entrants. For an assessment of that auction, see Hyndman and Parmeter, 2013.
 - 3 The large incumbents include TELUS and Rogers which compete nationally, the Bell Group which competes in all provinces but Manitoba and Saskatchewan, Sasktel and MTS which compete in Saskatchewan and Manitoba, respectively. However, TELUS, Rogers and Bell are much larger than Sasktel and MTS. Hence, in the remainder of the paper, reference to large incumbents encompasses TELUS, Rogers and Bell.
 - 4 See Industry Canada (2013).

The spectrum auction rules are buttressed by other rules and regulations that effectively constrain the ability of large, incumbent carriers to acquire spectrum through license transfers or corporate acquisitions, as well as promote access to the incumbents' networks by expediting roaming and tower sharing agreements.

As a practical matter, the rules establishing caps on the acquisition of the spectrum put up for bid limit the amount of spectrum that can be acquired by each of the large, incumbent wireless carriers. The intended purpose of the caps is to make it easier for entrants and smaller existing competitors to acquire spectrum in order to strengthen competition in Canada's wireless sector.

The established national wireless carriers (TELUS, Bell, and Rogers) have expressed strong opposition in the past to what they see as asymmetric rules for competition in the sector. This opposition has reached a crescendo with the prospect that Verizon will participate in the upcoming 700 MHz auction. In particular, the established carriers have complained strongly about rules that limit each to bid for only one of the four prime blocks of spectrum, and two of the seven blocks available in total, whereas smaller carriers, or a new entrant such as Verizon, can bid for up to two of the four prime blocks.⁵ The perceived scenario of Verizon acquiring one or more smaller wireless carriers and then successfully bidding for prime spectrum has focused national attention on the issue of whether Verizon will be an undue beneficiary of implicit subsidies from Canadian taxpayers and shareholders of the established carriers in order to establish a profitable business in Canada. It also raises the broader issue of whether the competition policy being implemented by the government is in the interests of Canadian wire-

less customers, and, more generally, in the country's best interests.

This discussion paper seeks to contribute to the current discussion surrounding the auction rules and related government regulations affecting wireless communications in Canada. The paper argues that while the issue of the competitiveness of the wireless sector in Canada is unsettled, initiatives to ensure that the large established carriers do not unduly restrict competition in the future can and should be addressed through the Competition Act, rather than by "handicapping" the competitive process, including spectrum auctions. As well, the likelihood of established carriers being able to restrict competition would be substantially diminished if all existing restrictions on foreign ownership in the sector were eliminated. In all other respects, efficient competition is more likely to be realized if asymmetric rules regarding the acquisition and use of assets, including spectrum licenses, are eliminated. Efficient competition would also be facilitated if social goals such as the provision of high-speed broadband access to rural subscribers were paid for directly through a broad tax or levy on all Canadians, rather than through directives for specific carriers to build out capacity in rural areas financed through internal cross-subsidies.

5 See George Cope (2013), "An open letter to all Canadians," Bell Canada.

The paper proceeds as follows. Section 2 contains a discussion of the rules surrounding the upcoming 700 MHz spectrum auction, as well as other rules concerning the acquisition and transfer of spectrum, and roaming and tower sharing agreements. The linkages between competition, efficiency, and consumer welfare are addressed in Section 3. The main points here are that the number of competitors in a market can be an unreliable guide to the strength of competition in that market, and that markets can be workably competitive with as few as two or three competitors. Workably competi-

... the number of competitors in a market can be an unreliable guide to the strength of competition in that market, and that markets can be workably competitive with as few as two or three competitors.

tive markets are real-world analogues to the textbook model of perfect competition in terms of suppliers performing efficiently and maximizing consumers' surplus.⁶ Some evidence on the competitiveness of the wireless sector in Canada is summarized and considered in Section 4. In particular, recent evidence showing that Canada's wireless carriers perform as well or better than their US counterparts is presented. Since many observers argue that the US wireless sector is workably competitive, this recent evidence supports an extension of that conclusion to Canada. Section 5 contains an assessment of possible justifications for the Canadian government's policy of handicapping large incumbent wireless carriers in order to promote

the entry or growth of rivals. The main conclusions are that handicapping incumbents can have serious adverse consequences for efficiency that will, in turn, reduce the welfare of Canadian consumers of wireless services. Alternative and preferable policy initiatives to strengthen and preserve workable competition in Canada's wireless sector are discussed in Section 6. The paper concludes with a summary and conclusions in Section 7.

6 Consumers' surplus is the difference between the value that consumers gain from their purchases of a product and the amount they have to pay.

2 Spectrum auction rules and related policies

The upcoming 700 MHz spectrum auction is currently planned to take place on January 14, 2014, with another auction encompassing spectrum in the 2500 MHz band to follow sometime afterwards. The 700 MHz spectrum was used for analog TV broadcast services and became available for auction as broadcasters moved to digital transmission systems. The 700 MHz band requires fewer cell towers to cover a specific geographic area, making it particularly attractive for increasing capacity in densely populated urban areas. About half of the available spectrum in the 2.5 MHz band had been previously auctioned for broadcasting and wireless telephony. The 2.5 MHz spectrum is especially well suited for mobile broadband services. Prospective bidders must formally apply to participate in the 700 MHz spectrum auction by September 17, 2013.

The federal government announced the rules and format for the upcoming auctions on March 7, 2013.⁷ A total of five blocks of paired spectrum and two blocks of unpaired spectrum will be available in 14 service areas. A total of 98 licenses will be offered. The auction will use the combinatorial clock auction (CCA) format, which involves bidding on a package of licenses on an all-or-nothing basis, rather than bidding for individual licenses.

Spectrum caps

Perhaps the most controversial rule is that a spectrum cap of one paired spectrum block from what TELUS and others identify as the prime wireless spectrum will apply to all large wireless service providers.⁸ Hence, of the four “blocks” of prime 700 MHz spectrum that are planned to be auctioned, the three large national carriers are restricted to acquiring no more than one block each. A spectrum cap of two paired frequency blocks will apply to all licensees while unpaired blocks will not be subject to a spectrum cap. The upshot is that a large US-based carrier is legally able to bid for

7 Industry Canada (2013). See also Industry Canada (2012).

8 See Dobby (2013, July 18). The definition for large wireless service providers is based on a subscriber market share of 10 percent at the national level or 20 percent at the provincial level. See Industry Canada (2012), Part B: 7. A paired spectrum block is especially attractive to carriers because it allows different frequencies to be used in each direction of signal transmission which mitigates signal interference problems.

more commercially valuable blocks of spectrum than large, incumbent Canadian companies.

At the time of writing, it is unknown how many independent entities will register to participate in the 700MHz auction. However, it seems reasonable to infer that if the largest wireless companies in Canada are restricted in the amount of prime spectrum they can bid for, the price of the spectrum in question will be lower than it would otherwise be.⁹ An implication is that Canadian taxpayers will not capture the full monetary value of the property right being auctioned. Moreover, and unlike previous

The successful entry and growth of Verizon is ostensibly attractive to the Canadian government, since it is consistent with the federal government's long-standing goal of having at least four large facilities-based wireless carriers in every regional market in Canada.

instances when spectrum was either assigned or set-asides were used, with lower revenues earned by the government from the spectrum made available, part of any wealth redistribution benefit from the upcoming 700MHz auction may go to non-Canadian shareholders—assuming that Verizon is a successful bidder. There are reasons to believe that Verizon would find spectrum in the 700MHz band in Canada commercially attractive, since it is complementary to the spectrum band Verizon is operating on in the United States.¹⁰ Hence, there would be complementarities and scale economies in combining Canadian with US operations. The successful entry and growth of Verizon is ostensibly attractive to the Canadian government, since it is consistent with the federal government's long-standing goal of having at least four large facilities-based wireless carriers in every regional market in Canada.¹¹

Foreign ownership

The spectrum auction limit is part of a broader set of policies designed to encourage investment in facilities-based wireless communications services by companies other than the large incumbents. One notable policy change in this regard was the government's amending of Canada's telecommunications laws in the summer of 2012 to remove foreign ownership restrictions on facilities-based service providers that hold less than a 10 percent share of the total Canadian telecommunications market based on

9 For some evidence supporting this inference drawn from the 2008 spectrum auction in Canada, which set aside spectrum for new entrants, see Hyndman and Parmeter, 2013.

10 Verizon is already using 700 MHz airwaves to build a U.S. network capable of handling heavy data use such as streaming video.

11 See Trichur (2013, June 28). The issue of whether the relevant geographic market for wireless services is regional or national is beyond the scope of this paper.

revenue. Furthermore, foreign-owned companies that are successful in growing their market shares in excess of 10 percent of the total market other than by way of mergers and acquisitions will continue to be exempt from foreign ownership restrictions.¹² The change in the foreign ownership rules made it legally possible for Verizon, the large US-based wireless carrier, to make a preliminary takeover offer for Wind Mobile. It has been reported that Verizon is also in early-stage acquisition negotiations with another small Canadian wireless carrier (Mobilicity).¹³ These prospective acquisitions highlight an asymmetry in the government's policies toward mergers and acquisitions in the wireless sector. Specifically, current rules allow companies such as Verizon to acquire small wireless companies in Canada, while preventing the large incumbents from competing to acquire those same wireless companies, at least until early 2014.¹⁴

Spectrum license transfers

Another competitive asymmetry was underscored by Industry Canada's announcement this past June that the government would not allow spectrum that was set aside for new entrants to be transferred to incumbents prior to the expiration of the ban on those transfers in 2014. Presuming the ban is not renewed, the government will review all applications for spectrum license transfers on a case-by-case basis. While the criteria for allowing transfers have not been made explicit, then Minister Paradis suggested that transfer proposals likely to "diminish competition" would likely not be allowed.¹⁵ The implication is that transfer proposals put forward by any of the large incumbents may not be approved, thereby putting in jeopardy existing options to acquire spectrum already negotiated by the incumbents.¹⁶ In addition, a review process for license transfers is likely to limit the ability of the incumbents to bid for future license transfers compared to other carriers, including Verizon if it enters Canada, given the incumbents' relatively large existing market shares.

-
- 12 See Industry Canada (2012, March 14). Restrictions on foreign ownership under the Broadcasting Act will remain for companies with broadcasting distribution activities.
- 13 See Trichur (2013, July 24).
- 14 See Trichur (2013, July 24).
- 15 See Trichur (2013, June 28).
- 16 It is possible that the government will not apply its rules for competitive review of license transfers retroactively.

Roaming, tower sharing and coverage

In 2008, as part of its effort to encourage wireless competition, the government required all carriers to offer roaming options, including some provisions that were only available to new service providers. These requirements were put in place for five years. In announcing the 700 MHz and 2500 MHz auctions, the government also announced its intention to extend and modify those roaming policies, including shortening the timelines for the initiation of arbitration, as well as the arbitration process between companies negotiating roaming agreements. The 2008 government initiative also mandated antenna tower and site sharing; the auction announcement included proposed changes to this policy. Specifically, wireless carriers will be required to make

... the rules established by the government for the upcoming spectrum auctions, as well as policies that directly or indirectly affect the acquisition and use of spectrum and related wireless capacity, are meant to disadvantage the large incumbents relative to new entrants and smaller carriers.

available basic information on all towers to improve transparency and expedite the sharing process. Furthermore, timelines for the initiation of arbitration and the arbitration process will be shortened. Finally, the government will require companies having access to two or more blocks of paired spectrum in the 700 MHz band through auction license or through spectrum sharing to cover 90 percent of their current high-speed population within five years and 97 percent within seven years of licensing. In addition, general rollout requirements will be applied in upcoming auctions, as in previous auctions, requiring population coverage of between 20 percent and 50 percent, depending on the region, within ten years. While the provisions regarding roaming, tower sharing, and population coverage apply, in principle, to all wireless carriers, they are particularly relevant to the large incumbents that own the bulk of spectrum and physical capital used in the sector.¹⁷

Summation

In sum, the rules established by the government for the upcoming spectrum auctions, as well as policies that directly or indirectly affect the acquisition and use of spectrum and related wireless capacity, are meant to disadvantage the large incumbents relative to new entrants and smaller carriers. The fact that a very large, US-based carrier appears poised to take advantage of the rules has heightened controversy surrounding

17 In its open letter to all Canadians, Bell asserts that these rules would allow Verizon to piggyback on the networks of Canadian carriers. In particular, it will avoid investing its own money in rural areas and concentrate capital investments in a few big urban centers.

the government's policies and initiatives, particularly in light of the relatively short amount of remaining time that firms have to submit their applications in order to participate in the upcoming auction. Since the rules and policies surrounding the acquisition and use of spectrum are ostensibly meant to improve the welfare of Canadian consumers of wireless telephone services, it is appropriate to assess those rules and policies against this broad criterion. The rest of this paper provides an assessment.

3 Competition, consumer welfare, and efficiency

As noted in the introductory section, the government’s stated public policy goals are to promote lower prices and improve quality of service for Canadians, including Canadians living in rural areas. While individual consumers have different priorities, it is reasonable to assume that consumers of wireless services will consider themselves better off if they can acquire one or more of those services at a lower price, all other things constant. They will also consider themselves better off if they can buy “better” services without paying higher prices. The welfare implications are a bit more speculative if higher quality services are accompanied by higher prices, even if the “quality adjusted” prices of those services decline, since some consumers might prefer the old basket of services along with lower prices.¹⁸ For purposes of the discussion in this section, this qualification adds needless complexity and will be ignored.

While the government has set reserve prices for the 700 MHz spectrum to be auctioned, it is apparently willing to sacrifice auction revenue for a market structure that it believes will result in lower price-cost margins, lower costs, and improved quality of services. Although the government does not put it in these terms, the primary goal of its spectrum policy, including spectrum auctions, seems to be improved economic efficiency in “downstream” wireless service markets.¹⁹ Therefore, it seems appropriate to assess the government’s spectrum policy against the criterion of economic efficiency in downstream markets.

In general, there is broad agreement amongst economists that competitive markets produce outcomes that promote lower prices and better products for consumers.²⁰ There are certainly relevant caveats to this claim, particularly the possibility that research and development (R&D) that leads to substantial innovations might actually be encouraged if producers were somewhat protected from competition and, there-

18 This qualification is relevant if consumers have no choice but to “migrate” to the new set of services being offered.

19 It is possible that the goal of economic efficiency conflicts with the objective of providing rural subscribers with the same services available to urban subscribers, particularly if some form of cross-subsidization by the carriers is required to achieve the objective.

20 This perspective underlies calls for government to recognize the importance of designing auctions so that they produce competitive bids, as well as competitive downstream markets for wireless communications, see Cramton, Kwerel, Roston, and Skrypacz (2011).

fore, could expect to earn well above “normal” profits for the risks they assumed related to innovation.²¹ In fact, the available empirical evidence indicates that new and improved products tend to be introduced sooner into the marketplace and adopted more quickly when markets are more competitive. This seems to be particularly true for information and communications technologies (ICT). Indeed, the US productivity outperformance of European economies from the mid-1990s through the mid-2000s has been primarily explained by the faster rate of adoption of ICT by US companies which, in turn, has been credited to fewer regulatory restrictions on competition in the United States than in Europe.²²

... the available empirical evidence indicates that new and improved products tend to be introduced sooner into the marketplace and adopted more quickly when markets are more competitive. This seems to be particularly true for information and communications technologies ...

To the extent that increased competition is the primary instrument for improving the welfare of wireless consumers in Canada, the government’s spectrum auction policy then turns on two related questions: 1) Will the spectrum auction rules and related initiatives implemented by the federal government actually lower prices and improve the quality of services purchased by wireless consumers? and 2) Are there preferable ways to ensure that Canadian wireless consumers enjoy the full benefits of competition in the wireless sector? The first question is addressed in the remainder of this section, while the second question is addressed in a later section.

The channels of influence between market structure, competition and consumer welfare

To the extent that incumbent firms in an industry enjoy some degree of market power, they may be able to price their products above the short- and long-run incremental costs of producing those products. If they do so, the output produced will fall short of the efficient output rate. As a result, consumers will be less well off than they would be if prices were equal to incremental cost, as would be the case if the firms behaved as perfect competitors.²³ However, even when an industry’s market structure suggests the existence of potential market power, rivalry amongst incumbent firms can, and often does, result in prices

21 For a discussion of the theoretical arguments surrounding this issue, as well a review of the empirical evidence, see Schiantarelli (2008).

22 See Colecchia and Schreyer (2001) and Conway, de Rosa, Nicoletti, and Steiner (2006).

23 By definition, firms enjoy market power if they can significantly influence the price of a product by the amount of the product that they sell. Competitive firms cannot affect price by selling more or less of a product.

that approximate what would be charged in markets whose structures more closely approach the textbook model of perfect competition.²⁴ As McFetridge (2007) argues in his comprehensive evaluation of the Canadian government's policies in the wireless communications sector, the empirical relationship between market structure and prices or price-cost margins is weak and discontinuous.²⁵ Simply put, a market with as few as 2 or 3 actively competing firms can exhibit price-cost margins that are no higher than those observed in markets with many more firms.²⁶ This means that any evaluation of the competitiveness of a market with respect to prices must consider the behaviour and performance of incumbent firms and not simply infer the degree of competitiveness from the number of incumbent competitors.

Firms that enjoy some degree of market power can also delay both implementing new technology to lower their costs, as well as supplying new and improved products into the marketplace without necessarily suffering serious losses in their market shares and profits. That is, firms that are protected from competition can choose to be inefficient without necessarily suffering serious financial harm. To be sure, being shielded from the competitive consequences of inefficient behaviour does not mean that firms possessing market power will necessarily choose to be inefficient in adopting cost-reducing technologies and deploying new services. Well-managed companies that are responsive to the interests of their shareholders can be expected to take advantage of opportunities to lower their costs and increase consumers' demand for their products even if they enjoy market power, since they can expect to earn higher profits by doing so, at least over some significant period of time. As noted above, the empirical evidence indicates that competition encourages firms to implement new products and production processes more quickly and comprehensively; however, the caveat that a small number of competitors and high sales concentration in a market may be unreliable indicators of the extent of price competition in that market is also relevant for the introduction of new products and the adoption of more efficient production processes. Simply put, traditional measures of market structure may be unreliable guides to technological competition and, hence, to long-run economic efficiency.

24 Such instances of rivalry are often characterized as "workable" or "effective" competition. Those two terms will be used synonymously in this paper.

25 See McFetridge (2007).

26 For some econometric evidence that market share measures can be unreliable indicators of the performance of wireless competitors, see Faulhaber, Hahn, and Singer (2011).

4 Market structure and competition in the Canadian wireless sector: some evidence

Concerns about the competitiveness of the Canadian wireless sector seem to be related to two observations. One is that the Canadian sector is more concentrated than the wireless sectors of most other OECD countries, particularly the United States.²⁷ Table 1 reports the shares of wireless revenues of Canada's facilities-based carriers on a national basis for 2011. Table 2 reports wireless subscriber market shares broken down by province for 2011. It is clear that the three large incumbents account for the bulk of the industry's revenues and subscribers. The ownership of wireless spectrum is also highly concentrated. After the 2008 auction, the three large incumbents held over 80 percent of the spectrum being used by all wireless carriers.²⁸ The ostensible position of the Canadian government is that a relatively concentrated market structure is a meaningful indicator of market power and inefficiency, notwithstanding the qualifications to this interpretation discussed above.

The second observation is that there is some evidence that the Canadian wireless market has “under-performed” other markets, including the United States, in outcome measures such as prices, penetration (take-up), and the roll-out of new technology.²⁹ As noted above, the actual performance of sellers in a market is a more meaningful economic indicator of effective competition in that market than is a simple count of the number of competitors or the market shares of competitors. Hence, it is useful to review briefly some recent evidence on the relative performance of the wireless sector in Canada.

Before considering evidence on the relative performance of Canadian wireless carriers, it is useful to acknowledge explicitly that performance can reflect a number of other factors besides the degree of competition. For example, differences in government regulations can contribute to variations in the behaviour and performance of

27 McFetridge (2007). It is beyond the scope of this paper to discuss the various measures economists use to measure concentration. Suffice to say, the various measures all use the market shares of firms competing in the “relevant” market to identify the degree to which a relatively small number of firms account for a relatively large share of sales revenue.

28 Hyndman and Parmeter (2013: 7).

29 See, for example, Industry Canada (2006).

Table 1: Wireless TSPs' Revenue Market Share (National), 2011

Company	Share (Percent)
Rogers Communications	37
Bell ²	28
TELUS	28
New Entrants ³	2
Other ¹	5

¹ "Other" includes MTS Allstream, SaskTel, and smaller WSPs.

² "Bell Group" includes Bell Canada, Northwestel Mobility, Bell Mobility, Télébec, NorthernTel, SkyTerra, Virgin, and Latitude Wireless.

³ "New entrants" refers to the new wireless entities that acquired spectrum in Industry Canada's 2008 AWS spectrum auction.

Source: CRTC data collection from Canadian Radio-television and Telecommunications Commission (2012), Figure 5.5.5. <<http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2012/cmr5.htm#n5>>, as of August 20, 2013.

Table 2: Wireless Subscriber Market Share (Provincial), 2011

Province	Bell Group ²	TCC	Rogers	New entrants ³	Other ¹
British Columbia	17%	39%	42%	2%	0%
Alberta	22%	49%	26%	2%	0%
Saskatchewan	8%	8%	13%	0%	72%
Manitoba	6%	9%	32%	0%	53%
Ontario	28%	19%	47%	5%	1%
Quebec	34%	28%	31%	7%	0%
New Brunswick	59%	20%	21%	0%	0%
Prince Edward Island	63%	20%	18%	0%	0%
Nova Scotia	53%	28%	19%	0%	0%
Newfoundland & Labrador	73%	24%	2%	0%	0%
The North ⁴	84%	0%	0%	0%	16%

¹ "Other" includes MTS Allstream, SaskTel, and smaller WSPs.

² "Bell Group" includes Bell Canada, Northwestel Mobility, Bell Mobility, Télébec, NorthernTel, SkyTerra, Virgin, and Latitude Wireless.

³ "New entrants" refers to the new wireless entities that acquired spectrum in Industry Canada's 2008 AWS spectrum auction.

⁴ The North includes Yukon, the Northwest Territories, and Nunavut.

Source: CRTC data collection from Canadian Radio-television and Telecommunications Commission (2012), Table 5.5.5. <<http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2012/cmr5.htm#>>, as of August 20, 2013.

firms when comparing data across countries, as can differences in the sizes of the firms' domestic markets. It is also challenging to identify comparable baskets of services in order to compare prices and quality across countries, and prices charged can vary because of differences in living costs, regulations, and so forth. The point is that comparisons of performance across countries are suggestive but not necessarily definitive evidence of differences in effective competition.³⁰

Some evidence on performance

Two relatively recent studies examining the performance of Canadian wireless carriers in an international context conclude that Canada's performance is neither among the best, nor the worst, of the countries included in the comparisons.³¹ Specifically, the OECD found in four of six usage scenarios that prices were lower in Canada than in the United States, although they were higher than the average for all OECD countries. In the usage scenario that encompasses plans promoting relative high usage of voice and text services, Canada ranked as the fifth least expensive of the 34 countries being compared. A second study by Wall Communications Inc. concluded that the price of a basic wireless plan in Canada was comparable to similar plans offered by US carriers in the major cities being compared. However, Canadian prices were higher than in major cities in several other OECD countries. Consistent with the findings of the OECD, Canadian prices were lower than US prices for higher usage plans and comparable to the average of other countries. Rabeau (2012) notes that there are no reliable data allowing a comparison of average download speeds across countries; however, he argues that Canada's performance relative to other countries looks pretty good with regard to the spread of the fastest network technologies.

In short, it can be argued that the performance of Canadian wireless carriers, in ways that matter to consumer welfare, has been comparable to or better than the performance of US wireless carriers, even though measures of concentration for the Canadian wireless sector are higher than those for United States. While some observers argue that European countries with more fragmented (by ownership) wireless markets perform better than the United States, the US might be a better comparison to Canada given greater similarities between Canada and the United States in real income levels, industrial structure, and other attributes that may influence market outcomes. In any case, and notwithstanding the detailed comparisons drawn by the OECD and Wall Communications, some experts argue that American wireless con-

30 McFetridge (2007) discusses these caveats in detail.

31 Wall Communications Inc. (2013); and OECD (2013). Their findings are summarized in Rabeau (2012).

sumers are better off than European consumers and that the US wireless industry has been competitive and continues to be so.³² Among other things, they point to the fact that the Federal Communications Commission (FCC) has assessed competition annually since the mid-1990s and (until fairly recently) has never reached the conclusion that the industry is uncompetitive.³³ The FCC has also reviewed numerous mergers over the past decade and did not find the underlying industry to be uncompetitive.³⁴

McFetridge (2007) also points out that comparable agencies in Canada have investigated the competitiveness of the Canadian wireless sector and have concluded that it is competitive. For example, he notes that the CRTC in its *Telecommunications Monitoring Report* and in recent decisions has concluded that the mobile wireless sector in Canada is robustly competitive.³⁵ Additionally, the Competition Bureau investigated the wireless sector in its review of Rogers's acquisition of Microcell in 2004. In discussing its decision not to challenge the acquisition, the Competition Bureau said it was satisfied that the market would remain vigorously competitive after the merger. Since the merger, the Competition Bureau has made no public statements indicating that the industry has been the subject of investigations for anti-competitive behaviour.

... agencies in Canada have investigated the competitiveness of the Canadian wireless sector and have concluded that it is competitive.

Summation

In summary, recent evidence suggests that the performance of the Canadian wireless sector is at least comparable to that of the United States, while the balance of opinion seems to be that the performance of the US wireless sector is effectively competitive.³⁶ Taken as a whole, the evidence points to Canada's wireless sector being workably competitive in delivering relatively low prices and improved service offerings to consumers. Of course, this does not mean that the entry of new competitors or the aggressive expansion of existing competitors would not make Canada's wireless sector even more

32 See Furchtgott-Roth (2012); and Hahn and Passell (2013, June 10).

33 Faulhaber, Hahn, and Singer (2011) discuss two recent reports that do not conclude that the US wireless services market is "effectively competitive."

34 See Furchtgott-Roth (2012). It should be noted that both the FCC and the Department of Justice objected to the proposed takeover of T-Mobile by AT&T on grounds that the acquisition would significantly reduce competition in the wireless sector.

35 McFetridge (2007: 32).

36 Additional evidence supporting workably competitive wireless markets in the US is found in Banker, Cao, Menon, and Natarajan (2013); and Benzoni, Feffains, Nguyen, and Salesse (2011).

competitive and thereby improve consumer welfare. Indeed, it is argued that post-2008 entry in Canada's wireless sector stimulated increased price competition.³⁷ The issue in this regard is whether the government should actively promote new entry or expansion by handicapping the large incumbents in the latter's strategies to acquire and use spectrum. If not, what other policy initiatives might be taken to perpetuate or even enhance effective competition in Canada's wireless sector? This issue is addressed in the next section of this report.

37 See CIBC (2011).

5 Evaluating the case for competitive handicapping

The entry and expansion of new firms is an expected response to incumbent firms charging above-competitive price-cost markups or failing to take advantage of potential efficiency improvements that would generate higher profits. Therefore, the fact that one or more relatively large alternative facilities-based suppliers to the three large incumbents have not yet emerged is consistent with the wireless sector in Canada being effectively or workably competitive. Of course, the government's policy to encourage a fourth large facilities-based competitor in all regions that the government deems to be relevant geographic markets is obviously predicated on the view that it is barriers to entry rather than competition that keeps large alternative carriers from emerging.

Barriers to entry—acquiring spectrum

It is clear that substantial up-front costs are required to enter the wireless sector on a large scale as a facilities-based carrier. However, to the extent that up-front costs can be recovered in the event of unsuccessful entry, they are not necessarily sunk costs. Costs that are recoverable are not effective barriers to entry. In this regard, spectrum can be considered a recoverable cost of entry. Specifically, spectrum can be resold, potentially at an even higher price than the entrant paid for it, particularly if the government allows resale of spectrum in an unrestricted secondary market. In this context, it is difficult to defend the notion that making spectrum cheaper for would-be entrants to acquire at auctions reduces risks for entrants, since spectrum is arguably not a sunk cost. While it is possible to argue that small would-be entrants face constraints on raising capital in order to bid on spectrum, I am unaware of convincing evidence supporting this concern. It certainly cannot be argued that large foreign-owned investors such as Verizon would be at disadvantage bidding for spectrum because they cannot raise sufficient capital.

Perhaps the strongest potential argument for imposing auction rules that implement set-asides for new firms, or caps on acquisitions by large incumbents, is that the latter will ordinarily find it more profitable than the former to acquire new spectrum precisely because acquisition deters new entry. If incumbents are charging above-competitive prices and earning economic profits, it is worth their while to spend some money to protect those economic profits. Discouraging entry by bidding more than

“competitive” prices for auction licenses might be seen in this light as a strategy to protect the economic profits that the incumbents are earning on the licenses that they already hold.³⁸ Since entrants hold no existing licenses, they have no economic profits to protect by restricting competition. All other things constant, this would reduce the incentives of would-be entrants to bid as aggressively for spectrum as the incumbents. Of course, the logic of this argument depends critically upon the assumption that the wireless market is sufficiently uncompetitive to generate economic profits for incumbents.

... acquiring spectrum to deny entry to a facilities-based carrier would not necessarily forestall competition completely, since the spectrum acquired by an incumbent could be used to facilitate the entry or expansion of resellers or mobile virtual network operators (MVNOs).

If the market is effectively competitive and there are no economic rents to protect, the argument becomes irrelevant as a guide to policy.

The subtlety of the preceding argument for set-asides, caps, or other competitive handicapping at spectrum auctions is underscored by the observation that any incumbent acting independently has an incentive to acquire only spectrum that it can use profitably, independent of any monetary benefit the acquisition would provide other incumbents as a consequence of discouraging competitive entry. Put simply, if one incumbent outbids would-be entrants for spectrum to prevent competition, the benefits extend to other incumbents competing in the same market. Hence, restricting the entry of individual competitors has a “public-goods” characteristic. Specifically, if one of the incumbents outbids an entrant for spectrum, it forestalls new competition for the other incumbents in the relevant market, even if the latter pursue competitive bidding behaviours.³⁹

This attribute creates a potential coordination problem for incumbents seeking to forestall new entry. In the absence of an explicit or implicit agreement to share the costs of preempting entrants, the resulting “free-rider” problem might discourage anti-competitive premium bidding for spectrum by any of the incumbents. In short, even if incumbents are earning economic rent in wireless markets, those rents may not precipitate anti-competitive bidding by incumbents at auctions.

Yet another related consideration militates against incumbents bidding above-competitive prices for spectrum in order to strengthen barriers to entry. It is that acquiring spectrum to deny entry to a facilities-based carrier would not necessarily forestall competition completely, since the spectrum acquired by an incumbent could

38 The strategy is a version of “raising rivals costs” to deter entry or expansion. See Cramton, Skrzypacz, and Wilson (2007).

39 Competitive bidding means that the bid price reflects the value of the spectrum ignoring the impact of forestalled entry on the market in question. McFetridge (2007) argues that mobile wireless telephone carriers compete in a national market, although the Competition Bureau has tended to define relevant geographic markets as provincial or regional.

be used to facilitate the entry or expansion of resellers or mobile virtual network operators (MVNOs). While some MVNOs are owned by the large incumbents, others are independently owned by large companies such as 7-Eleven, Petro-Canada, and Sears-Canada.⁴⁰ The competitive activity of resellers increases the likelihood of greater competition at the wholesale level among the large incumbents for reasons Telser (1960) identifies in his classic article explaining why manufacturers support resale price maintenance.⁴¹ Hence, the acquisition of spectrum by any of the incumbents at a “high” price in order to discourage new firm entry raises another coordination problem. Namely, incumbents that benefit from the acquisition of “surplus” spectrum by other incumbents may need to compensate the acquirers somehow for their higher bids, otherwise the spectrum acquired might be rented to resellers, and economic profits could be eroded by increased non-facilities-based competition.

On balance, therefore, arguments in favour of handicapping incumbents in order to ensure competitive bidding for spectrum are, at best, speculative. If collusion at the auction is effectively prevented by the auction’s structure, and incumbents cannot be sure that their individual bidding efforts designed to discourage entry will be accompanied by similar efforts by rivals, or compensation in some other way, a resulting “free-rider” problem could well contribute to competitive bidding at the auction by the incumbents.

Barriers to entry—capital equipment and installed customer base

Building out a cellular network obviously requires substantial capital investment. Depending upon how specific the hardware and software investments are to the nature and location of the network, a substantial portion of those investment costs might be sunk in the event that the investor wants to exit the business. Of course, the incumbents presumably made large and risky investments in building out their own networks, so the requirement for new entrants to do so is not, strictly speaking, an anti-competitive barrier to entry, so much as it is simply part of the cost of competing as a facilities-based carrier.

There are certainly potential strategies available to would-be entrants to reduce the risks associated with constructing infrastructure. For example, they can take in investment partners, including MVNOs who want additional options at the wholesale level in order to facilitate expansion of resale activities. They can also seek to rent or

40 For a list of active Canadian MVNOs, see Prepaid MVNO (2011).

41 See Telser (1960), “Why Should Manufacturers Want Fair Trade?”

lease some capacity from incumbents. As noted above, individual incumbent carriers might be willing to rent or lease access to cell towers and other network infrastructure to new facilities-based carriers if it is profitable to do so, unless “cooperating” with other incumbents to deny access to network facilities is more profitable.

The “strengthening” of rules regarding roaming and tower sharing can be seen as government initiatives to thwart any efforts on the part of incumbents to cooperate in denying entrants roaming and capacity sharing privileges. The practical benefits and costs of government rules in such matters obviously depend on precisely how the rules are implemented. The benefits are clearly linked to the risks of incumbents implicitly cooperating to make roaming and sharing more costly and difficult for entrants. The costs are linked to various inefficiencies that might result from regulators imposing roaming and sharing obligations on incumbents that do not accurately reflect the opportunity cost of the assets in question when used efficiently by incumbents. More will be said on the potential inefficiencies later in this main section. The use of regulation to promote roaming and sharing agreements will be discussed in a following section.

It would be feckless to argue that the established client bases and brand names of the large incumbent wireless carriers pose no significant obstacles to entry and expansion by new facilities-based entrants. However, it must also be acknowledged that the large subscriber bases and the well-established brand names of the incumbents are consistent with their developing and implementing business expansion plans that brought success in the marketplace by improving consumers’ welfare. In this respect, the wireless sector is no different from many other industries ranging from retail coffee (Starbucks) to smart phones (Samsung). That is, one should expect specific companies to earn substantial market shares and develop valuable brand names by providing consumers with innovative and attractively priced products over a significant period of time. While the presence of such companies in a market makes entry of new competitors more difficult, it does not necessarily justify government policies that directly or indirectly give an advantage to potential or actual competitors relative to those successful incumbents.

It is worth noting one final, albeit important, consideration. Even if it were profitable for the large incumbent carriers to discourage entry by increasing the costs to rivals of acquiring spectrum, building out a network, marketing to customers, and so forth, the strategy is likely to be much less effective in blocking entry by firms using alternative technologies. In this regard, Wi-Fi is an increasingly prominent alternative technology for delivering voice and data services in competition with wireless carriers. Wireline carriers, includ-

The emergence and growth of this substitute for cellular technology expands the scope for new competition by encompassing a set of firms not currently considered to be direct competitors of the large wireless incumbents. Indeed, to the extent that incumbent carriers are inefficient while earning economic profits, their behaviour and performance will encourage the entry of competitors using alternative technologies.

ing cable companies, can provide Wi-Fi voice and data services (including broadband services) using the Internet. The emergence and growth of this substitute for cellular technology expands the scope for new competition by encompassing a set of firms not currently considered to be direct competitors of the large wireless incumbents. Indeed, to the extent that incumbent carriers are inefficient while earning economic profits, their behaviour and performance will encourage the entry of competitors using alternative technologies.

Inefficient entry and discouraging investment by incumbents

The inference to be drawn from the preceding discussion is that the benefits of competitive handicapping are, at best, speculative. At the same time, competitive handicapping through spectrum auction caps and other rules invites the risk of inefficient entry. One concern with direct or indirect government subsidies to new competitors is that those subsidies can promote inefficient entry and expansion. It is unlikely that government bureaucrats can distinguish *ex ante* would-be competitors that will operate efficiently from those that will operate inefficiently.⁴² Certainly, having to bid for spectrum discourages the less efficient among the would-be entrants from entering the market. However, successful entrants might still be less efficient than the incumbents. Furthermore, mandated roaming, sharing, and other initiatives can allow firms that are less efficient than the incumbents to survive and even grow.

Encouraging inefficient entry represents a waste of resources, *ex post*. Furthermore, historical experience from other industries in Canada, such as textiles and fishing, suggests that once the government extends subsidies or protection to specific companies or groups of workers, it becomes politically difficult to withdraw those benefits, even when it becomes apparent that the goals of the policy are not being realized.

Perhaps an even more important policy concern about competitive handicapping is that direct or indirect subsidies extended to entrants may prevent or discourage the efficient operations of incumbents. For example, if incumbents are directly or indirectly limited in how much spectrum they are allowed to acquire, they may not be able to introduce new services in a timely manner to customers. If they are prohibited from acquiring smaller wireless carriers, they may be effectively prevented from acquiring complementary physical and human capital in the most economical manner possible. If entrants gain market share from incumbents, in part because of direct or indirect government subsidies, incumbents may lose some efficiencies associated with econo-

42 This is even true for Verizon, since the company will be operating in geographic markets that are new to it.

mies of scale, as they lose customers. Finally, if incumbents come to anticipate that future commercial success will simply lead to increased government-imposed handicaps being placed on them, they are likely to invest less and will take fewer financial risks which, in turn, will probably result in more modest improvements in services for consumers, as well as slower introductions of new services.

Summation

The spectrum auction rules and restrictions on the incumbents' legal ability to acquire spectrum and other resources through acquisitions and license transfers risk promoting inefficient competition. Given conclusive evidence that the wireless sector in Canada is workably competitive, there would clearly be no conceptual case for competitive handicapping. The brief review in the previous section points to the wireless sector in Canada being workably competitive, though the evidence is arguably not conclusive. In particular, it cannot be concluded unequivocally that the performance of the wireless sector in Canada would not improve if competitive forces in the sector were stronger than at present. This caveat invites consideration of whether there is a preferable policy approach to safeguarding competition than the competitive handicapping policies described in earlier sections.

6 Ensuring workable competition

The goal of achieving and maintaining workable competition is not equivalent to targeting some minimum number of competitors in a market. As noted earlier, the precise number of competitors in a market is an unreliable guide to the behaviour and performance of those competitors; however, both theory and evidence support the premise that the potential for entry is an important disciplining force on incumbent firms. That is, the threat of entry by efficient firms constrains incumbent firms to charge competitive prices and encourages them to minimize costs and adopt new technology in a timely manner. The spectrum auction rules and related initiatives are meant to promote entry; however, they may not promote *efficient* entry and competition. Initiatives that facilitate the entry of efficient competitors without handicapping incumbents are arguably a preferable approach to competition policy. This alternative approach to competition policy would target regulatory barriers to entry and joint initiatives on the part of incumbents to increase entry costs.

Foreign ownership

One element of an alternative approach to competition policy as applied to the telecommunications sector is to eliminate all foreign ownership restrictions on facilities-based carriers. In fact, the majority of OECD countries do not have significant foreign ownership restrictions. The elimination of the 10 percent ownership limitation for facilities-based telecommunications carriers would enable foreign investors to enter on a larger scale than is currently allowed through mergers and acquisitions. Entry and expansion through acquisitions rather than through organic growth might be particularly attractive strategically to foreign-owned firms based outside the United States. Non-US-based carriers may not have as ready access to complementary resources, such as knowledge of North American subscribers' market behaviour and preferences, as do their US-based counterparts. While there are currently few large acquisition targets beyond Bell, Rogers, and TELUS, the 10 percent limitation imposed on a growing market could increasingly prove a relevant constraint on foreign acquisitions in the Canadian telecommunications industry.

Elimination of foreign ownership limitations would also permit hostile takeovers of one or more of the three large incumbents. The threat of a takeover provides an

incentive for managers to use corporate resources efficiently.⁴³ Furthermore, large foreign-owned firms are less likely to maintain any long-standing “cooperative” arrangements between domestic firms that dampen competition. Eliminating foreign ownership restrictions on broadcasters, particularly cable companies, which are in a competitive position to provide indirect competition to wireless carriers through supplying Wi-Fi capacity would also enhance entry threats to incumbent wireless carriers. While the issue of foreign ownership of culture businesses is obviously much broader than the issue of competition in the wireless sector, it must be acknowledged that the rationale for relaxing foreign ownership limitations in telecommunications also

Elimination of foreign ownership limitations would also permit hostile takeovers of one or more of the three large incumbents. The threat of a takeover provides an incentive for managers to use corporate resources efficiently.

applies to relaxing foreign ownership limitations in broadcasting. Furthermore, since the large incumbent wireless carriers are also in the broadcasting business, eliminating the foreign ownership restriction on broadcasting is necessary if large wireless carriers are to be eligible for acquisition by foreign investors.

The Competition Act

A second important element of an alternative approach to competition policy for the wireless sector is to rely upon the provisions of the Competition Act instead of regulatory interventions to discourage anti-competitive behaviour. The provisions in the Act dealing with mergers and acquisitions, as well as abuse of dominance, are adequate to address concerns about large incumbents augmenting market power through mergers and acquisitions or reducing competition through actions such as raising rivals’ costs. To the extent that mergers and acquisitions by large incumbent carriers are to be reviewed under the Competition Act, there is no need for regulatory prohibitions on the acquisition of spectrum or other assets by large incumbent carriers. Furthermore, acquisitions that are reviewed should be assessed on the basis of their plausible efficiency gains, as well as their likely impacts on competition, which is what is called for under the Competition Act. Thus, acquisitions of spectrum and other assets through transfers and takeovers should be subject to the same two-fold criteria as any other merger or acquisition reviewable under the Competition Act. An advantage of moving the review of mergers, acquisitions of spectrum, and other strategic initiatives to competition policy authorities is the broad and deep experience the latter have with the relevant issues and requisite analyses.

43 In a recent report, the CIBC briefly discusses the potential attractiveness of acquiring one or more of the large incumbents to foreign telephone carriers (CIBC, 2011).

Decisions related to roaming and sharing agreements, contractual terms with customers, and other initiatives by incumbents that are viewed by rivals as anti-competitive actions should also be addressed using the relevant provisions of the Competition Act. In particular, strategies ostensibly foreclosing access to the supply of an essential input and thereby raising rivals' costs, among others, can be challenged as abuses of dominance under the Competition Act. As in the case of mergers and acquisitions, any efficiency gains from the challenged behaviours must be weighed against any anti-competitive consequences. It is appropriate to evaluate business behaviour in a broad social benefit-cost framework, and the Competition Tribunal is arguably better positioned than other government departments or agencies to make the relevant social benefit-cost evaluation.⁴⁴ As broadcasting entities become closer competitors to traditional telecommunications carriers in mobile broadband wireless communications, it seems appropriate for the CRTC to relinquish its regulatory

Imposing differential regulatory obligations on individual carriers is inconsistent with efficient competition. The provision of wireless telephone services to rural subscribers should not be implicitly or explicitly subsidized by specific carriers.

authority in matters of competition policy to the Competition Bureau. The continued authority of the CRTC to regulate prices and other conditions of service is inconsistent in the long-run with Industry Canada's goal of relying upon market competition to safeguard consumer interests.

Other social goals

Telecommunications carriers have traditionally been called upon to contribute to social objectives that involve cross-subsidies from profitable lines of business to unprofitable lines of business. One such long-standing objective has been to provide rural subscribers with access and services whose costs are not recovered directly in access and service charges to the rural subscribers. In the case of wireless telephone service, the government has objectives to ensure rural access to wireless service including the availability of high-speed broadband service.

One point of concern raised about Verizon's possible participation in the upcoming spectrum auction is that the company will focus on serving Canadian subscribers in the heavily populated geographic region of Southern Ontario, leaving the incumbents to continue to serve less populated areas of the country. To the extent that the incumbents are allowed by the regulator to recover their costs of serving rural sub-

44 Currently the CRTC exercises its authority to regulate prices and conditions of service. For example, it recently announced plans for a new wireless code that will allow consumers to cancel their wireless contracts after two years without penalty and that will set provisions to limit extra data and international roaming charges. See Lasalle (2013, July 4).

scribers, a strategic decision by Verizon to focus on urban areas raises no issues of competitive handicapping; however, such issues are clearly raised if the large incumbents bear any implicit burdens of subsidizing rural access to high-speed broadband wireless service while their competitors do not. Since the 700 MHz spectrum is particularly suited for high-speed broadband signals, the concern about Verizon's geographical focus is a pressing one.

Imposing differential regulatory obligations on individual carriers is inconsistent with efficient competition. The provision of wireless telephone services to rural subscribers should not be implicitly or explicitly subsidized by specific carriers. Any subsidization should be done through taxpayer-funded programs that either pay carriers for relevant capital and operating costs that are not recovered through subscriber fees, or (preferably) that subsidize low-income rural subscribers directly.⁴⁵

45 The history in Canada of subsidizing local access through higher prices for other telephone services suggests that direct taxpayer subsidies to rural subscribers to pay for high-speed broadband services will not find much political support.

7 Summary and conclusions

The Canadian government's stated goal of relying upon market competition to maximize consumer welfare from wireless telephone services is laudable and appropriate. The contentious issue is whether the government should continue to promote the emergence and growth of one or more large competitors to the incumbent carriers through competitive handicapping. The rationale for continuing the handicapping policy, including spectrum auction rules that constrain the incumbents from acquiring prime spectrum, is that the Canadian wireless sector is uncompetitive and that (presumably) it will remain uncompetitive unless government imposes rules and regulations that directly or indirectly promote spectrum acquisition and other strategic initiatives of actual and would-be rivals to the incumbents. In fact, the available evidence, on balance, does not support a claim that the sector is uncompetitive. Specifically,

... there is an obvious danger to having government handicap incumbents in order to ease entry conditions into the sector. Specifically, there is a danger of promoting inefficient competition which makes most consumers worse off rather than better off.

while market concentration is relatively high, the behaviour and performance of wireless carriers in Canada is comparable to that of other countries where market concentration is lower. This observation raises important questions about whether the rationales for competitive handicapping cited above are valid.

While there may well be additional benefits to consumers from the intensification of the degree of workable competition that currently characterizes Canada's wireless sector, there is an obvious danger to having government handicap incumbents in order to ease entry conditions into the sector. Specifically, there is a danger of promoting inefficient competition which makes most consumers worse off rather than better off. If there are gains at the margin from competitive entry and expansion, it is preferable to allow market incentives to encourage such entry and expansion. The objective of competition policy in this context should be to ensure

that government regulations and collusive behaviour on the part of large incumbents do not unduly contribute to barriers to entry and expansion or otherwise suppress incentives for efficient competition. The elimination of all foreign ownership restrictions on facilities-based carriers and reliance upon the Competition Act to deter acquisitions of spectrum that threaten to reduce competition, as well as to discourage any abuses of market dominance that raise rivals' costs or otherwise suppress competition, seem quite adequate competitive safeguards.

The immediate policy issue, of course, is whether the current rules for the upcoming 700 MHz spectrum auction should be changed. Those who oppose chang-

ing the rules may argue that the spectrum to be auctioned is critical to the provision of future competitive broadband services, and that new competition might be foreclosed for a very long time if the incumbents were to acquire the entire prime spectrum to be auctioned. A response is that eliminating the caps that have been imposed does not obviate the acquisition of spectrum by rivals to the incumbents. Certainly Verizon (and other large, foreign-owned carriers) has the financial capacity to bid aggressively for spectrum. Furthermore, if the incumbents acquire spectrum that they cannot or do not use efficiently in the future, they would invite takeovers by larger foreign-owned carriers, as well as encourage the faster introduction of substitute technologies such as Wi-Fi.⁴⁶ If the Canadian government is willing to rely upon market competition to maximize the consumer benefits of wireless telecommunications, it need not wait until after the upcoming auction to do so.

46 This presumes that the government eliminates the remaining restrictions on foreign ownership of both telecommunications and broadcasting entities.

References

Banker, R.D., Z. Cao, N. Menon, and R. Natarajan (2013). Technological Progress and Productivity Growth in the U.S. Mobile Telecommunications Industry. *Annals of Operations Research*, 173 (1): 77–87.

Benzoni, L., B. Feffains, A.T. Nguyen, and O. Salesse (2011). Competitive Dynamics Between MNOs in the Mobile Telecommunications Single Market: Lessons from the U.S. Experience. *Communications and Strategies*, 82: 127–145.

CIBC (2011). *Will 700 MHz/2.5 GHz Spectrum Auctions Change the Game?* Institutional Equity Research Industry Update (February 1). CIBC World Markets Inc. <<http://www.investorvillage.com/uploads/51958/files/ResearchTELECOM.pdf>>, as of August 13, 2013.

Colecchia, Alessandra, and Paul Schreyer (2001). *ICT Investment and Economic Growth in the 1990s: Is the United States a Unique Case? A Comparative Study of Nine OECD Countries*. STI Working Paper 2001/7. OECD.

Conway, Paul, Donato de Rosa, Giuseppe Nicoletti, and Faye Steiner (2006). *Regulation, Competition and Productivity Convergence*. OECD Economics Department Working Papers No. 509 (September 4). OECD.

Cope, George (2013). *An Open Letter to All Canadians*. Bell Canada. <<http://www.bell.ca/an-open-letter-to-all-canadians>>, as of August 13, 2013.

Cramton, Peter, Evan Kwerel, Gregory Roston, and Andrzej Skrzypacz (2011). *Using Spectrum Auctions to Enhance Competition in Wireless Services*. Mimeo. <<http://works.bepress.com/cgi/viewcontent.cgi?article=1178&context=cramton>>, as of August 13, 2013.

Cramton, Peter, Andrzej Skrzypacz, and Robert Wilson (2007). *Economic Comments on the Design of the 700 MHz Spectrum Auction*. Mimeo (June 11). <<http://www.cramton.umd.edu/papers2005-2009/cramton-skrzypacz-wilson-700mhz-auction-design-us-senate.pdf>>, as of August 13, 2013.

Dobby, Christine (2013, July 18). Telus CEO Entwistle Warns of Bloodbath if Verizon has Advantage in Wireless Spectrum Auction. FP Tech Desk. *Financial Post*. <http://business.financialpost.com/2013/07/18/telus-darren-entwistle-wireless-spectrum-verizon/?_lsa=3d2f-a65c>, as of August 13, 2013.

Faulhaber, Gerald, Robert Hahn, and Hal Singer (2011). Assessing Competition in U.S. Wireless Markets: Review of FCC's Competitive Reports. *SSEN Electronic Journal*. <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1880964>, as of August 13, 2013.

Furchtgott-Roth, Harold (2012). Assessing Competition in the Wireless Sector: How DOJ Can Clear Away the Fog from Proposed Mergers. *Engage*, 13 (2) (July): 108-113. <<http://www.fed-soc.org/publications/detail/assessing-competition-in-the-wireless-sector-how-doj-can-clear-away-the-fog-from-proposed-mergers>>, as of August 13, 2013.

Hahn, Robert, and Peter Passell (2013, June 10). The Danger of Meddling with Wireless. *Wall Street Journal*: A13.

Hyndman, Kyle, and Christopher Parmeter (2013). *Efficiency or Competition? A Structural Econometric Analysis of Canada's AWS Auction and the Set-Aside Provision*. Mimeo. <<http://www.hyndman-honhon.com/hyndman/HP-AWS-Auction.pdf>>, as of August 13, 2013.

Industry Canada (2006). *Telecommunications Policy Review Panel Final Report*. Industry Canada. <[http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/tprp-final-report-2006.pdf/\\$FILE/tprp-final-report-2006.pdf](http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/tprp-final-report-2006.pdf/$FILE/tprp-final-report-2006.pdf)>, as of August 13, 2013.

Industry Canada (2012). *Spectrum Management and Telecommunications: Policy and Technical Framework: Mobile Broadband Services (MBS) — 700 MHz Band, Broadband Radio Service (BRS) — 2500 MHz Band*. Web page (March). Government of Canada. <<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10121.html>>, as of August 13, 2013.

Industry Canada (2012, March 14). *Harper Government Takes Action to Support Canadian Families: Rules for the 700MHz and 2500 MHz Spectrum Auctions; Foreign Investment Restrictions in the Telecommunications Sector*. Background. Government of Canada. <<http://news.gc.ca/web/article-eng.do?nid=662619>>, as of August 13, 2013.

Industry Canada (2013). *Spectrum Management and Telecommunications: Licensing Framework for Mobile Broadband Services (MBS) – 700 MHz Band*. Web page (March 7). Government of Canada. <<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10581.html>>, as of August 13, 2013.

Lasalle, Luann (2013, July 4). Canadians Pay Less for Cellphone Service than Americans. *Globe and Mail*.

McFetridge, Donald (2007). *Competition in the Canadian Mobile Wireless Telecommunications Industry*. Mimeo. Carleton University, Department of Economics.

Organisation for Economic Cooperation and Development [OECD] (2013). *OECD Communications Outlook 2013*. OECD.

Prepaid MVNO (2011). Canadian MVNO Companies. Web page. Prepaid MVNO. <<http://www.prepaidmvno.com/mvno-companies/north-american-mvno-companies/canadian-mvno-companies/>>, as of August 13, 2013.

Rabeau, Yves (2012). *Is the Canadian Wireless Sector Competitive?* Economic Note. Regulation Series. Montreal Economic Institute. <http://www.iedm.org/files/note1012_en.pdf>, as of August 13, 2013.

Schiantarelli, Fabio (2008). *Product Market Regulation and Macroeconomic Performance: A Review of Cross-Country Evidence*. Boston College. <<http://fmwww.bc.edu/ec-p/wp623.pdf>>, as of August 13, 2013.

Telser, Lester (1960). Why Should Manufacturers Want Fair Trade? *Journal of Law and Economics*, 3 (1): 86–105.

Trichur, Rita (2013, June 28). Ottawa Stresses Competition, Consumer Prices in New Wireless Rules. Report on Business. *The Globe and Mail*. <<http://www.theglobeandmail.com/report-on-business/ottawa-stresses-competition-consumer-prices-in-new-wireless-rules/article12882059/>>, as of August 13, 2013.

Trichur, Rita (2013, July 24). Big Three Telecoms Urge Ottawa to Close Policy Loopholes. Report on Business. *The Globe and Mail*.

Wall Communications Inc. (2013). *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions*. Prepared for the Canadian Radio-television and Telecommunications Commission and Industry Canada. Wall Communications Inc. <http://www.wallcom.ca/pdfs/price-comp-report_2013update.pdf>, as of August 13, 2013.

About the author

Dr. Steven Globerman is the Kaiser Professor of International Business and Director of the Center for International Business at Western Washington University and is a Fraser Institute Senior Fellow. Previously, he held tenured appointments at Simon Fraser University and York University and has been a visiting professor at the University of California, University of British Columbia, Stockholm School of Economics, Copenhagen School of Business, and the Helsinki School of Economics. He has published more than 150 articles and monographs and is the author of the book *The Impacts of 9/11 on Canada-U.S. Trade* as well as a textbook on international business management. In the early 1990s, he was responsible for coordinating Fraser Institute research on the North American Free Trade Agreement. In addition, Dr. Globerman has served as a researcher for two Canadian Royal Commissions on the economy as well as a research advisor to Investment Canada on the subject of foreign direct investment.

Acknowledgements

The author thanks Martine Madill for very helpful research assistance. He also thanks several anonymous reviewers for many helpful suggestions and comments. The author takes full responsibility for any remaining errors or omissions. The views expressed in this study do not necessarily reflect the views of the supporters, trustees, or staff of the Fraser Institute.

Publishing information

Distribution

These publications are available from <<http://www.fraserinstitute.org>> in Portable Document Format (PDF) and can be read with Adobe Acrobat® 7 or later, or with Adobe Reader® 7 or later. Adobe Reader® X, the most recent version, is available free of charge from Adobe Systems Inc. and may be downloaded from: <<http://get.adobe.com/reader/>>. We encourage you to install the most recent version.

Ordering publications

For information about ordering the Fraser Institute's printed publications, please contact the publications coordinator

- ❖ e-mail: sales@fraserinstitute.org
- ❖ telephone: 604.688.0221 ext. 580 or, toll free, 1.800.665.3558 ext. 580

Media

For media inquiries, please contact our Communications Department:

telephone: 604.714.4582 or e-mail: communications@fraserinstitute.org

Copyright

Copyright © 2013 by the Fraser Institute. All rights reserved. No part of this publication may be reproduced in any manner whatsoever without written permission except in the case of brief passages quoted in critical articles and reviews.

Disclaimer

The authors of this publication have worked independently and opinions expressed by them are, therefore, their own, and do not necessarily reflect the opinions of the supporters, trustees, or other staff of the Fraser Institute. This publication in no way implies that the Fraser Institute, its trustees, or staff are in favor of, or oppose the passage of, any bill; or that they support or oppose any particular political party or candidate.

ISBN

ISBN 978-0-88975-267-2

Date of issue

August 2013.

Citation

Globerman, Steven (2013). *An Assessment of Spectrum Auction Rules and Competition*. Fraser Institute.

Editing and production

Kristin McCahon

Design

Lindsey Thomas Martin

Cover design

Bill Ray

Cover images

Blank smart phone... © Rangizzz, Bigstock

Modern earth in web... © dgbomb, Bigstock

Supporting the Fraser Institute

To learn how to support the Fraser Institute, please contact

- ❖ Development Department,
The Fraser Institute,
Fourth Floor, 1770 Burrard Street,
Vancouver, British Columbia,
Canada V6J 3G7
- ❖ telephone, toll-free: 1.800.665.3558 ext. 586
- ❖ e-mail: development@fraserinstitute.org

Lifetime Patrons

For their long-standing and valuable support contributing to the success of the Fraser Institute, the following people have been recognized and inducted as Lifetime Patrons of the Fraser Institute.

Sonja Bata

Charles Barlow

Ev Berg

Art Grunder

Jim Chaplin

Serge Darkazanli

John Dobson

Raymond Heung

Bill Korol

Bill Mackness

Fred Mannix

Jack Pirie

Con Riley

Catherine Windels

Purpose, funding, and independence

The Fraser Institute provides a useful public service. We report objective information about the economic and social effects of current public policies, and we offer evidence-based research and education about policy options that can improve the quality of life.

The Institute is a non-profit organization. Our activities are funded by charitable donations, unrestricted grants, ticket sales and sponsorships from events, the licensing of products for public distribution, and the sale of publications.

All research is subject to rigorous review by external experts, and is conducted and published separately from the Institute's Board of Trustees and its donors.

The opinions expressed by staff or author(s) are those of the individuals themselves, and should not be interpreted to reflect those of the Institute, its Board of Trustees, or its donors and supporters.

As a healthy part of public discussion among fellow citizens who desire to improve the lives of people through better public policy, the Institute welcomes evidence-focused scrutiny of the research we publish, including verification of data sources, replication of analytical methods, and intelligent debate about the practical effects of policy recommendations.

About the Fraser Institute

Our vision is a free and prosperous world where individuals benefit from greater choice, competitive markets, and personal responsibility. Our mission is to measure, study, and communicate the impact of competitive markets and government interventions on the welfare of individuals. Founded in 1974, we are an independent Canadian research and educational organization with locations throughout North America and international partners in over 85 countries. Our work is financed by tax-deductible contributions from thousands of individuals, organizations, and foundations. In order to protect its independence, the Institute does not accept grants from government or contracts for research.

Nous envisageons un monde libre et prospère, où chaque personne bénéficie d'un plus grand choix, de marchés concurrentiels et de responsabilités individuelles. Notre mission consiste à mesurer, à étudier et à communiquer l'effet des marchés concurrentiels et des interventions gouvernementales sur le bien-être des individus.

Peer review

Validating the accuracy of our research

The Fraser Institute maintains a rigorous peer review process for its research. New research, major research projects, and substantively modified research conducted by the Fraser Institute are reviewed by experts with a recognized expertise in the topic area being addressed. Whenever possible, external review is a blind process. Updates to previously reviewed research or new editions of previously reviewed research are not reviewed unless the update includes substantive or material changes in the methodology.

The review process is overseen by the directors of the Institute's research departments who are responsible for ensuring all research published by the Institute passes through the appropriate peer review. If a dispute about the recommendations of the reviewers should arise during the Institute's peer review process, the Institute has an Editorial Advisory Board, a panel of scholars from Canada, the United States, and Europe to whom it can turn for help in resolving the dispute.

Editorial Advisory Board

Professor Terry L. Anderson
Professor Robert Barro
Professor Michael Bliss
Professor Jean-Pierre Centi
Professor John Chant
Professor Bev Dahlby
Professor Erwin Diewert
Professor Stephen Easton
Professor J.C. Herbert Emery
Professor Jack L. Granatstein
Professor Herbert G. Grubel
Professor James Gwartney
Professor Ronald W. Jones
Dr. Jerry Jordan
Professor Ross McKittrick

Professor Michael Parkin
Professor Friedrich Schneider
Professor Lawrence B. Smith
Dr. Vito Tanzi

Past members

Professor Armen Alchian*
Professor James M. Buchanan*†
Professor Friedrich A. Hayek*†
Professor H. G. Johnson*
Professor F. G. Pennance*
Professor George Stigler*†
Professor Edwin G. West*
Sir Alan Walters*

* Deceased

† Nobel Laureate