CT-2022-002

THE COMPETITION TRIBUNAL

IN THE MATTER OF the *Competition Act*, R.S.C. 1985, c. C-34;

AND IN THE MATTER OF the proposed acquisition by Rogers Communications Inc. of Shaw Communications Inc.;

AND IN THE MATTER OF an application by the Commissioner of Competition for one or more orders pursuant to section 92 of the *Competition Act*.

B E T W E E N :

COMMISSIONER OF COMPETITION

Applicant

- and -

ROGERS COMMUNICATIONS INC. AND SHAW COMMUNICATIONS INC.

Respondents

- and -

ATTORNEY GENERAL OF ALBERTA AND VIDEOTRON LTD.

Intervenors

WITNESS STATEMENT OF LARS SPENCER OSBERG, PhD

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1. My name is Lars Osberg. I am the McCulloch Professor of Economics at Dalhousie University in Halifax, Nova Scotia. I earned my B.A.(Hons.) in Economics from Queen's University in 1968, and my M. Phil and PhD from Yale University in 1972 and 1975 respectively. My PhD dissertation was entitled "A Structural Approach to the Distributions of Earnings."

2. I have served as a tenured Professor at Dalhousie since 1981. During the course of my academic career I have also held a number of positions – most recently at the Institute for New Economic Thinking at Oxford, U.K. in 2018, the Statistics Directorate, Organization for Economic Co-operation and Development (OECD) in Paris, France in 2014, the Indira Ghandi Institute for Development Research (IGIDR), in Mumbai, India in 2010 and Research on Poverty Alleviation (REPOA), Dar es Salaam, Tanzania, 2009 –2010.

3. My areas of expertise are in the fields of labour economics and public finance, which are the areas of economics that address the determinants and implications of the distributions of income and wealth. Within that field I have specialized in analysis of economic insecurity and of inequalities of opportunity. I have taught courses on Inequality and Poverty, Public Finance, Graduate and Undergraduate Labour Economics, Canadian Economic Policy Debates, Globalization and Economic Development, Principles of Economics, Introductory Econometrics, Economic Development, Collective Bargaining and Labour Market Policy, Intermediate Macroeconomics and Microeconomics.

4. My research has been published in leading economics journals. My most recent 20 refereed articles (i.e. since 2014) include articles in *Review of Income and Wealth, Canadian Journal of Economics , Journal of Population Economics, Journal of Economic Behavior & Organization* and *Social Science and Medicine*. My most recent book *The Age of Increasing Inequality: The Astonishing Rise of Canada's 1%* was awarded the Doug Purvis Memorial Prize for contribution to Canadian Economic Policy, by the Canadian Economics Association in 2019.

5. I was appointed a Fellow of the Canadian Economics Association in June 2020 and received the Galbraith Prize, Progressive Economics Forum, in 2014 and the Mike McCracken Award for Economic Statistics, of the Canadian Economics Association, in 2015.

6. Additional information on my qualifications is contained in my curriculum vitae, attached.

7. I was asked by counsel for the Commissioner of Competition to prepare a report addressing the impact of a price increase for wireless services on certain groups and addressing other certain other matters as set out in my report.

8. Attached as Exhibit "A" my report.

9. Attached as Exhibit "B" is my curriculum vitae.

10. Attached as Exhibit "C" is my Acknowledgement of Expert Witness.

11. Attached as Exhibit "D" a list of the sources and documents relied upon in preparing my report.

Signed, this 21st
day of September, 2022

Lars Osberg

Distributional Implications of the proposed Rogers/Shaw merger

And Why They Matter

Lars Osberg

McCulloch Professor of Economics

Dalhousie University

September 21st 2022

1. I was asked by counsel for the Commissioner of Competition, to assume that a price increase for wireless services (as defined in the application herein) of the general magnitude set out in the Report of Nathan Miller dated May 6, 2022 (which I understand is in the process of being finalized for the section 92 application) was likely to occur from the proposed merger between Rogers Communications Inc. and Shaw Communications Inc., to prepare a report addressing the impact of such a price increase by reviewing relevant available facts and statistical data and:

    a. To examine and describe the groups in society who would likely receive the gains from such a price increase, their characteristics and income levels; and

    b. To examine and describe the groups in society who would likely bear the costs or loss arising from such a price increase, their characteristics and the way such a price increase would be distributed across such groups.

2. I was also informed by counsel that the distributive impact of such a price increase on different groups in society has been held by the Federal Court of Appeal to be a relevant factor to be weighed in the balancing of the effects of the merger against any efficiencies. I was therefore asked, given my experience with public policy addressing social welfare and programs related to income equality, to make observations on general principles, rationales and factors applied in such policies which might be relevant to the task of the Tribunal in determining the weight to give the incidence of the gains and losses in the context of the application of the efficiency defense of the *Competition Act* to the impact of the merger on the wireless services market.

3. The balance of the losses and gains of the proposed merger will vary across Canadian households – higher prices for cell phone services will increase the cost of living of all households who use cell phones while the financial gains of greater profits will be received in proportion to stock ownership in the merged entity. In addition to financial impacts, to the extent that access to cell phone technology is a

social necessity in 21st century Canada, higher prices for that access will also be particularly important for the social inclusion or exclusion of low-income Canadians – further social marginalization of poor people can be considered a socially adverse consequence of the merger.

4. Estimation of the net change in economic well-being of Canadians ascribable to a change in market structure (such as a Rogers/Shaw merger) requires adding up gains and losses across dissimilar individuals, who will win or lose in different proportions. The net impact of the proposed merger on the well-being of Canadians therefore depends on its impact on the distribution of income among individuals and the social exclusion of low-income citizens, as well as on its impact on total national income.

5. Section 1 examines who the winners of the proposed merger will be and the relative size of their shares of the financial gains. The Rogers and Shaw family gains are discussed in Section 1.1 and the relative size of the gains of other Canadian Rogers/Shaw shareholders is examined in Section 1.2.

6. Section 2 looks at the losers. Section 2.1 summarizes available data on the impacts of increased cell phone prices on household budgets by income group in Canada. Section 2.2 then discusses the evidence on whether, in the early 21st century, cell phone access can be considered a "necessity" in Canada and elsewhere. Section 2.3 focusses on Canadians who do not have landlines or home internet and depend on their cell phones for all their telecommunications needs.

7. Will Canadians be better off if the Rogers/Shaw merger proceeds or if it does not? Section 3 discusses briefly why the distributional impact of policy changes and the availability of necessities to all citizens matters for public policy decisions. Section 3.1 addresses the distinction between actual and potential compensation. Sections 3.2 and 3.3 summarize briefly the Utilitarian and Rawlsian perspectives on why the distribution of gains and losses matters. Section 3.4 considers the ways in which the market for cell phone services diverges from the market structure assumed in calculations of consumer surplus and how that might matter.

1. Winners and Losers from the Rogers/Shaw Merger – Who wins? How Much?

8. The winners and losers from the proposed Rogers/Shaw merger are remarkably different in wealth and income. Consumers throughout the income and wealth distribution will pay any increase in the price of cell phone services (see Section 2 below). The financial winners from the merger will be the shareholders of cell phone companies, who are disproportionately likely to be at the very top of the income and wealth distribution of Canada.

9. To the extent that reduced competition in the market area affected by the Rogers/Shaw merger enables higher prices for cell phone services in those areas, both Rogers/Shaw and its competitors (notably the Bell and Telus networks) will be able to raise their prices over what they would otherwise have been. Those higher prices will increase the profitability of competitor networks, and the stock prices and future dividends of their shareholders, as well as increasing the profitability of the merged Rogers/Shaw entity. For households who were, and remain, subscribers to other networks such as Bell or Telus this will amount to a straightforward subscriber/shareholder income transfer, since those networks will not be affected by any cost savings realized in the merged Rogers/Shaw entity. The costs to subscribers can be expected to be borne in the proportions identified in Statistics Canada's Survey of Household Spending (which does not identify which cell phone provider is used). These costs are discussed in Section 2.

10. This section will focus on the gains of shareholders in the merged Rogers/Shaw company. Shareholders will benefit, in proportion to their share ownership, from an increase in the Rogers/Shaw stock price and from higher future dividends due to the greater profitability enabled by both cost savings (due to such things as "elimination of duplication" and "headcount reduction") and any greater price increases possible in a less competitive market. The new entity is forecast[1] to be 28.7% owned by the Rogers family and 4.5% owned by the Shaw family. Non-Rogers/Shaw Family Canadian-owned shares are forecast to be 28.9% with 17.9% foreign and 20% undisclosed/Unknown.

11. If the Undisclosed/Unknown shareholders are assumed to be Canadian and foreign in the same proportions as the known Canadian and foreign non-Rogers/Shaw family shareholders, the merged company will have three types of shareholders: (1) Rogers and Shaw family members (28.7% + 4.5% = 33.2%), (2) other Canadian shareholders (41.3%) and (3) foreign shareholders (25.5%).

1.1 The Rogers and Shaw Families (33.2%)

12. There is no mystery about where the Rogers and Shaw families are in the Canadian wealth distribution. Both are at the very, very top. In 2021, holdings of the Rogers Control Trust and other Rogers Family members in Rogers Communication were 151.4 Million shares[2] – which at the August 16th 2022 stock price of $59.34 Cdn. would be worth $8.984 Billion[3]. Shaw Family Company Shares of Shaw

[1]Affidavit of Erik Himan (May 4, 2022) Paragraph 34, Table 5

[2] Himan (2022) Paragraph 24, Table 2

[3] At the 52 week (before August 16th) high of $80.85, the value would be $12.24 Billion and at the 52 week low of $55.55, $8.41 Billion

Communications totaled 56.7 million (11.4% ownership)[4] which at a stock price of $35.32 implies wealth of $ 2.002 Billion[5]. Both families obviously have many other assets, so Rogers Communications shareholding of $9 Billion and Shaw Communications shareholding of $2 Billion are only part of their wealth picture.

13. The wealthiest general category identified in wealth distribution statistics is the top 1% of the top 1% - i.e. the top 0.01% or the top one in ten thousand – which in Canada in 2019 was estimated to begin at $143.1 Million. In presenting its estimates of the distribution of wealth in Canada, the Parliamentary Budget Office (PBO 2020:3)[6] commented that: "Statistics Canada's principal family wealth microdata product, the Survey of Financial Security Public Use Microdata File (SFS PUMF), reports families with wealth up to only $27 million. By contrast, the lowest entry on Canadian Business magazine's list of the 100 "Richest People" had a wealth of $875 million." The PBO therefor supplemented the survey data with Canadian Business (CB) magazine's Richest People List[7]. Table 1.1 is calculated from their Table 4-2 to show the average wealth holding and wealth share within each segment of the wealth distribution of Canada[8].

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[4] Himan (2022) Paragraph 31, Table 4

[5] At the 52 week high (before August 16th) of $39.49, the value would be $2.24 Billion and at the 52 week low of $33.42, $1.89 Billion

[6] "Estimating the top tail of the family wealth distribution in Canada" Parliamentary Budget Office (2021- Table 4.2 https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/RP-2021-007-S/RP-2021-007-S_en.pdf

[7] Survey data can paint a reasonable picture of the behavior and of the wealth of the "middle 90%" of the population but the very, very wealthy do not show up in the numbers, both because they are so few in number that they are unlikely to be sampled (except by very large surveys, which are prohibitively expensive) and because they are even more unlikely to provide data, in the improbable event that they are asked. As well, sampling variability is much more consequential for survey estimates at the very top end than in the middle. However, although the world's billionaires may not respond to sample surveys, they are few enough in number that the business press can keep track of their changing fortunes. It is now common practice to merge "rich list" or tax data on the very top end with survey data on the general population using a Pareto-function interpolation **(**see Top Incomes Over the Twentieth Century: A Contrast Between Continental European and English-Speaking Countries A. B. Atkinson, T. Piketty, **Oxford University Press 2007) ,** as the PBO did. The PBO used the Canadian Business "rich list" and Forbes magazine also maintains a "rich list" of great fortunes (see Forbes Billionaires 2022: The Richest People In The World) which includes Canadians. Although these lists differ somewhat, and sometimes seem to miss large fortunes held through family trusts and foundations, they are the best available data on the very top end of the wealth distribution.

[8] PBO estimates are for the distribution of wealth among nuclear families (i.e. people related by blood, marriage or adoption sharing a common residence), which will in general differ from estimates of the distribution of wealth among individuals. (Estimates of the distribution of wealth among individuals face the formidable problem of attributing wealth within households – e.g. assigning to spouses the value of

14. Both the Rogers and Shaw families are far above the threshold value ($143.1 Million) for the top 0.01% (i.e. top one in ten thousand) of the wealth distribution of Canada in 2019. Both similarly are far above the threshold for the top 0.01% of the income distribution. Rogers wealth of $9 Billion[9] and Shaw wealth of $2 Billion are only part of their wealth pictures, but even a 5% rate of return[10] on $9 Billion would generate $450 Million in annual income for the Rogers family and a 5% return on $2 Billion would produce $100 Million annually for the Shaw family – both are far above the threshold value for the top 0.01% of the income distribution, which was $2.973 Million annually in 2019.[11]

jointly owned assets like family homes.) For many reasons – e.g. tax minimization, maintenance of corporate control, intra-family dynamics - ownership of wealth at the very top is often a complex affair of family trusts and a maze of private companies – in the present instance, the Rogers Control Trust and Shaw Family Living Trust. Since the family trusts of the very wealthy link the fortunes of individual family members between generations and across households, the wealth of the extended family is the relevant concept.

[9] The *Canadian Business* 2017 listing "Canada's Richest People: The Complete Top 100 Ranking" put Rogers family wealth at $11.57 Billion and Shaw wealth at $1.61 Billion https://archive.canadianbusiness.com/lists-and-rankings/richest-people/100-richest-canadians-complete-list/

[10] The actual rate of return on portfolios of this size is considerably higher than rate of return obtained by small savers. See Heterogeneity and Persistence in Returns to Wealth Fagereng, Andreas; Guiso, Luigi; Malacrino, Davide; Pistaferri, Luigi ISSN: 0012-9682; DOI: 10.3982/ECTA14835 Econometrica : 2020, Vol.88(1), p.115-170

[11] Statistics Canada. Table 11-10-0055-01 High income tax filers in Canada
DOI: https://doi.org/10.25318/1110005501-eng

Table 1.1 Family wealth distribution, by selected quantiles, Canada, 2019

Family wealth quantile	Wealth Threshold ($million)	Number of Families (thousands)	Total Wealth ($billions)	Average Wealth ($millions)	Share of Total Wealth (percent)
Top 0.01%	143.1	1.6	654	408.75	5.6
Next 0.09%	29.3	14.4	773	53.7	6.6
Next 0.4%	9.7	65.3	983	15.1	8.4
TOTAL TOP 0.5%	**9.7**	**79.7**	**2,410**	**30.24**	**20.6**
Next 0.5%	6.1	79.6	600	7.5	5.1
TOTAL TOP 1%	**6.1**	**159.3**	**3,010**	**18.90**	**25.7**
Next 4 %	2.3	637.4	2,097	3.3	18
Next 5 %	1.6	796.8	1,522	1.9	13
TOTAL TOP 10%	**1.6**	**1,593.5**	**6629**	**4.2**	**56.7**
Next 10%	1	1,593.5	2,004	1.26	17.1
Middle 40%	**0.1-1.0**	**6,373.8**	**2,932**	**0.46**	**25.1**
Bottom 40%	**under 0.1**	**6,373.8**	**132**	**0.02**	**1.1**

Source: Calculated from Table 4-2 Parliamentary Budget Office (2021)

1.2 Other Canadian Shareholders (41.3%)

15. Other known Canadian-owned shares in the merged entity are to be 28.9% of total shareholdings. If the 20% Undisclosed/Unknown shares are allocated proportionate to known foreign and domestic shareholders, some 41.3% of the merged entity will be Canadian owned Non-Rogers/Shaw Family. The value of the current shareholdings of the other Canadian shareholders is $13.67 Billion, if valued on the same basis (see above) as the current holdings of the Rogers and Shaw families. The specific identities of these other Canadian shareholders are unknown to the author, but it is possible to calculate the distribution of their financial gains on the assumption that Rogers and Shaw shares are held similarly to other share ownership or to the ownership of financial assets.

16. As already noted, survey data on the ownership of wealth typically has little information on top wealth-holders[12], and when billionaires are not counted there is an under-estimate of wealth inequality. It has long also been known that financial

[12] The 2019 Survey of Financial Security, for example, started with a sample of 20.098 dwellings, from which data was obtained on 10,422 in-scope responding family units. Although 5 sampling strata were identified, this size of sample obviously makes it impossible to talk reliably about the top one in ten thousand of the wealth distribution. Sampling variability, item non-response and financial complexity are also major problems for survey data on the very wealthy. See Tables 2.2 and 2.3 Data Quality Report, 2019 Survey of Financial Security, Social Statistics Methods Division, Statistics Canada, April 2021.

assets, especially stock ownership, are particularly likely to be under-reported[13]. Survey data on financial asset ownership is thus best seen as providing a lower bound estimate of the inequality of financial asset ownership and Table 1.2 (taken from publicly available data from Statistics Canada's Survey of Financial Security) must be read with that in mind. Since there is not much difference between the different survey years (2005, 2012, 2016 and 2019) in the percentage of financial assets owned by each decile of the wealth distribution, Table 1.2 averages over those four survey years.

17. Adding together financial assets owned directly by households and indirectly[14] through private pension funds, the Survey of Financial Security estimates, as Table 1.2 indicates, that the bottom 30% of Canada's wealth distribution own 0.9% of Financial Assets in Canada and the next 20% own 4.6% for a total 5.5% of financial assets owned by the less wealthy half of Canadians.

[13] James B. Davies (1979) "On the Size Distribution of Wealth in Canada" *Review of Income and Wealth* September 1979, pages 237-260.

[14] Pension fund assets are over twice the financial assets directly owned by households (in 2019, for example, $3,945,309 M compared to $ 1,544,715 M). Such assets are owned by the pension fund (whose liabilities are its pledges to pay pension benefits), so pension beneficiaries, unlike share owners, have no control of such assets and no influence over corporate decisions. Only about 37% of Canadian workers are currently in registered pension plans (a percentage which has been trending down and is positively correlated with income). See *Pension plans in Canada, as of January 1, 2020* Statistics Canada DAILY **2021-06-29** https://www150.statcan.gc.ca/n1/daily-quotidien/210629/dq210629c-eng.htm

Table 1.2: Distribution of Ownership of Non-Pension Financial Assets and Private Pension Assets[15] by Net Worth Decile. Average of 2005, 2012, 2016, 2019

Decile	Share of all Non-Pension Financial Assets and Private Pension Assets
Total, all net worth deciles	100.0%
Lowest net worth decile	0.1%
Second net worth decile	0.1%
Third net worth decile	0.7%
Fourth net worth decile	1.6%
Fifth net worth decile	3.0%
Sixth net worth decile	5.0%
Seventh net worth decile	8.4%
Eighth net worth decile	13.2%
Ninth net worth decile	21.9%
Highest net worth decile	46.1%

Source: Statistics Canada. Table 11-10-0075-01 Selected assets and debts by net worth deciles, Survey of Financial Security https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110007501

18. If the merged Rogers/Shaw entity is 41.3% owned by Canadian, non-Rogers/Shaw households, then such households will receive in total 41.3% of the financial gains to Rogers/Shaw shareholders from the Rogers/Shaw merger. If ownership of Rogers/Shaw shares is proportionate to overall ownership of financial assets[16], that implies the least wealthy 30% of Canadian households will get 0.9% of the total gains of Canadian, non-Rogers/Shaw family share owners and the next 20% will get another 4.6% of those financial gains from the Rogers/Shaw merger. Putting those two proportions together, 0.38% (= 0.431*0.9%) of the financial gains to Rogers/Shaw shareholders from the Rogers/Shaw merger will be received by the poorest 30% of Canadian households and another 1.98% (= 0.431*4.6%) will be received by the next 20%. The less wealthy half of Canada can thus expect to get a total 2.36% share of the financial benefits to Rogers/Shaw shareholders of the Rogers/Shaw merger.

[15] The Survey of Financial Security provides an estimate of the total value of all financial assets owned by people in each decile of the wealth distribution. Table 1.2 reports the percentage of all deciles reported financial assets held by each decile. To the extent that the Survey of Financial Security does not record the financial assets of the very wealthy, Table 1.2 will overstate the percentage of financial assets owned by the bottom nine deciles. Since it is known that the top respondent to the SFS had wealth ($27M) less than the threshold value ($29.3M) estimated by the PBO for the top 0.1%, who are estimated to hold 12.2% of total wealth (held mostly in financial form) adding that unreported wealth to the net worth of the top decile would have a non-trivial impact on the reported financial asset shares of other deciles.

[16] In the 2019 SFS, reported stock ownership was only 12.8% of non-pension financial assets and mutual funds were another 27.8% (Table 2.4 Data Quality Report). Since bank deposits and low-risk assets dominate the (small) portfolios of low-wealth and low-income households, assuming that ownership of Rogers/Shaw stocks is proportional to total financial assets will overstate the Rogers/Shaw holdings of the relatively poor.

19. Published reports[17] indicate that the Rogers family includes four children and four grandchildren. If those are the immediate[18] beneficiaries of the Rogers Family Trusts, these eight people will share 28.7% of the financial benefits of the merger, which is on average 3.59% (=28.7%/8) per family member. The per person value of the merger for each individual Rogers family member is thus about 152% (= 3.59%/2.36%) of the financial gains accruing to the less wealthy half of Canada. With more family members and a smaller total share of future profits, the per person financial benefit of the merger for Shaw family members is smaller. If the widow of JR Shaw, four children and twelve grandchildren[19] all share (e.g. through the Shaw Family Living Trust) in the financial gains from the Rogers/Shaw merger, their per immediate capita benefit is 0.26% (=4.5%/17) of the financial gains from the merger.

20. These calculations of the distribution of financial gains ignore any possible financial advantages for the Rogers and Shaw families of their continued corporate control of the merged enterprise. Ignoring the financial benefits of their continued corporate control implies an under-estimate (of unknown size) of the inequality of gains from the merger.

21. Any comparison of the distributional impacts of the merger should examine the distribution of benefits per person. Since there are 38.6 Million Canadians in 2022, 19.3 Million are in the bottom half (11.6 Million in the bottom 30% and 7.7 Million in the next 20%) of the wealth distribution. Most of them will not have any ownership interest in Rogers/Shaw at all, either direct or indirect. However, on average the 0.38% of total financial benefits to Rogers/Shaw shareholders received by Canada's least wealthy 30% (11.6 Million people) amount to 0.000000033% (= 0.38%/11.6M) of total financial benefits per person. The next 20%, numbering 7.7 Million, can expect a total 1.98% of benefits, which on a per person basis averages to 0.000000259% of benefits. The per person financial benefit to each Rogers family member will therefore be about 109 Million times greater (= 3.59% /0.000000033%) than the per person benefit to Canada's least wealthy 30% and about 29 Million times larger than the per person benefit to the less wealthy half of Canada. The per person financial benefit of the merger for Shaw family members is 8.5 Million times (= 0.26% /0.000000033%) larger than the per person benefit of Canada's bottom 30% and about 935,000 times larger than the per person benefit of the less wealthy half of Canada.

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[17] https://www.thecanadianencyclopedia.ca/en/article/ted-rogers

[18] Since the Rogers grandchildren will eventually inherit from their own parents, the ultimate benefit to the grandchildren of the Rogers/Shaw merger will be much greater than their immediate pro-rated per person share of total gains.

[19] https://calgaryherald.com/business/local-business/shaw-communications-announces-the-death-of-founder-jr-shaw/

22. In my view, the proposed Rogers/Shaw merger is an exchange of assets and it is most appropriate to compare its impacts at different points in the distribution of wealth. However, the differences between the gains and losses arising from the Rogers/Shaw merger for more affluent and less affluent Canadians can be examined comparing either more wealthy and less wealthy Canadians or comparing higher income and lower income households. It does not really make that big a difference, but it does make some difference, since income and wealth are imperfectly correlated. Table 1.3 presents the distribution of ownership of financial assets by income decile.

Table 1.3: Distribution of Ownership of Non-Pension Financial Assets and Private Pension Assets by After-Tax Income Decile Average of 2005, 2012, 2016, 2019

After-tax income decile	Share of all Non-Pension Financial Assets and Private Pension Assets
Total, all after-tax income deciles	100.0%
Lowest after-tax income decile	1.5%
Second after-tax income decile	1.9%
Third after-tax income decile	3.3%
Fourth after-tax income decile	5.2%
Fifth after-tax income decile	7.4%
Sixth after-tax income decile	8.6%
Seventh after-tax income decile	11.2%
Eighth after-tax income decile	12.9%
Ninth after-tax income decile	16.6%
Highest after-tax income decile	31.3%

Source: Statistics Canada. Table 11-10-0078-01 Selected assets and debts by after-tax income deciles, Survey of Financial Security: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110007801

23. If ownership of Rogers/Shaw shares is proportionate to overall ownership of all financial assets, that implies the lowest income 30% of Canadians will get 6.7% of the total gains of Canadian, non-Rogers/Shaw households owning Rogers/Shaw shares and the next 20% will get another 12.6% of the financial gains from the Rogers/Shaw merger. Putting those two proportions together, 2.77% (= 0.431*6.7%) of the financial gains to Rogers/Shaw shareholders from the Rogers/Shaw merger will be received by the lowest income 30% of Canadian households and another 5.22% (= 0.431*12.6%) will be received by the next 20%. The low-income half of Canada may thus get a total 8.0% share of the direct financial benefits to Rogers/Shaw shareholders of the Rogers/Shaw merger.

24. The per-person contrast between the gains of the Rogers and Shaw families and those of lower-income Canadians is thus not quite as stark as when wealth inequality is the focus. On average the 2.77% of total financial benefits to

Rogers/Shaw shareholders received by the 11.6 Million people in Canada's lowest income 30% amount to 0.00000024% of total benefits per person. The next 20%, numbering 7.7 Million, can expect a total 5.22% of gains to Rogers/Shaw shareholders, which on a per person basis averages to 0.00000068% of benefits. The per person financial gain of each Rogers family member will therefore be about 14.9 Million times greater than the per person gain of Rogers/Shaw shareholders in Canada's lowest income 30% and about 8.6 Million times larger than the per person benefit to those in the lower income half of Canada. With more family members and a smaller total share of future profits, the per person financial benefit of the merger for Shaw family members is 1.1 Million times larger than the per person benefit to Rogers/Shaw shareholders of Canada's lowest income 30% and about 627,000 times larger than the per person benefit of the lower income half of Canada.

25. In addition, if the market for cellphone services becomes less competitive, and cell phone prices in affected markets rise more than they would have otherwise, shareholders in competitor networks will also gain financially, in proportion to their share ownership, while subscribers to those other networks will lose financially, in proportion to their cell phone bills.

26. Direct share ownership is not common in Canada and is somewhat more concentrated than ownership of all types of financial assets. As Table 1.4 indicates, over the four waves 2005-2019 of the Survey of Financial Security, an average 8.4%

of households[20] have reported stock ownership[21]. Comparing income deciles, the share (5.5%) of reported stock ownership wealth of the lowest income 30% of households is less than their share (6.7%) of all financial assets, while the top income decile owns 55.2% of reported stock value but only 31.3% of all financial

[20] If anything, there is a downward trend in the percentage of households owning stocks directly. However, in a sample survey of limited size like the SFS which tries to measure a variable like wealth whose distribution is highly skewed, year to year sampling variability adds to actual year to year variation over time. Table 1.4 (c) shows the percentage of households who reported owning stock in each survey year.

Table 1.4(c) Direct Ownership of Stocks by Decile – 2005, 2012, 2016, 2019

	2005		**2012**		**2016**		**2019**	
Decile	Percentage of households in the income decile holding stocks (percent)	Average value of stocks for those that hold stock ($)	Percentage of households in the income decile holding stocks (percent)	Average value of stocks for those that hold stock ($)	Percentage of households in the income decile holding stocks (percent)	Average value of stocks for those that hold stock ($)	Percentage of households in the income decile holding stocks (percent)	Average value of stocks for those that hold stock ($)
01	*	*	*	*	3.10	98,700	*	*
02	*	*	2.87	89,800	*	*	*	*
03	*	*	4.20	62,800	2.95	43,200	2.63	109,200
04	6.37	76,900	5.55	107,500	4.50	51,800	4.47	66,900
05	8.49	51,200	7.91	196,500	5.91	79,700	7.08	104,700
06	9.93	39,200	7.13	97,700	6.31	100,200	8.40	81,200
07	11.24	54,800	9.13	98,700	8.06	143,300	9.24	88,500
08	11.40	125,300	9.78	101,900	8.95	134,600	9.98	112,900
09	15.59	39,200	13.21	138,500	11.59	189,700	13.56	121,200
10	27.16	169,400	23.35	366,600	19.90	542,800	18.28	335,700
Total	9.90	99,100	8.53	184,200	7.34	235,100	7.96	155,800

*Suppressed by Statistics Canada as “too unreliable to be published.”
Source: Statistics Canada, Tabulation of Survey of Financial Security, certified September 14, 2022

[21] As already noted, the share holdings of the very wealthy are not captured in the SFS. The Rogers and Shaw family holdings in fact provide an example of the empirical importance of wealth not reported in sample surveys. As Paragraph 13 noted, the top wealth holding identified in the SFS was $27 Million so it is clear that neither the Rogers nor Shaw family shareholdings are in the SFS survey data. That implies that at least 45% (=33.2/(33.2+41.3)) of the value of Rogers/Shaw shares is not included in the total Rogers/Shaw stock wealth of Canadian residents identified by the SFS. As footnote 15 has noted, SFS respondents did not include the top 0.1% of wealth holders but if the shares owned by them were added to the stock wealth reported by the top 10% of survey respondents, that would affect significantly the recorded top 10% share of stock ownership.

assets[22]. If the gains to Rogers/Shaw shareholders of the merger were allocated to income classes proportionate to reported stock ownership that would imply a more unequal impact of the merger than the calculations, based on Table 1.3 above, already reported in Paragraphs 19 and 21 above.

[22] Canadian households can benefit from both direct share ownership or indirect ownership through mutual funds or pension plans. Similar calculations to those reported in Table 1.4 have been done specifically for the shares of income deciles in the total value of mutual funds, investment funds and income trusts and the decile income shares of pension assets. The results are not much different. To avoid tedium, these results are not reported here, but are available on request.

Table 1.4: Direct Ownership of Stocks by Income Decile – 2019

	2019	2019	Across year (2005, 2012, 2016,2019) average		
Income decile	Percentage of households in the income decile holding stocks (percent)	Average value of stocks for those that hold stocks ($)	Percentage of households holding stock in the income decile (simple average across reported years)	Average value of stocks for those that hold stock (simple average across years in constant 2019 dollars)	share of value of all stocks held
01	*	*	3.1	98,700	2.1%
02	*	*	2.9	89,800	1.8%
03	2.6	109,200	3.3	71,733	1.6%
04	4.5	66,900	5.2	75,775	2.8%
05	7.1	104,700	7.3	108,025	5.6%
06	8.4	81,200	7.9	79,575	4.4%
07	9.2	88,500	9.4	96,325	6.4%
08	10.0	112,900	10.0	118,675	8.4%
09	13.6	121,200	13.5	122,150	11.6%
10	18.3	335,700	22.2	353,625	55.2%
Total	8.0	155,800	8.4	168,550	100%
* Suppressed by Statistics Canada as “too unreliable to be published.”					
Source: Statistics Canada, Tabulation of Survey of Financial Security, certified September 14, 2022					

Direct reported ownership of stocks is also clearly much higher in the top 20% of the income distribution than for the middle class or the poor or near-poor – see Table 1.4(b), which uses Statistics Canada’s Low Income Measure (LIM) as its poverty line threshold (see Section 2.2 below).

Category 1: POOR; $Y \leq LIM$

Category 2: NEAR-POOR; $LIM < Y \leq 1.25*LIM$

Category 3: MIDDLE 1; $1.25*LIM < Y \leq 2*LIM$

Category 4: MIDDLE 2; $2*LIM < Y \leq$ *(Top 20%)*

Category 5: TOP 20, $Y >$ *Top 20% income threshold*

Where $Y =$ *Income*

Table 1.4(b) Direct Ownership of Stocks by Income Category - 2019

Income category	Number of households in the income category	Percentage of households in income group holding stocks (percent)	Average value of stocks for those that hold stock ($)
1	3,560,200	2.9	123,800
2	1,446,600	2.6	78,400
3	4,122,200	5.4	65,000
4	3,981,400	9.5	88,700
5	2,804,000	18.7	254,400
All categories	15,914,400	8.0	155,800
Source: Statistics Canada, Tabulation of Survey of Financial Security, certified September 14, 2022			

27. Inequality within the least wealthy (or lowest income) 30% or 50% of Canadian households is significant. As Table 1.2 indicates, for example, the share (0.1%) of financial assets held by the least wealthy 10% of households is one seventh of the share (0.7%) of the third decile. As a consequence, focussing on the *average* gains of the bottom 30% and 50% of the distributions of income and wealth obscures the very much smaller per person share of gains received by the least affluent 10% of Canadians. Since financial assets like bank deposits are more widely held than stocks, assuming that the ownership of Rogers/Shaw shares among the bottom 30% or 50% is proportionate to the Survey of Financial Security data on the distribution of all financial assets will also overstate their actual share of the financial gains from the merger. The comparisons of per person gains from the merger to Rogers/Shaw shareholders presented above will therefore understate the disparity between gains received at the top and at the bottom of Canada's distributions of income and wealth. However, whatever way one slices it, a very tiny part of the financial gains to Rogers/Shaw shareholders from the Rogers/Shaw merger will be received by less affluent Canadians.

2. The Distribution of Losses – Who loses? How Much?

2.1 Costs to Cell-Phone subscribers

28. If a lessening of competitive pressures enables the merged Rogers/Shaw enterprise to raise prices more than otherwise would have been the case, greater costs will be borne by all cell phone service customers, with an impact that will be proportionate to their current expenditure on cell phone services. Additionally, higher cell phone prices can be expected, at the margin, to adversely affect the percentage of households without cell phones.

29. Statistics Canada's Survey of Household Spending enables comparison of household expenditure on cell phone services at different points of the income distribution. Publicly available data from that survey is the source of Table 2.1.1, which documents cell phone and pager costs by income quintile in Canada from

2015 to 2019. Over the 2015 to 2019 period, cell phone costs rose for all income quintiles as a percentage of total household spending, but especially for the bottom two quintiles. Expressed as a percentage point increase, the increase was 0.17 percentage points for all quintiles and 0.24 percentage points for the bottom income quintile.

30. Percentage point changes in total expenditure may be a poor way of expressing the impact of cell phone price changes on discretionary expenditure. If most of a family's income is pre-committed to mortgage payments and taxes and paying for the gas to get to work and other inflexible spending requirements, any increase in cell phone charges must be paid for out of the amount left over, which will be substantially less than total income.

31. A useful way of seeing the relative importance of cell phone charges to family budgets therefore is to compare them to food expenditures[23]. Food is universally recognized as a necessity, and at the margin food is also a discretionary source of pleasure. A minimum number of calories and a minimum amount of protein is necessary for physical survival, but protein can, for example, be provided by either lentils or filet mignon – in Canada, most food expenditure exceeds the physically necessary minimum. In a similar vein, Section 2.2 will argue that in Canada in 2022, access to cell phone services has become a social necessity, but some uses of cell phone technology (e.g. streaming video) are reasonably seen as discretionary sources of pleasure. Hence, total spending on both food and cell phone services combines discretionary spending and that required for a minimum necessary purchase. It is striking that cell phone spending is a fairly constant, and significant, fraction of spending on food.

32. One intuitive way of understanding the importance of cell phone costs in family budgets is to express them in terms of the number of meals per week that would have to be skipped in order to pay the cell phone bill. Fasting one day a week would save 3 meals weekly, about 14% of food expenditure, which is somewhat more than the cost of cell phones. Between 2015 and 2019, the weekly "meal equivalent" cost of cell phone charges increased from 2.56 to 2.74 (averaging 2.7) meals per week for all income quintiles, and was fairly constant across income quintiles. Cell phones are a significant expenditure item, for all but the highest income households.

[23] A technical reason for preferring the cellphone/food expenditure comparison to the comparison of cellphone expenditure with annual income is the better alignment of reporting time periods. In the Survey of Household Spending, household expenditures are captured by weekly expenditure diaries, filled in by respondents who answer the survey in different months of the year. Those diary expenditures are then extrapolated to annual totals. The income measure is that of the previous tax year (i.e. 2018 for the May 2019 SHS). Volatility of incomes, which is particularly likely for low-income households, can thus influence some comparisons of expenditure/income ratios. (see *User Guide for the Survey of Household Spending*, 2019 Statistics Canada Catalogue no. 62F0026M ISSN 1708-8879 ISBN 978-0-660-36993-8 Release date: January 22, 2021)

Table 2.1.1: Household expenditures on cell phone services and food, 2015-2019

All quintiles	2015	2016	2017	2019	4 year average	Increase 2019-2015
Total expenditure	$82,697.00	$84,489.00	$86,479.00	$93,724.00	$86,847.25	$11,027.00
Cell phone and pager services	$1,047.00	$1,105.00	$1,216.00	$ 1,343.00	$1,177.75	$296.00
Cell as % of Total Spending	1.27%	1.31%	1.41%	1.43%	1.35%	0.17pp
Food expenditures	$8,629.00	$8,784.00	$8,968.00	$10,311.00	$9,173.00	$1,682.00
Food as % Total Spending	10.43%	10.40%	10.37%	11.00%	10.55%	0.57pp
Cell as % of Food Spending	12.13%	12.58%	13.56%	13.02%	12.82%	0.89pp
Food expenditure per meal	$7.88	$8.02	$8.19	$9.42	$8.38	$1.54
cell phone expenditure in weekly meals	2.56	2.65	2.86	2.74	2.70	0.19
Lowest quintile	2015	2016	2017	2019	4 year average	Increase 2019-2015
Total expenditure	$33,705.00	$32,566.00	$35,113.00	$37,534.00	$34,729.50	$3,829.00
Cell phone and pager services	$525.00	$569.00	$631.00	$673.00	$599.50	$148.00
Cell as % of Total Spending	1.56%	1.75%	1.80%	1.79%	1.72%	0.24pp
Food expenditures	$4,983.00	$4,735.00	$4,982.00	$5,560.00	$5,065.00	$577.00
Food as % Total Spending	14.78%	14.54%	14.19%	14.81%	14.58%	0.03pp
Cell as % of Food Spending	10.54%	12.02%	12.67%	12.10%	11.83%	1.5pp
Food expenditure per meal	$4.55	$4.32	$4.55	$5.08	$4.63	$0.53
cell phone expenditure in weekly meals	2.22	2.53	2.67	2.55	2.49	0.33
Source: Statistics Canada. Table 11-10-0223-01 Household spending by household income quintile, Canada, regions and provinces, Release date: 2021-01-22						

33. Another way of making the same point – that cell phone costs are a quite significant part of the cost of living of Canadian households at all income levels – is to compare cell phone spending to other detailed expenditure categories. Table 2.1.2 uses publicly available data for 2019, which can compare expenditure by income quintile.

Table 2.1.2: Cell Phone Services Expenditures and Other Key Essential Household Expenditures as a percentage of household income (2019)

Expenditures as a percentage of household income by category:	All quintiles	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Highest quintile
Communications	3.87%	4.51%	4.42%	4.16%	3.87%	3.30%
Cell phone and pager services	1.95%	1.90%	2.00%	2.07%	2.06%	1.80%
Food purchased from stores	10.92%	12.29%	12.19%	11.78%	11.12%	9.33%
Vegetables and vegetable preparations	1.41%	1.62%	1.65%	1.47%	1.47%	1.17%
Dairy products and eggs	1.52%	1.69%	1.70%	1.72%	1.54%	1.27%
Meat	2.15%	2.53%	2.44%	2.23%	2.12%	1.88%
Food purchased from restaurants	4.02%	3.37%	3.98%	3.72%	4.41%	4.12%
Public transportation	2.14%	2.55%	1.94%	1.87%	2.20%	2.22%
Personal care	2.01%	2.01%	1.86%	1.99%	2.12%	1.99%
Household furnishings	1.63%	1.52%	1.47%	1.52%	1.80%	1.67%

Source: Statistics Canada. Table 11-10-0223-01 Household spending by household income quintile, Canada, regions and provinces, and Statistics Canada, Tabulation of Survey of Household Spending, certified April 25, 2022

34. It is notable that cell phone and pager service spending is, for all income quintiles, a bigger fraction of the household budget than “Dairy products and eggs” or “Vegetables and vegetable preparations” or all “Household furnishings”.

35. A special tabulation by Statistics Canada (using the same survey data, but using a finer disaggregation of impacts by income decile, is presented in Table 2.1.3

Table 2.1.3 2019 Cellphone Services Costs relative to Income & Food Spending

Alberta, British Columbia, Ontario			
Decile	Percent of households with no cell phone	Percent of household income spent on cell service[24]	Cell phone expenditures as a percentage of food expenditure
1	17.2	27.7	14.1%
2	22.9	3.4	18.1%
3	12.4	2.6	20.2%
4	6.2	2.2	18.5%
5	3.0	1.9	19.0%
6	4.8	1.7	20.0%
7	0.4	1.6	20.8%
8	1.0	1.4	19.7%
9	2.4	1.3	21.3%
10	2.1	0.9	21.4%
All	7.2	4.1	15.8%
Source: Statistics Canada, Tabulation of Survey of Household Spending, certified September 14, 2022			

Rest of Canada			
Decile	Percent of households with no cell phone	Percent of household income spent on cell service	Cell phone expenditures as a percentage of food expenditures
1	26.3	22.8	20.1%
2	30.8	3.0	16.9%
3	17.5	2.4	16.2%
4	10.1	2.0	16.5%
5	9.9	1.8	16.2%
6	3.8	1.7	17.2%
7	3.1	1.5	17.4%
8	1.5	1.4	17.9%
9	2.4	1.2	17.6%
10	6.0	0.8	16.0%
All	11.1	3.4	18.6%
Source: Statistics Canada, Tabulation of Survey of Household Spending, certified September 14, 2022			

36. Table 2.1.4 organizes the data a little differently, to look more explicitly at cellphone spending of the poor[25], near poor and middle-class segments of the income

[24] "Percent of household income spent on cell service" is calculated only for those households with one or more cell phones, and the percentage of income spent on food is calculated for the same households.

[25] As defined by Statistics Canada's Low Income Measure (see Paragraph 41 below). Since measuring poverty according to the MBM measure (Canada's official poverty line) requires data on details of household income that are not available in the Survey of Household Spending, this section uses the LIM rather than the MBM.

distribution as defined by Statistics Canada's Low Income Measure or LIM (see Section 2.2 and especially Paragraph 41 below).

Category 1: POOR; $Y \leq LIM$

Category 2: NEAR-POOR; $LIM < Y \leq 1.25*LIM$

Category 3: MIDDLE 1; $1.25*LIM < Y \leq 2*LIM$

Category 4: MIDDLE 2; $2*LIM < Y \leq$ *(Top 20%)*

Category 5: TOP 20, $Y >$ *Top 20% income threshold*

Where $Y =$ *Income*

Table 2.1.4: 2019 Cellphone Costs relative to Income & Food Spending

Alberta, British Columbia, Ontario			
Income Category	Percent of households with no cell phones	Average percent of household income spent on cell service	Cell phone expenditures as a percentage of food expenditures
1	16.7%	16.3%	14.4%
2	14.3%	3.0%	19.6%
3	5.9%	2.0%	19.6%
4	3.0%	1.5%	20.3%
5	2.4%	0.9%	20.5%
All	7.2%	4.1%	15.8%
Source: Statistics Canada, Tabulation of Survey of Household Spending, certified September 14, 2022			

Rest of Canada			
Income Category	Percent of households with no cell phones	Average percent of household income spent on cell service	Cell phone expenditures as a percentage of food expenditures
1	23.9%	14.6%	19.6%
2	25.2%	2.4%	15.1%
3	9.9%	2.0%	17.2%
4	3.7%	1.3%	16.7%
5	5.4%	0.9%	17.0%
All	11.1%	3.4%	18.6%
Source: Statistics Canada, Tabulation of Survey of Household Spending, certified September 14, 2022			

37. Table 2.1.5 reports cell phone spending by decile in Canada in 2019. As a percentage of income, cell phone costs are greatest for the lower income deciles, implying that a price increase will have its largest proportionate impact on family

budgets among lower income households. In absolute dollars, spending rises with income, but at a rate that diminishes with income.

Table 2.1.5: Cell phone spending by decile: Canada 2019.

Income Decile	% of households with 0 cell phones	Average % of household income spent on cell phone services, for households with ≥1 cell phone	Average % of household income spent on cell phone services, for all households including those with zero cell phones	Average income for decile	Average Cell Phone Expenditure for all households in category
1	20.7	*	*	$13,657	*
2	25.9	3.3	2.4	$28,513	$697.23
3	14.3	2.5	2.1	$41,365	$886.25
4	7.7	2.1	1.9	$55,115	$1,068.29
5	5.6	1.9	1.8	$69,755	$1,251.13
6	4.4	1.7	1.6	$85,910	$1,396.21
7	1.4	1.5	1.5	$104,324	$1,542.95
8	1.2	1.4	1.4	$128,114	$1,772.07
9	2.4	1.2	1.2	$160,850	$1,883.88
10	3.6	0.9	0.9	$282,390	$2,450.02

*Note: Values for the first income decile are not reported due to reliability concerns. The average percent of income spent on Cell Service for the lowest decile is computed strictly on households from the lowest decile having a positive income (households reporting a negative or null income were not used to determine the average). Additionally, the income is from the calendar year prior to the survey year, whereas the spending on Cell Service is an annualized value based on the last payment (which would usually be in the survey year).

Source: Derived from Statistics Canada, Tabulation of Survey of Household Spending, certified September 14, 2022

2.2 Cell Phones – a Necessity of 21st Century Life?

38. Cell phones were clearly not a necessity of life in Canada 50 years ago, when they did not exist, or 25 years ago, when cell phone ownership was rare. In those days, it was possible, *because cell phone ownership by other people was non-existent or rare*, to participate in normal social and economic interactions, from arranging a social life to finding out about shift reassignments on one's job, without a cell phone. However, as "everyone else" has acquired cell phones, and as their capabilities have expanded, remaining on the outside without one becomes ever more difficult.

39. "Necessities" include both the material requirements for personal physical survival and the commodities needed for participation in society. Almost 250 years ago, when the per capita national income of England and Scotland was significantly less than that of India today,[26] Adam Smith defined “necessities” as “not only those things which nature, but those things which the established rules of decency have rendered necessary to the lowest rank of people.” Smith was absolutely clear that the “established rules of decency” of a society change as a society changes. In 1776, one of the examples he used was: “a linen shirt, for example, is, strictly speaking, not a necessary of life. The Greeks and Romans lived, I suppose, very comfortably though they had no linen. But in the present times, through the greater part of Europe, a creditable day-labourer would be ashamed to appear in public without a linen shirt, the want of which would be supposed to denote that disgraceful degree of poverty.”[27]

2.2.1 Canada’s Official Poverty Line – The “Market Basket Method”

40. There is a large modern literature on the definition and measurement of poverty[28]. In the comparative international literature, the most commonly used “poverty line” criterion is one half[29] the median household money income after taxes and transfers, which in the modern literature is usually adjusted for household size to reflect economies of scale in household consumption. The poverty criterion is therefore more exactly one half of “median equivalent disposable income”. A major advantage of this criterion of poverty is that it enables international comparisons, since the necessary comparable data is widely available. A disadvantage is that it is not sensitive to differences in the regional cost of living within countries.

41. Statistics Canada has long called the “one half of median equivalent disposable income” criterion the “Low Income Measure[30]” or LIM. For many years, Statistics

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[26] Maddison (2003; 59) estimated (using 1990 Purchasing Power Parity USD) that in 1820, UK GDP per capita was $1,706, and for the rest of Europe was $1,245. For comparison, India’s GDP per capita was $2,756 in 2007 (World Development Indicators — Current PPP International $).

[27] Adam Smith (1776) *The Wealth of Nations* (Vol. 2, Bk. V, Ch. II, Pt II, Art IV - 1961:400).

[28] See L. Osberg (2007) “The Evolution of Poverty Measurement—With Special Reference to Canada” a report to Statistics Canada https://www.researchgate.net/publication/228750590_The_Evolution_of_Poverty_Measurement-With_Special_Reference_to_Canada. For short summaries, see Osberg (2018: Chapter 4) or L. Osberg (2000) “Poverty in Canada and the USA: Measurement, Trends and Implications” Presidential Address to the Canadian Economics Association Canadian Journal of Economics Vol.33, No.4, November, 2000 pp. 847-877;

[29] The European Union uses a 60% of median household income criterion.

[30] See: “Low income measure (LIM) thresholds by income source and household size” Table: 11-10-0232-01 (formerly CANSIM 206-0091) https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110023201

Canada published the LIM and three other "Low Income" criteria[31]– the "Low Income Cut Off" (in both "Before Tax" (LICO-BT) and "After Tax" (LICO-AT) versions) and the "Market Basket Method" (MBM) low income criterion. However, Statistics Canada long resisted calling any of them "Poverty Lines". Writing in 1997, the Chief Statistician argued: "Before anyone can calculate the minimum income needed to purchase the "necessities" of life, they must decide what constitutes a "necessity" in food, clothing, shelter and a multitude of other purchases, from transportation to reading material. The underlying difficulty is due to the fact that poverty is intrinsically a question of social consensus, at a given point in time and in the context of a given country." Believing there was an "absence of politically sanctioned social consensus on who should be regarded as "poor" [32], the agency preferred to say it was measuring "low income" (meanwhile in practice recognizing the widespread use of their "low income" statistics as indicators of poverty).

42. The reluctance of Statistics Canada to officially define "poverty" was long a distinct contrast to statistical practice in many other countries – e.g. the United States, where official estimates of poverty have been published since 1969. The designation in 2018, following a widespread national consultation process, of the "Market Basket Method" criterion as Canada's "Official Poverty Line"[33] was therefore a major initiative, for Statistics Canada and for the federal government as a whole.

43. The MBM sets the local poverty line in each province and major city across Canada by calculating the cost, at local prices, of "a specific basket of goods and services representing a modest, basic standard of living". That basket is defined, and occasionally updated over time, in an extensive consultative process "with Canadians, experts, and federal, provincial and territorial stakeholders" using surveys, focus groups, online forums, personal interviews and expert panels and working jointly with Employment and Social Development Canada (ESDC) [34].

44. The "Market Basket Method" poverty line explicitly considers local variations in the cost of living. For example, based on the assumption of a reference household of

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[31] Figure 4.2 of Osberg (2018:101) plots their trends since 1976. See also Statistics Canada *Towards a Poverty Reduction Strategy – A backgrounder on poverty in Canada*

https://www.canada.ca/en/employment-social-development/programs/poverty-reduction/backgrounder.html

The consultation process is partly described at https://www.statcan.gc.ca/en/consultation/2018/mbm

[32] See: "On poverty and low income" by Ivan P. Fellegi, Chief Statistician of Canada. September 1997 https://www150.statcan.gc.ca/n1/pub/13f0027x/13f0027x1999001-eng.html

[33] See https://www.statcan.gc.ca/en/topics-start/poverty

[34] The process is described in much more detail in Andrew Heisz (2019) Statistics Canada Income Research Paper Series "An update on the Market Basket Measure comprehensive review" Release date: July 18, 2019 https://www150.statcan.gc.ca/n1/pub/75f0002m/75f0002m2019009-eng.html

two adults and two children and the Canadian National Occupancy Standard for bedroom occupancy[35], it obtains data on local apartment rents in 50 different geographic areas across Canada and calculates the median cost of rental accommodation for a three bedroom apartment in each local market area. Food costs also differ regionally and some cost of living differences are due to differences in provincial policies – e.g. childcare costs have been lower in Quebec than elsewhere due to its daycare subsidy policies.

45. An important example of the social nature of "necessities", and a positive feature of the MBM, is the allowance that the MBM makes for transportation costs. Measurement of poverty has a long history and initially it was not necessary to take account of transportation costs. When few people have cars, or refrigerators, as in the Canada of a century ago, the food distribution system can be based on the existence of corner stores nearly everywhere to which consumers can walk – often daily, to purchase perishables. However, when most people have cars and refrigerators, corner stores cannot compete in price and variety with big box supermarkets, which draw people from a wide area for their weekly purchases. Corner stores go out of business and their replacement by a food distribution system based on large supermarkets means that transportation becomes necessary for food purchase. In 21st century Canada, the structure of urban areas now means that walking to work is rare. Transportation is also now necessary for access to many public services as well as for access to food – i.e. transportation has become both a physical and a social necessity. Unlike older measures (like the LICO) the MBM includes in its estimates of the cost of living an allowance for bus passes in localities served by public transit. Where public transit is unavailable, as in much of rural Canada, owning an automobile becomes a necessity, not a luxury, so the MBM calculations include the costs of running a small used car[36].

46. The MBM also recognizes income sources like child support payments – which are important for many poor families, both in paying and in receiving. An innovation in its calculation of income which is particularly important for elderly and rural households is the fact it takes account of the cost savings of owner-occupied housing. For these and other reasons, the "Market Basket Method" (MBM) methodology was chosen when Canada in 2018 designated an official poverty line.

47. In 2018, when the MBM was adopted as Canada's official poverty line,[37] the defined list of necessities was based on 2008 data. However, in 2019 the MBM was updated

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[35] CMHC, Housing in Canada Online. Available at: https://cmhc.beyond2020.com/HiCODefinitions_EN.html

[36] This recognition of some of the higher costs of rural living alters the relative incidence of poverty, comparing rural and urban Canada.

[37] Opportunity for All – Canada's First Poverty Reduction Strategy https://www.canada.ca/content/dam/canada/employment-social-development/programs/poverty-reduction/reports/poverty-reduction-strategy-report-EN.pdf

and has since then included the cost of cell phone services (specifically, the provincial average expenditures on cell phone services for families in the second decile of income as recorded in Survey of Household Spending) since they "have become a necessity since the 2008-base MBM was developed[38]".

48. One dictionary's definition of "necessity" is "something that you need, especially in order to live[39]" and another's is " the quality or state of being in need *especially* : POVERTY or "something that is necessary" : REQUIREMENT Many families could not afford the bare *necessities* of life[40]." What people themselves believe they need can be inferred from their purchases - specifically from whether expenditures on a particular good or service can be observed even at very low incomes. If many very low-income people buy something, although they can only do so by sacrificing other obviously important purchases, that is strong evidence that the people involved see it as a necessity.

49. Evidence for the necessity of cell phone access, from the point of view of individuals themselves, therefore comes from around the world. Many very poor people, in countries much poorer than Canada, willingly forego expenditure on many other goods, including food, clothing and shelter, in order to purchase and use cell phones. As the World Bank has noted: "More households in developing countries own a mobile phone than have access to electricity or clean water, and nearly 70 percent of the bottom fifth of the population in developing countries own a mobile phone[41]." To illustrate these issues, Appendix 1 provides data comparing cell phone penetration in Canada and in two sub-Saharan African countries (Nigeria and Tanzania) and notes how much more common cell phone ownership is in Tanzania (with a 2020 per capita national income of $2,616 U.S.) than ownership of many basic consumer goods that Canadians typically take for granted.

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[38] Samir Djidel, Burton Gustajtis, Andrew Heisz, Keith Lam and Sarah Mc Dermott (2019) *Towards an update of the Market Basket* Catalogue no. 75F0002M ISSN 1707-2840 ISBN 978-0-660-33155-3 by Release date: December 6, 2019. https://www150.statcan.gc.ca/n1/pub/75f0002m/75f0002m2019013-eng.html

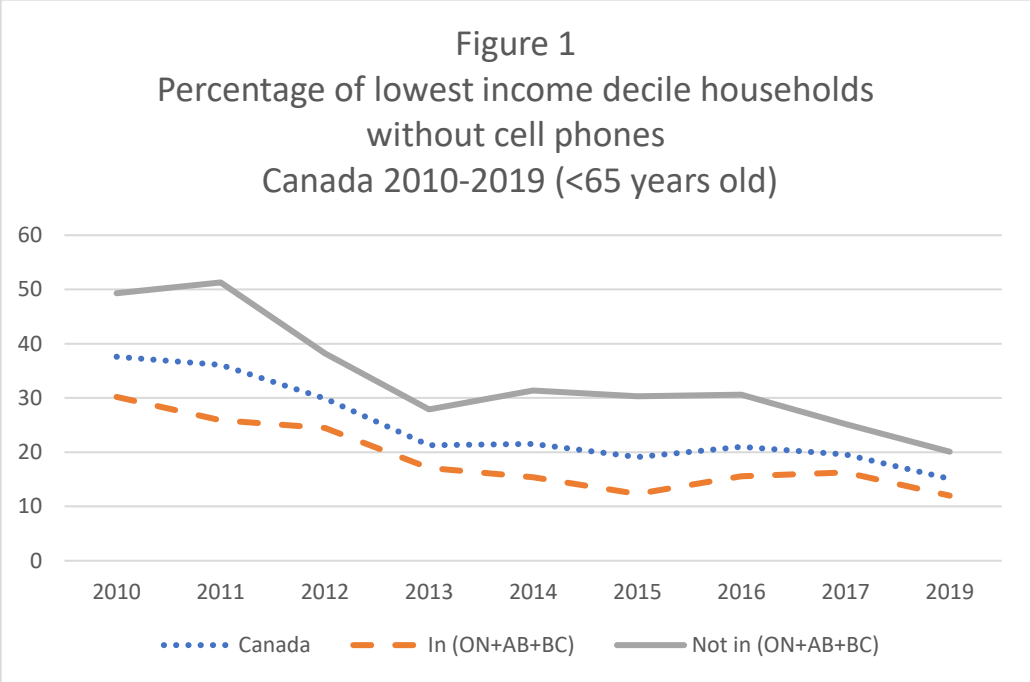
The MBM measure of necessary cell phone spending is specified in an email of Gustajtis, Burton - CISWS/CSRBS, Statistics Canada, February 8, 2022

[39] https://dictionary.cambridge.org/dictionary/english/necessity

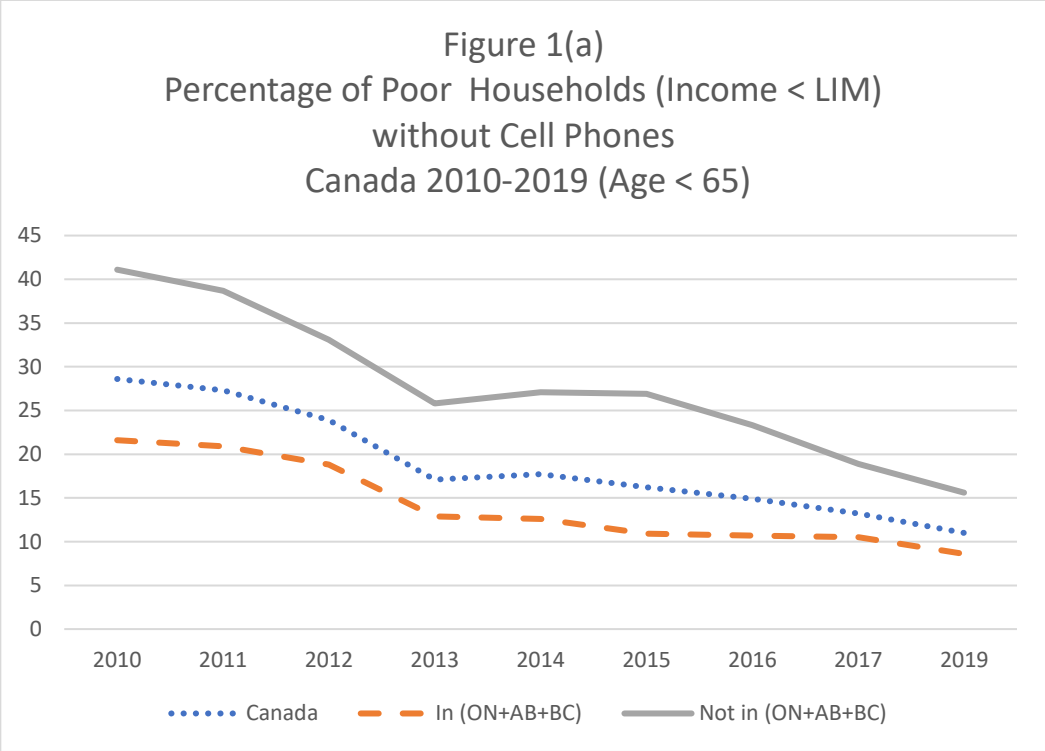
[40] https://www.merriam-webster.com/dictionary/necessity

[41] (2016:2) *Digital Dividends: World Development Report* (2016) International Bank for Reconstruction and Development / The World Bank, Washington DC https://documents1.worldbank.org/curated/en/896971468194972881/pdf/102725-PUB-Replacement-PUBLIC.pdf I am informed by counsel that for the purposes of a judicial process I should attest to the reliability of World Bank data. The World Bank is the premier international agency dealing with economic development issues. Its research is of the highest quality and its statistical data base is depended on by professional economists around the world.

50. Nevertheless, even among the non-elderly a significant fraction of the poorest decile of Canadians and of Canadians living below the LIM poverty line still do not have cell phones, as Figures 1 and 1(a) note. An increase in the price of cell phones service would increase the barriers to digital inclusion for Canada's least affluent.



Source: Statistics Canada, Tabulation of Survey of Household Spending, certified September 14, 2022



Source: Statistics Canada, Tabulation of Survey of Household Spending, certified September 14, 2022

2.3 "Captive" Consumers – Impacts of Cellphone price increases on Canadians with only cell phones.

51. Most Canadian households have a combination of landlines, internet subscriptions and cell phone plans with which to satisfy their needs for telecommunications services – but some do not. As one would expect, more affluent households are usually able to afford a combination of communications services while the less affluent are more likely to only have cell phones, as Table 2.3.1 documents.[42]

[42] Statistics Canada suppresses its estimates when the sample size is so small as to be statistically unreliable (denoted here with *), which is why Table 2.3.1 (and 2.3.2) report only Canada-wide estimates for households of all ages. Since the average reported in Table 2.3.1 is generated from the data that is not redacted, the average for the fifth decile does not include 2017.

Table 2.3.1: Percentage of households with at least one cell phone but no landline telephone and no home internet by decile

	2017	2019	AVERAGE*
Lowest after-tax income decile	13.56%	10.09%	10.95%
Second after-tax income decile	5.51%	6.17%	5.86%
Third after-tax income decile	3.70%	3.28%	4.35%
Fourth after-tax income decile	2.65%	3.20%	3.29%
Fifth after-tax income decile	*	1.70%	2.51%
Sixth after-tax income decile	2.23%	*	2.23%
Seventh after-tax income decile	*	*	NA
Eighth after-tax income decile	*	*	NA
Ninth after-tax income decile	*	*	NA
Highest after-tax income decile	*	*	NA
Total, all after-tax income deciles	3.20%	2.92%	3.15%
AVERAGE* = average of non-suppressed percentages in 2010, 2011,2012, 2013, 2014, 2015, 2016, 2017, and 2019			
* Suppressed by Statistics Canada as “too unreliable to be published.” Source: Statistics Canada, Tabulation of Survey of Household Spending, certified September 14, 2022			

Table 2.3.2: Expenditures as a percentage of household incomes for households with at least one cell phone but no landline telephone and no home internet, by decile

Decile	Number of households with one cell phone but no landline or home internet in decile	Average percentage of household income spent on food (%)	Average percentage of household income spent on cell phone services (%)	Cell phone spending as a percentage of food spending (%)
1	149,000	62.6	14.5	23.2
2	91,000	12.0	2.8	23.3
3	48,000	10.6	2.4	22.6
4	47,000	9.1	1.5	16.5
5	25,000	8.9	2.0	22.5
6	*	*	*	NA
7	*	*	*	NA
8	*	*	*	NA
9	*	*	*	NA
10	*	*	*	NA
All	429,000	27.8	6.3	22.7
* Suppressed by Statistics Canada as “too unreliable to be published.” Source: Statistics Canada, Tabulation of Survey of Household Spending, certified September 14, 2022				

52. As Table 2.3.2 notes, in 2019 some 429,000 households[43] in Canada depended on their cellphones for all their tele-communications needs and were therefore particularly exposed to any increase in cell phone service prices. These households were primarily in the lower half of the income distribution and their cell phone spending was an average of 23% of their spending on food (i.e. equivalent to what they spend on about 4 ¾ meals, or about 1 ½ days food, per week).

3. Why do distributional impacts matter?

3.1 Actual and Potential Compensation

53. If, for example, policy changes produced a $100 Million increase in the income of Canada's richest person while decreasing the incomes of everybody else by a total $90 Million, national income, as measured by GDP or GNI[44], would increase by $10 Million[45]. In this example there is growth in national income since the monetary gain of one person outweighs the monetary losses of 38 million other people. *Potential* compensation would be possible, which *could* improve national well-being. The one winner could potentially pay $90 Million to compensate the 38 million losers and still be better off financially (by $10 Million). If that *actually happened*, the outcome would be "Pareto Superior" – i.e. at least one person would be better off and nobody would be worse off. However, Pareto superiority depends crucially on actual compensation of all losses. Potential compensation does not qualify. Since it is common to observe real world policy decisions that produce both winners and losers and quite uncommon to observe full compensation of all losers, the "Pareto Superior" criterion for policy changes is not, in practice, very useful. Economists have therefore developed the "Social Welfare Function" literature as a methodology for ascertaining whether a given policy or institutional or market change has made society "better off". Since a Social Welfare Function is defined as a weighted aggregation of individual utilities, it embodies the utility value of the consumer surplus of all households.

3.1.1 Utilitarianism

54. Neo-classical economics, with its philosophical roots in utilitarianism, has formalized in the idea of a Social Welfare Function[46] the perspective that total societal well-

[43] 227,000 were in Ontario, Alberta or B.C. while 202,000 were in the rest of Canada.

[44] Gross Domestic Product or Gross National Income

[45] Reduced vacation time would increase working time and output, while lower wages would increase profits – both would adversely affect employees (i.e. most people), but both would be cost-saving. Even though most people would be worse off, marketed output (GDP) could still increase (e.g. if exchange rates were fixed and lower domestic production costs for firms enabled greater export sales).

[46] For straightforward expositions see Lambert, 1989 or Semple, 2020.

being depends on the total utility derived from the consumption of all citizens. On the assumption that each individual's utility depends on their personal consumption of a private good, the utilitarian position is that society is better off when the total utility of all individuals increases. Diminishing marginal utility dictates that the utility each person derives from additional consumption of each good increases with consumption of that good but at a decreasing rate[47]. If a society is inequality averse on ethical or other grounds, greater weight should be assigned to the utility of the less affluent[48] in adding up utilities, but total utility, summed over all individuals, is seen as the proper objective of public policy.

55. However, diminishing marginal utility implies that a dollar's change in income matters less for the utility of the affluent than for the utility of poor households. An additional $500 income would, for example, have a noticeable impact on the utility of an Ontario social assistance recipient with an annual income in 2020 of $10,309[49] but would have a barely perceptible influence on a billionaire's utility. Even in the case where society is indifferent about the inequality of well-being, diminishing marginal utility of consumption implies that because the impact of any given dollar gain or loss on utility is greater for low-income households the distribution of income

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Lambert, Peter (1989) *The Distribution and Redistribution of Income* Basil Blackwell Publishers, Cambridge, Mass. and Oxford, U.K. 1989;

Semple, Noel (2020) *Review of Matthew D. Adler's Measuring Social Welfare: An Introduction* Erasmus Journal for Philosophy and Economics, Volume 13, Issue 1, Spring 2020, pp. 115–121. https://doi.org/10.23941/ejpe.v13i1.442 EJPE.ORG

[47] The idea that the marginal utility gain of additional consumption decreases as consumption rises can be illustrated in introductory economics classes by feeding a volunteer marshmallows and asking the volunteer how much they enjoyed the last marshmallow eaten, until they ask for their professor to stop, please. Formally, the well-being of each individual i is seen as the utility (u_i) they derive from their own consumption C_i [i.e. $u_i = u(C_i)$]. Positive but diminishing marginal utility implies $u'(c) > 0$ and $u''(c) < 0$. A neo-classical social welfare functional [SWF] is then defined over the vector $\boldsymbol{u}$ of all individual utilities [i.e. $SWF = swf(\boldsymbol{u}) = \Sigma_i \alpha_i u(c_i)$] where Σ is the summation operator and α_i is the social weight assigned to each citizen. If a society is inequality averse, larger α_i is assigned to the utility of the less well-off. Extension of this framework to intergenerational social welfare is straightforward but deserting other assumptions can be more problematic (e.g. the assumption that individual well-being depends solely on the individual's own outcomes, and not on the process by which outcomes are determined, and that utilities are not interdependent, perhaps due to envy or empathy.)

[48] If we denote the average income as μ and a measure of the inequality of income as σ, an inequality indifferent social welfare function is one with the same weight on utility for rich and poor alike (i.e. $\alpha_i = 1$ for all individuals) so the social welfare function can simply be written as SWF = swf (μ) while an inequality averse social welfare function is written as SWF = swf (μ,σ) where swf ' (μ) > 0 and swf '(σ) < 0.

Although the original utilitarian formulation of the maximizing total utility idea presupposed (on ethical, not empirical, grounds) identical cardinal utility functions, this assumption is not necessary. Ordinal utility with preference heterogeneity orthogonal to income gives the same result. Bossert and Kamaga (2020) discuss the mixed utilitarian and Maxi-Min perspective.

Walter Bossert & Kohei Kamaga, 2020. "An axiomatization of the mixed utilitarian–maximin social welfare orderings," Economic Theory, Springer; Society for the Advancement of Economic Theory (SAET), vol. 69(2), pages 451-473, March.

[49] See Welfare in Canada, Maytree Foundation, 2020 https://maytree.com/welfare-in-canada/ontario/

matters for total utility.[50] The greater marginal utility for low-income individuals of a dollar's consumption implies that even if there is no impact on total money income (i.e. GDP), a policy change that transfers income from poorer people to richer people will decrease total utility, and therefore decrease social welfare. A policy change that has larger dollar gains for high income individuals than the dollar losses of low-income people (and therefor produces an increase in total national income) will only increase total well-being if the size of the dollar gain for the affluent is large enough to more than offset the lower per-dollar utility benefit of their additional income.

56. An increase in national income therefore only indicates a *potential* Pareto improvement in the sense that the gainers *could have* compensated the losers and still have had some additional income left over. If full compensation for losses actually occurs, then the compensation prevents any decline in the well-being of those adversely affected. If all individuals' utility (after compensation is paid) does not decline and if some individuals still have higher incomes and more utility, a "Pareto superior" gain in social welfare occurs. However, if compensation does not occur, even when the dollar gains of the affluent exceed the dollar losses of the poor, aggregate utility only increases if the utility losses of low income people are less than the utility gains of the more affluent. The distinction between actual and potential compensation is thus crucial. Increases in total market incomes (i.e. increases in GDP) will only be an unambiguous indicator of social welfare improvements if there is actual compensation of the losses of all those adversely affected by a policy change. If compensation for losses is only potential, even an inequality indifferent utilitarian social welfare function may not show an improvement.

57. Consumer surplus adds up the total utility gains of all infra-marginal consumers from their purchases (i.e. it is the summation over all consumers of the excess of their hypothetical "willingness to pay"[51] over the actual market price they did pay.) Because an individual's marginal utility depends on their income, changes in the distribution of income affect the marginal utility of consumption (and therefore the consumer surplus) of all consumers whose incomes change. Because distributional changes affect infra-marginal consumers as well as the marginal consumer, the total impact of distributional changes on economic surplus is the sum over all consumers of their changes in consumer surplus due to changes in income.

58. Differences across individuals in the marginal utility of consumption therefore imply that estimates of consumer surplus loss or gain deriving from price changes should be distributionally sensitive. If estimates of consumer surplus are made using the assumption of a "representative agent/consumer", many issues (including

[50] See Appendix 2 for a verbal example from an introductory economics textbook.

[51] "Willingness to pay" for any individual can also be phrased as "willingness and ability to pay" – i.e. for each consumer, it is the price they are willing to pay to purchase an additional unit conditional on their income and on the prices of all other commodities.

competition policy) can never arise, since all agents are being assumed to be identical[52]. However, we do not live in such a world. To know the impact on social welfare of price changes when agents have unequal incomes, the dollar value of the gains or losses of consumers and owners should be weighted by (a) their relative marginal utility of consumption and (b) the relative weight that society wishes to assign to changes in the utility of richer or poorer citizens.

59. For the issue at hand, i.e. the implications of a possible price increase for cellphone services due to a Rogers/Shaw merger, an inequality indifferent utilitarian would ask whether total utility increases. To figure that out, a utilitarian would compare (1) the total utility gain of the shareholders of cell phone companies (i.e. their marginal utility of additional consumption due to an income gain, multiplied by their increase in shareholder income, added up over all shareholders) with (2) the total utility loss of cell phone subscribers (i.e. their marginal utility of consumption, multiplied by the change in their cost of living due to the additional increase in cell phone costs enabled by reduced product market competition, added up over all cell phone subscribers)[53]. Section 1 has presented data on the distribution of ownership of financial assets and noted that if the shares of cell phone companies are similarly held, their owners are disproportionately in the top end of the income and wealth distributions and therefore have lower marginal utility of income. Section 2 has documented the fact that the subscribers to cell phone networks are distributed across all income classes, with some low-income households particularly exposed to increased cellphone costs, hence on average subscribers have a higher cost in marginal utility loss per dollar of cell phone prices increase than the marginal utility gain per dollar of shareholder income increase.

60. For continuing subscribers and shareholders of the Bell and Telus and other competitor networks, the net negative impact on total utility of a cell phone price increase is therefore straightforward. Since no impacts on operating costs are anticipated, there is a simple subscriber / shareholder income transfer. Each dollar of income gain by shareholders is matched by a dollar income loss by subscribers. One can therefore expect that the utility losses of subscribers will exceed the utility

[52] In a representative agent economy, all the identical agents own an equal share of the capital stock as well as their own (identical) labour power, so there is no inequality and no point to drawing a distinction between consumer and producer surplus. Since this also implies that all agents own an equal share of any potentially monopolistic firm and are identical consumers of its products, there is also no point to competition policy since agents will do what is in their own interests and all will share identically in profits and products.

[53] The terms of reference of this report limit it to examination of the implications of possible price increases in the product market due to the Rogers/Shaw merger (i.e. prices for cell phone services). Fuller evaluation of the well-being implications of the merger would examine also its impacts on input markets (i.e. the social costs of layoffs).

gains of shareholders because on average shareholders are more affluent and have lower marginal utility of income than subscribers[54].

61. Income gains for Rogers/Shaw shareholders will include both the revenue gains due to price increases and, to the extent that operating costs in the merged entity are actually reduced, the financial gains from operating cost reductions. However, in thinking about the total utility gains of Rogers/Shaw shareholders, a utilitarian whose concern was the total utility of Canadians would disregard the income gains accruing to foreign shareholders. Since a utilitarian thinks of utility gains as the marginal utility of the increased consumption enabled by greater income, and since Section 1.1 documented the fact that a significant fraction of the income gains of the Rogers/Shaw merger would be received by families that already have billions of dollars' worth of Rogers/Shaw shares, a utilitarian would wonder how the consumption of billionaire shareholders would actually change and how big the net utility gains from that consumption increase could possibly be[55]. A utilitarian would therefore tend to focus on the roughly 43% of total shareholder gains that will be received by other Canadian shareholders, who would still be disproportionately from the top end of the wealth distribution (see Table 1.4) but are not billionaires. However, if total utility in Canadian society is to increase as a result of the Rogers/Shaw merger, the increase in the utility of the Canadian, non-family Rogers/Shaw shareholders has to be greater than the sum of (1) the utility loss of Rogers/Shaw subscribers plus (2) the net utility loss of the income transfer from poorer subscribers to richer shareholders in all competitor networks plus (3) the utility losses of laid-off employees.

62. The discussion to this point has been about inequality indifferent utilitarianism. A utilitarian with inequality averse social values would place extra weight on the utility losses of less affluent subscribers and less weight on the utility gains of more affluent shareholders.

[54] Faced with a price increase for cell phones, and holding individual income constant, the utility loss of each consumer is the sum over all commodities of their loss in consumer surplus due to reduced consumption of each good. Consumers whose demand for cell phone services is not completely inelastic will reduce their own consumption of cell phone services. Section 3.3 argues that communications technologies in general and cell phones in particular are products with externalities of consumption, which implies that there are costs to other households of a reduction in demand for cell phone use by price-sensitive consumers. Those utility costs to other households are in addition to the utility cost of a poorer-to-richer, subscriber-to- shareholder income transfer.

[55] Saudi Princes and Russian Oligarchs have certainly demonstrated that massive amounts of money can be spent on super yachts, exotic cars, multiple residences and similar status signifiers. However, a utilitarian would note that competitive consumption is a zero-sum game – the utility gain that one billionaire receives when they get the bragging rights associated with having the biggest yacht in the marina is offset by the utility loss of the billionaire who now only has the second biggest yacht.

3.2 The Rawlsian Perspective

63. The "justice as fairness" approach of John Rawls (1971, 1982[56]) specifies a particular form of an inequality-averse social welfare function, namely that social welfare should be measured as the well-being of the least well-off members of society[57]. Economists have often called this the MaxiMin criterion for social welfare improvements. However, this criterion was only part of Rawls' argument[58]. Economists and utilitarian philosophers have typically started by assuming the constancy of government and other social institutions – the "holding other things constant" assumption (a.k.a. "ceteris paribus"), has often been convenient for analysis. However, Rawls was a political philosopher who wanted to specify the preconditions for the stability of the liberal state and the personal freedoms that it enables. Although an authoritarian state can enforce allegiance to a hegemonic ideology (e.g. a state religion) and maintain social stability by coercion, liberal democracies have the problem of maintaining social cohesion while ensuring personal freedoms. Rawls started from "The presupposition of liberalism …that there are many conflicting and incommensurable conceptions of the good, each compatible with the full autonomy and rationality of human persons". His agenda was to think through the consequences of liberalism for "the unity of society and the allegiance of its citizens to their common institutions" [59] and his argument was that free and equal moral persons with different conceptions of the good could find agreement on two principles:

    (1) "Each person has an equal right to the most extensive scheme of equal basic liberties compatible with a similar scheme of liberties for all;

    (2) Social and economic inequalities are to satisfy two conditions: they must be (a) to the greatest benefit of the least advantaged members of society and (b) attached to offices and opportunities open to all under conditions of fair equality of opportunity".

64. Among economists, Rawls is best known for his advocacy of the social objective of maximizing the minimum income (MaxiMin), but he is actually very clear that the first principle is prior to the second and under (2) "part (b) has priority over part (a)[60]

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[56] Rawls, John (1982) "Social Unity and Primary Goods" Pp 159 to 186 in Sen and B. Williams (Ed) *Utilitarianism and Beyond* Cambridge University Press, Cambridge, U.K. 1982 and Rawls, John (1971) A Theory of Justice, Harvard University Press, 1971

[57] Formally, the Social Welfare Function is defined as SWF = Min (u(ci))

[58] Income and wealth were also only part of what Rawls called "primary goods", which also included basic liberties, freedom of movement, free choice of occupation, and the social bases of self-respect.

[59] For a fuller discussion, see https://plato.stanford.edu/entries/rawls/

[60] See John Rawls (1982:162) for a concise statement and Rawls (1971:60-83) for his arguments in favour of the MaxiMin criterion (which he referred to as "the difference principle").

– i.e. that in economic affairs "fair equality of opportunity" gets priority over the MaxiMin criterion.

65. Indeed, "fairness" was crucial to Rawls' attempt to articulate a philosophical basis for a stable society that could reconcile individual liberties and social responsibilities. The importance of that agenda has been underlined recently by political events in the USA and Europe, even if much economic analysis has taken for granted, and continues to take for granted, the stability of the political and legal institutional framework.

66. In "A Theory of Justice" Rawls used the concept of a "Veil of Ignorance" as a rhetorical device to think about fairness and why it implied his approach to inequalities. He suggested that we should all ask ourselves: "if I could choose what rewards people with different characteristics (e.g. gender, race, ethnicity, education, social origin, etc.) get in society, but I had to make those choices from behind a "veil of ignorance" about my own characteristics, (e.g. not knowing whether I was male or female), what sort of society would I want to live in?" His argument was that if, for example, we somehow did not know if we would be borne white or black or male or female, and therefore did not know whether the opportunities open to us would be those open to a white person or a black person or a man or a woman, we would want all persons to have fair equality of opportunities. Then, once we knew that we had had an equal chance (because all people have obtained fair equality of opportunity), we would want our worst-case outcome to be not so bad – i.e. we would want to maximize the well-being of the least well-off.

67. For the issue at hand – competition in Canada's cell phone industry – the implication of the Rawlsian perspective is that public policy criteria should include consideration of both: (i) consequences for fair equality of opportunity in 21st century Canada (e.g. enabling access to services needed for employment, government services, market participation, social interaction, etc.) and (ii) the material standard of living of Canada's least affluent citizens. Furthermore, a Rawlsian would attend first to ensuring fair equality of opportunity and second to enhancing the material standard of living of the most deprived.

68. In the specific instance of cell phone services, it is clear that cell phone services pricing has different potential implications for fair equality of opportunity in 2022 than in 2002 or than is likely to be the case in 2042. In 2002, cell phones were used by relatively few people, compared to 2022, for relatively simple purposes – it was then reasonable to think of them as discretionary purchases of relatively affluent consumers (which implied that access to cell phone use was not important for fair equality of opportunity). By 2022, after dramatic increases in cell phone penetration and technology, cell phones had become social necessities (see section 1.2 above), and as more services and social interactions have migrated to cell phones, exclusion from cell phone access had become more important to fair equality of opportunity. Since it is clear that the cell phone industry is technologically dynamic,

further improvements and the institutional changes they facilitate are certain. Hence, there is every likelihood that access to cell phone services will be more important for fair equality of opportunity in the future than it is now.

69. A concrete public policy example consistent with the importance of considering the impact of cell phone availability for the less affluent is the Universal Service Fund operated by the Federal Communications Commission in the United States. Financed by charges on providers, its Low Income Support Mechanism has since 1985 assisted low-income customers by helping to pay for monthly telephone charges as well as connection charges to initiate telephone service.[61]

3.3 Limitations of Standard Consumer Theory relevant to Cell Phone Pricing in Canada 2022+

70. Standard consumer theory in economics starts from the presumption of a consumer who can decide, given their total budget constraint, how much of each good or service to purchase at known, market determined prices in order to maximize the utility they obtain from the consumption of commodities. This "consumer sovereignty" model requires that the individual consumer knows, at no cost, the price per unit of the commodity or service they will actually consume and can control the amount of each commodity or service they actually use, and therefore pay for. An example would be the supermarket customer in the breakfast cereal aisle who can see, at no cost, the price of each alternative cereal available for purchase and can choose how much of each to buy and consume, easily comparing prices and shifting without cost between suppliers as tastes and prices change. Estimates of consumer surplus and of the efficiency of market equilibria depend on this full information consumer sovereignty model.

71. If cell phone service consumption were like buying a box of cereal in Canada customers would know in advance the per-unit prices of actual service use and would be charged only for the uses they initiated (i.e. their own outgoing calls, texts and data demands). In this case, they would (a) know in advance how much their cell phone use would cost, per unit of service actually used and (b) control their own total cost of service. They could then choose their utility-maximizing amount of cell phone usage. However, that option is not available. Instead, Canadian consumers of cell phone services are offered "plans" – contracts which specify lump sum payments for access up to a specified amount of usage within an accounting period plus, under some plans, penalty rates for excess usage. Since usage can include both incoming and outgoing activity, Canadian cell phone users do not always

[61] The Canadian approach seems to have been to ask nicely for better pricing. "The CRTC wants Canadians to have better access to affordable wireless services for their cell phones and other mobile devices. We are therefore expecting Bell, Rogers, Telus and SaskTel to offer and promote low-cost and occasional-use plans." https://crtc.gc.ca/eng/phone/mobile/occa.htm

personally fully control their usage and indeed can be unaware of how much usage they initiated. The contract of each individual "plan" purchaser instead specifies how much usage (incoming and outgoing) can be made within a given accounting period without incurring penalty rates or other limitations. Hence the cost per unit of service actually initiated by the customer may not be knowable ex ante, may be difficult to calculate ex post and may depend partly on incoming data, texts or calls not controlled by the consumer. Knowledge of the price to be charged for services actually used and initiated and the ability of consumers to control the quantity of services actually used are central to the "consumer sovereignty" model, and therefore to statements about the efficiency properties of the market process. In most markets for goods and services, it is reasonable to assume that consumers generally know in advance the prices they will pay for the goods and services they will actually use and to assume that consumers can control the actual quantities they consume in response to those price signals. The market structure of the pricing of cell phone services in Canada is quite different.

72. Further problems arise because of the nature of the commodity. Estimation of the efficiency implications of market structure typically start from the assumption that all goods consumed are private[62], with no externalities of consumption or production (breakfast cereal would be an example). Estimates of consumer surplus and a neo-classical social welfare function defined as the weighted sum of individual utilities from personal consumption[63] make this assumption as well. Even if, for argument's sake, cell phone services could be priced similarly to breakfast cereals, the fact remains that cell phone services are a significantly different type of commodity.

73. Network externalities are an essential aspect of communication technologies, since the utility directly derived from owning a cell phone depends entirely on what one can do with it and who one can call or be called by with it – which all depend on the consumption of others. This is quite unlike most other commodities. (Using the breakfast cereal example, my enjoyment of a particular cereal does not depend on whether or not anyone else likes it, but if nobody else has a telephone, there is nobody to call, or be called by, so utility of ownership is zero.)

74. The initial market for cell phones depended on the fact that subscribers could access the landline network. However, the development of apps for smart phones means that cell phones now perform many functions in addition to person-to-person calls. Since the profitability of producing cell phone apps depends on the size of their potential market, initial app development focuses on apps valuable to most consumers and late arrivers in app development have to chase consumers with

[62] A private good is rival in consumption and excludable – in the breakfast cereal example, the cereal one person eats cannot be eaten by others and each consumer can prevent others from consuming their cereal. By contrast, the classic definition of a public good is that it is a good that people derive utility from but which is non-rival in consumption and non-excludable – a fireworks display would be one example.

[63] i.e. over the vector $\boldsymbol{u}$ of all individual utilities [i.e. SWF = swf($\boldsymbol{u}$) = $\Sigma_i \alpha_i u(c_i)$]

more specialized tastes. (An example would be apps using cell phone cameras and microphones which can now be used to identify birds or plants – apps which were not worth developing until the pool of potential users was large enough.) The number of potential consumers of specialized apps increases as cell phone penetration increases. The services any one consumer can access depend on which apps are developed but the economics of developing apps depends on the number of potential app users. As a consequence, the utility any individual can derive from purchasing cell phone services depends on the total number of other subscribers[64].

75. Additionally, an indirect externality arises when the costs of other goods consumed are affected by changes in cell phone penetration, perhaps because when firms or governments know that everyone has cell phones they can dispense with other more costly technologies (replacing coin operated parking meters with payment by a phone app might be an example).

76. The positive externalities of cell phone access mean that the loss of consumer surplus when cell phone charges rise is (1) the loss of consumer surplus by the individuals who personally reduce their own cell phone use PLUS (2) the loss of consumer surplus (for all consumers) associated with any decline in the percentage of people who have cell phones. Although (2) may be small on a per person basis, small benefits added up over a large number of people can sum to a significant total. Appendix 3 presents a graphical analysis of that loss in consumer surplus, which is distinct conceptually from any "public good" that greater cell phone penetration might provide.

77. An example of a public good enabled by cell phones might be the possibility of voting by cell phone, which in a democracy should not happen unless all citizens have cell phones. Each voter would derive a private benefit from the time saving and convenience of cell phone voting (which an upward demand curve shift in Figure A3 at appendix 3 can represent) and many also would derive utility from the public good of believing that they live in a democracy in which everyone gets to vote. Another example, if citizens derive positive utility from knowing that they live in a safe society, and they may think societies are safer when everyone has a cell phone and can call the police, or an ambulance, immediately if needed. If so, the benefit of that knowledge would be a public good whose utility is in addition to the utility they derive directly from their own personal consumption of cell phone services.

[64] More formally, defining $\mathbf{P_j}$ as the percentage of all other people who have cell phones, the utility (u_i) of any individual comes from own consumption C_i and depends on $\mathbf{P_j}$ [i.e. $u_i = u(C_i, \mathbf{P_j})$] so SWF = swf($\boldsymbol{u}$) = $\Sigma_i \alpha_i u(c_i, \mathbf{P_j})$

Appendix 1

International Evidence on the social necessity of cell phone access

1.1 Table A1 presents some comparative international data on cell phone penetration to illustrate how important access to cellphones is to people in countries much poorer than Canada.[65]

Table A1: Cell phone penetration and Gross National Income (GNI) per capita

	2018	2019	2020	2020 GNI as % of Canada GNI
CANADA				
Mobile cellular subscriptions (per 100 people)	89.6	91.9	95.6	..
GNI per capita, PPP (constant 2017 international $)	48,156	48,465	45,038	100%
TANZANIA				
Mobile cellular subscriptions (per 100 people)	77.2	82.2	85.7	..
GNI per capita, PPP (constant 2017 international $)	2,555	2,694	2,616	5.8%
NIGERIA				
Mobile cellular subscriptions (per 100 people)	88.2	91.9	99.1	..
GNI per capita, PPP (constant 2017 international $)	4,929	4,971	4,740	10.5%
Source: World Development Indicators, Series Code IT.CEL.SETS.P2 NY.GNP.PCAP.PP.KD, https://databank.worldbank.org/source/world-development-indicators				

1.2 A further illustrative example comes from Tanzania, a relatively poor Sub-Saharan African country (2020 per capita income of $2,616 U.S.) where the National Bureau of Statistics conducts periodic household surveys of the population to assess living standards[66]. Cell phone use is feasible for ordinary people in Tanzania because: (1) people are only charged for outgoing calls[67], which enables consumers to control their costs; (2) charges are very low, by Canadian standards, because seven mobile network operators compete vigorously for business; (3) Cell phone calls in Tanzania are typically paid for by prepaid cards (sold in every local market in denominations as small as 10 or 25 cents Canadian) with a “scratch to

[65] To conserve space, Table 1 only reports three countries data. Many more data points are available at: World Development Indicators, Series Code IT.CEL.SETS.P2, NY.GNP.PCAP.PP.KD, https://databank.worldbank.org/source/world-development-indicators.

[66] I am informed by counsel that I should attest to the reliability of data from the Tanzania National Bureau of Statistics (TNBS), which is the national equivalent to Statistics Canada. Since I have lived and worked in Tanzania, know TNBS personnel and have used TNBS data, I can attest to its reliability.

[67] Incoming calls are not charged but outgoing calls between networks are charged extra – so it is very common for people to have subscriptions on multiple networks and to go to considerable lengths to take incoming calls in order to avoid having to return calls.

reveal" code that enables outgoing texts or calls.[68] As Table A1 indicates, cell-phone penetration has increased since a 2017/2018 survey but Figure A1[69] indicates the relative priority then assigned to cell phone ownership by Tanzanians compared to many other consumer goods that Canadians would clearly consider "necessities".

1.3 Since a dollar number (like 2020 per capita income of $2,616 U.S.) may not really convey the living standards at which cell phone access is considered important enough to displace other expenditures, the "vignette" methodology of the World Bank[70] may be useful. For example[71],

> *"Edward's/Esther's family has 6 people – 3 adults and 3 children – living in a mud house with the river as the main source of water. One of the children is in primary school. None of the adults are literate. The family has a one-acre banana plantation. The adult male does some casual labor in construction in town. The family eats two small meals a day and is able to occasionally eat meat or dagaa. The family has three old mattresses, a bench for guests and a few chickens."*

1.4 This vignette was intended to illustrate an "improved but poor" household. When presented with this vignette in 2013, 61.3% of Tanzanian respondents rated their own standard of living as "similar or below". Since in 2013 there were 56.6 cell phone subscriptions per 100 people, it is clear that many of them still managed to have cell phones.

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[68] https://www.budde.com.au/Research/Tanzania-Telecoms-Mobile-and-Broadband-Statistics-and-Analyses

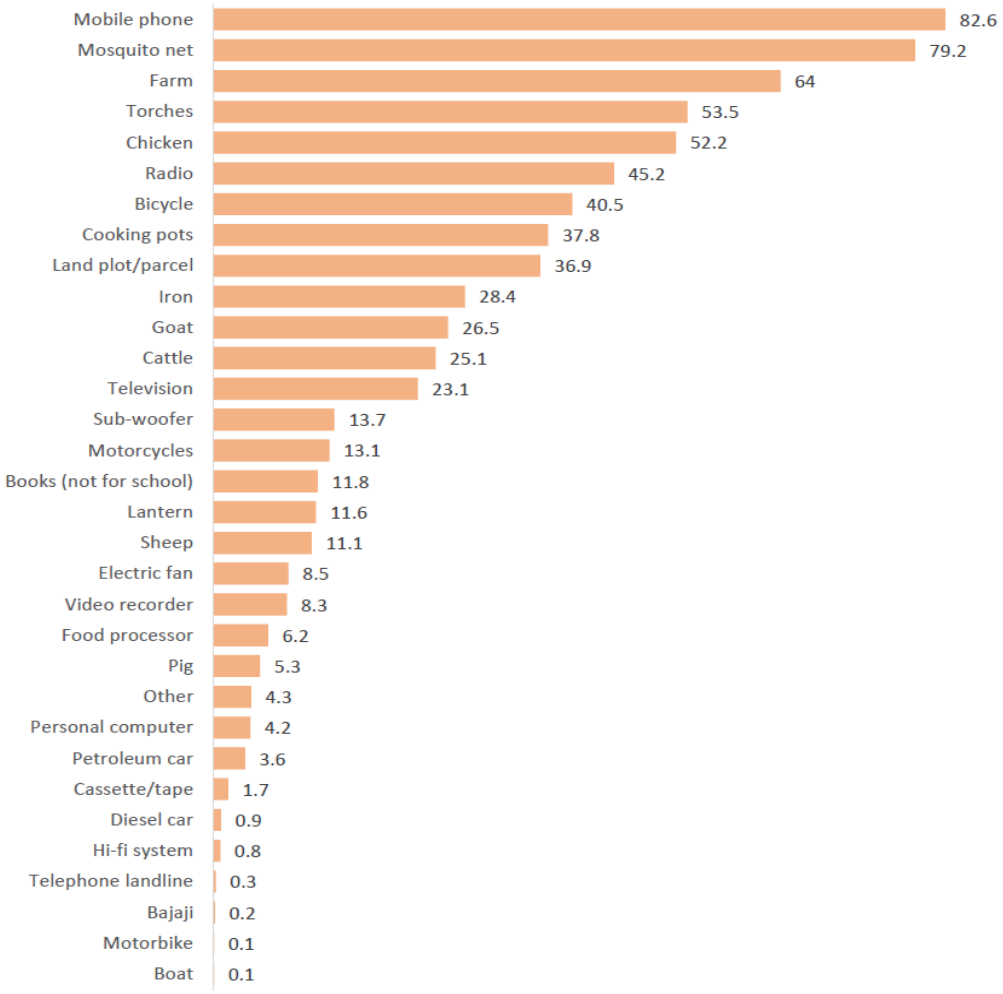
[69] Tanzanian National Bureau of Statistics: https://www.nbs.go.tz/index.php/en/census-surveys/poverty-indicators-statistics/household-budget-survey-hbs

[70] *Can Subjective Questions on Economic Welfare Be Trusted? Evidence for Three Developing Countries* Policy Research Working Paper 6726 *Martin Ravallion, Kristen Himelein, Kathleen Beegle* The World Bank Development Research Group 2013

[71] Also known as the "Lake Victoria sardine" – typically sold in dried form.

Figure A1

Figure 3.14.1: Percentages of Households Owning Selected Items, Tanzania Mainland, HBS 2017/18



Source: Tanzanian National Bureau of Statistics

Appendix 2

2.1 The Utilitarian argument is summarized in Chapter 13 of the introductory text Principles of Microeconomics: Fourth Edition – by Frank, Bernanke, Osberg, Cross and MacLean (2012) McGraw-Hill Ryerson, Toronto, reproduced below:

THE UTILITARIAN ARGUMENT

The branch of moral philosophy called **utilitarianism** holds that the right course of action is the one that results in the highest total level of utility. Utilitarians argue against income inequality on the grounds that the marginal utility of income is typically smaller for a wealthy person than for a poor person. In their view, transferring $1000 of income from a rich person to a poor person is justified because the extra happiness experienced when the poor person receives the money outweighs the decline in happiness when the rich person gives it up.

utilitarianism a moral theory in which the right course of action is the one that results in the highest total utility

The argument is based on the concept of diminishing marginal utility presented in Chapter 4. To understand it, it is useful to review the example presented in Table 4.2. That example referred to the utility a person named Lamar gained from eating four ice cream cones. The utility derived from eating the first ice cream cone is 100, while the second cone eaten yields additional utility of 50, the third cone consumed provides 25 additional utils, and the fourth cone has a benefit of 12 utils. This example captures the idea of diminishing marginal utility because Lamar gets more utility from consuming more ice cream, but the first cones eaten are more enjoyable than the last few consumed.

Now let us extend the example and suppose there are two people with identical tastes, Lamar and Angelo. If there are four ice cream cones and Lamar eats them all, his utility is 187 (= 100 + 50 + 25 + 12). Angelo then consumes nothing, so his utility is zero. Total utility is 187.

The transfer of one ice cream cone from Lamar to Angelo would give Angelo 100 utils while Lamar now has 175 utils, producing total utility of 275 for a net gain in total utility of 88 (Lamar loses 12 utils while Angelo gets 100 utils). If we were to go further and transfer another ice cream cone to Angelo (so they now have two each) then total utility rises to 300 (= 150 + 150). Total utility is maximized when consumption is equalized, if both individuals have identical tastes.

This argument for greater equality based on diminishing marginal utility has been an influential one, but notice that the example of Lamar and Angelo illustrates two levels of equalizing transfers: moving from a (4,0) division of extreme inequality to a (3,1) division of moderate inequality, and then moving from moderate inequality to total equality (2,2).

Notice also that the move from high to moderate inequality produces a large gain (88) in total utility, while the move from moderate inequality to total equality produces a much smaller gain in total utility (25). The principle of diminishing marginal utility implies that total utility increases in both cases it also implies that the closer a society is to absolute equality, the smaller is the size of the gains in total utility of *further* reductions in inequality.

The principle of diminishing marginal utility applies both to incomes in general and to ice cream cones in particular. However, in real life we cannot measure utility and we know that different people have different tastes. People may also differ in their general ability to derive pleasure from their incomes. Unfortunately, we have no way of knowing how much utility different people get from the same bundle of goods. Hence, we cannot actually add the utility of different people and use the criterion of maximizing total utility as a guide to public policy. Furthermore, the issue of how to divide a given amount of goods (as in the example of four ice cream cones and two people) ignores the problem of how to establish incentives for people to produce goods. Hence, although most people accept the claim that an extra dollar generally meets more pressing demands for a poor person than for a rich person, even utilitarians do not argue for complete equalization on these grounds.

Appendix 3

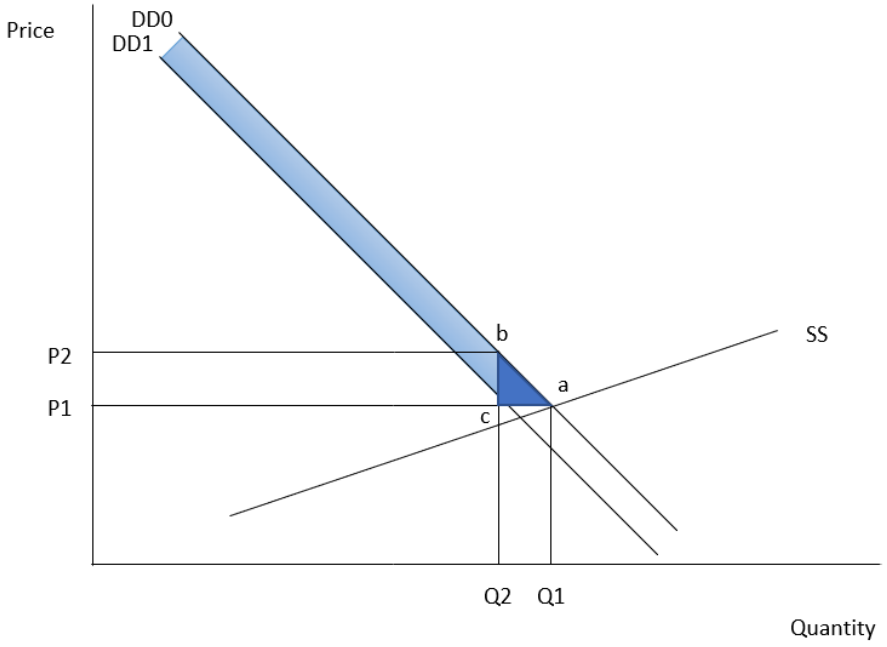
An Illustration of the Consumer Surplus Loss Associated with Cell Phone Price Increases

3.1 In Figure A3 below, standard consumer theory argues that when price increases from P_1 to P_2 demand falls from Q_1 to Q_2. If the demand curve (DD_0) does not shift there is a net social loss of consumer surplus on the units that are no longer sold, due to the price increase, that can be represented in Figure A3 by the dark blue triangle abc and there is a transfer of consumer surplus to producers equal to $Q_2*(P_2 - P_1)$. However, if the utility that consumers derive from consumption depends partly on the percentage of people who have cell phones the decline Q_1 to Q_2 reduces willingness to pay and shifts the demand curve downwards (as represented by the shift of DD_0 to DD_1 in Figure A3 below). An additional loss of consumer surplus then occurs, on all the units that continue to be sold (represented by the light blue area between DD_0 and DD_1.

3.2 Graphically, the loss of consumer surplus associated with a price increase for a good without externalities is a triangle under the demand curve (abc in Figure A3). When a network externality is present, the demand curve shifts as well when some consumer stop purchasing (DD_0 to DD_1 in Figure A3), causing a loss of consumer surplus for infra-marginal consumers. Although the consumer surplus loss for each infra-marginal consumer may be small, there are a great many of them. Adding up a small per person loss over many people may imply a significant aggregate loss – which is the situation that Figure A3 portrays

3.3 The decline in willingness to pay for private consumption of cell phone services when the number of potential callers and number and quality of cell phone apps developed depends positively on is conceptually distinct from the public goods benefits of greater cell phone coverage.

Figure A3



References have been embedded in the relevant footnotes.

Appendix B

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Curriculum Vitae

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CITIZENSHIP Canadian

EDUCATION PhD, Yale University, 1975
M.Phil., Yale University, 1972
BA. (Hon.), Queen's University, 1968

DISSERTATION TITLE A Structural Approach to the Distributions of Earnings

PROFESSIONAL CAREER

Dalhousie University
- McCulloch Professor of Economics, July 1, 1995--
- Professor with Tenure, Department of Economics, 1985--
- University Research Professor – July 1, 2005 – June 30, 2010
- Associate Professor with Tenure, Department of Economics, 1981-1985
- Assistant Professor, Department of Economics, Dalhousie University, 1977-80.

Visiting Scholar / Visiting Research Fellow
- Institute for New Economic Thinking, Oxford, U.K. February – May 2018
- Statistics Directorate, Organization for Economic Co-operation and Development (OECD), Paris, France, January-June 2014
- Economics Department, University of Queensland, Brisbane, Australia
  -July 2012, February 2014, April 2015, January 2018, June 2019
- Indira Ghandi Institute for Development Research (IGIDR), Mumbai, India May –June 2010
- Research on Poverty Alleviation (REPOA), Dar es Salaam, Tanzania, August 2009 – April 2010.
- Institute for Social and Economic Research, University of Essex, Colchester, UK: 2001 - 2002
- Social Policy Research Centre, University of New South Wales, Jan/July, 1998
- Economics Department, University of Sydney, Jan/July, 1998;
- CV Starr Centre, New York University, New York, Nov. 1990.
- Department of Applied Economics; Cambridge University, August 1983- July 84
  - occasional tutor, Clare College, Cambridge University, 1983-84
  - Member of High Table, King's College, Cambridge University, 1983-84

Assistant Professor, Economics Department, University of Western Ontario, 1975-77 (Lecturer, 1973-74);
Teaching Assistant, (International Economics), Yale University, 1972-73

Lars Osberg

Research Assistant, Queen's University, 1968; Researcher, Department of Finance, Ottawa, summer 1973.
Economist, Tanzania Sisal Corporation, Tanga, Tanzania, 1968-70.
Economist, National Insurance Corporation, Dar es Salaam, Tanzania, 1968.

Prizes and Awards

Galbraith Prize, Progressive Economics Forum, May 2014
Mike McCracken Award for Economic Statistics,
Canadian Economics Association, May, 2015
Doug Purvis Memorial Prize for contribution to Canadian Economic Policy
Canadian Economics Association, June, 2019
(awarded for *The Age of Increasing Inequality: The Astonishing Rise of Canada's 1%*)
Fellow, Canadian Economics Association – appointed June 2020

Courses Taught

Canadian Economic Policy Debates
Inequality and Poverty
Graduate Labour Economics
Globalization and Economic Development: Current Debates
Principles of Economics
Introductory Econometrics
MA/MDE Research Methods Seminar
Honours Seminar
Economic Development
Undergraduate Labour Economics
Collective Bargaining and Labour Market Policy
Intermediate Macroeconomics
Intermediate Microeconomics
Public Finance
Urban Economics

Current Research

- Inequality of Opportunity
- Measurement and Determinants of Economic Well Being, Poverty and Inequality
- Economic Insecurity
- Instability Implications of Increasing Inequality and Insecurity

PUBLICATIONS

BOOKS

The Age of Increasing Inequality: The Astonishing Rise of Canada's 1% James Lorimer Publishers, Toronto, 2018, 248 pages

Principles of Microeconomics: Fourth Edition – 2012 McGraw-Hill Ryerson, Toronto - joint with Frank/Bernanke/Cross/MacLean

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The Economic Implications of Social Cohesion (edited) University of Toronto Press, Toronto, 2003, 249 pages

Lars Osberg

Hard Money, Hard Times (edited with P. Fortin) James Lorimer Publishers, Toronto, 1998, 202 pages.

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3. "The Measurement of Inequality" Keynote Address to 2019 Queensland Economics Winter School, Economic Society of Australia (Qld), O'Reilly's Rainforest Retreat, Lamington National Park, July 1-3, 2019

4. "Could "Equality of Opportunity" among Commoners Suffice?"
   -Keynote address to Inequality of Opportunity Conference, University of Queensland, Brisbane, Australia, June 26-27, 2019
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5. "Financialization and Inequality" "10 Years After the Crisis - modelling meets policy making" Workshop organized by Fields Institute and New Approaches to Economic Challenges (NAEC) of the Organisation for Economic Co-operation and Development (OECD Fields Institute, Toronto, January 15/16, 2019

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6. "Full Employment in Canada in the early 21st Century" Policy Research Workshop, Canadian Labour Congress, Ottawa, April 8/9, 2019, Ottawa
7. "Gender Bias Within Chinese Families—Who Eats First in Tough Times?" with Nancy Kong – Poster session August 22 presented by Kong IARIW 35th General Conference, Copenhagen, Denmark, August 20-25, 2018
8. "Blown Off-Course? Unhealthy Vices of the Economically Insecure During the Great Recession" with Barry Watson, Angela Daley and Nicholas Rodhe – presented by Watson and Rohde Session 6E August 23 IARIW 35th General Conference, Copenhagen, Denmark, August 20-25, 2018
9. "Economic Insecurity: Health implications"
   -Department of Economics, Queensland University of Technology, Brisbane, June 24, 2019
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18. *Poverty in Nova Scotia: Money does Matter*
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27. *What's so bad about more inequality?*
    - Center for Wealth and Inequality Workshop, Columbia University, New York, October 3, 2013
    - Social Policy Research Centre, University of New South Wales, Sydney, Australia November 11, 2013
    - Keynote Address to ACADEMY OF THE SOCIAL SCIENCES IN AUSTRALIA – 2013 ANNUAL SYMPOSIUM *Levelling the Spirit: Addressing the Social Impacts of Economic Inequality*, Canberra, Australia November 12, 2013.
    - Economics Department, University of Queensland, Brisbane, Australia, February 21, 2014
    - Economics Department, Griffith University, Gold Coast, Australia, February 28, 2014
    - Economics Department, National University of Ireland, Galway, Ireland, March 14, 2014
28. *Unionization & Inequality: Trends in Canada* Labour Rights and their Impact on Democracy, Economic Equality and Social Justice, International Conference, Toronto, March 26-28, 2013
29. *The Impact of the Great Recession on Economic Well-being: How Different are OECD Nations and Why*? With Andrew Sharpe 32nd IARIW General Conference, Boston, USA, August 7, 2012
30. *"Beyond GDP: Measuring Economic Well-being in Canada and the Provinces, 1981-2010"* With Andrew Sharpe
31. A CELEBRATION OF STATISTICS CANADA AND BETTER DECISION MAKING THROUGH DATA March 30-31, 2012, Ottawa, Ontario, Canada
32. *Measuring Economic Insecurity in Rich and Poor Nations*
    - OECD/IARIW CONFERENCE ON ECONOMIC SECURITY November 22-23, 2011, Paris, France.
    - Canadian Economics Association, Calgary, Alberta June 9, 2012
    - EPAP workshop on Poverty, Inequality and Economic Development, Griffith University, Brisbane Australia, 12th July 2012
    - Economics Department, University of Regina, April 11, 2013
33. *Instability Implications of Increasing Inequality: What can be learned from North America?*
    - Conference on ECONOMIC AND SOCIAL INEQUALITIES: CAUSES, IMPLICATIONS AND REMEDIES, Centro Congressi Cariplo, Milan, Italy, October 27-28, 2011.
    - Conference on POLICY CHOICES: AUSTERITY, INEQUALITY, OR FULL EMPLOYMENT? March 23-24, 2012 Laurentian University, Sudbury Ontario
    - Economics Department, University of Queensland, Brisbane Australia, 13th July 2012
    - Public Lecture: Johnson-Shoyama School of Public Policy, University of Regina, April 10, 2013
34. *The Hunger of Old Women: How sensitive are poverty measures?* With Thadeus Mboghoina - Canadian Economics Association, Ottawa, Canada June 4, 2011.
35. *Why has Unemployment Disappeared from Official Macro-Economic Policy Discourse in Canada?* Workshop for Festschrift in Honour of Ian Stewart, Centre for the Study of Living Standards, April 20-21, 2011, Ottawa
36. *Measuring Economic Insecurity and Vulnerability as part of Economic Well-being: Concepts and Context* 31st General Conference of IARIW August 27, 2010 St-Gallen, Switzerland

37. *Measuring Poverty and Vulnerability: A Survey* – two lectures at Indira Ghandi Institute for Development Research, Mumbai, India June 22 & 23, 2010
38. *Social Protection of the Elderly in Tanzania: Current Realities and Future Implications*, presented at REPOA 15th Annual Research Workshop, Dar es Salaam, March 18-19, 2010

39. *Poverty and Recessions: Canada's Vulnerable in Tough Times* - Council of the Federation Symposium on Labour Force Participation, St. John´s, Newfoundland, June 23, 2009
40. *"Economic Insecurity in the IEWB"* – Centre for the Study of Living Standards, Rideau Club, Ottawa, June 16, 2009
41. "*Canada's declining social safety net: EI reform and the 2009 Budget"* Conference: The 2009 Federal Budget: Challenge, Response and Retrospect John Deutsch Institute May 7-8, 2009 - Queen's University
42. *"New Perspectives on the Economic Security Component of the Index of Economic Well-Being"* Canadian Economics Association 43rd Annual Conference – Toronto May 31, 2009
43. *"Current Macro-Economic Conditions"* -Symposium on "*The Path to Economic Recovery?*" Atlantic Provinces Economic Council Halifax, February 3, 2009
    Canadian Union of Public Employees – Regional Representatives Meeting, Dartmouth February 17, 2009

Discussant and other Participation (since 2009)

1. Discussant: "The Decline of African-American and Hispanic Wealth since the Great Recession" by Edward N. Wolff, 35th IARIW General Conference, Copenhagen, Denmark, August 24, 2018
2. Discussant: "Another Look at whether the Rich Save More: Evidence from a Survey Experiment" by Mike Brewer, John Burton, Thomas Crossley, Paul Fisher, Annette Jaeckle, Alessandra Gaia and Joachim Winter 35th IARIW General Conference, Copenhagen, Denmark, August 24, 2018
3. Discussant: Sessions 2B and 5A and Wrap-up Panel *IARIW-Bank of Korea Conference "Beyond GDP: Past Experiences and Future Challenges in the Measurement of Economic Well-being," Seoul, Korea, April 26-28, 2017*
4. Discussant: "World Development Report 2017" and Wrap-up Panel "Why Institutions Matter for Industrialization-Led Development", 22nd Annual Research Workshop, Research on Poverty Alleviation (REPOA), March 27-28, 2017, Dar es Salaam, Tanzania. https://www.youtube.com/watch?v=coyZm_DaUyM
5. Discussant, Labour Market Insecurity in Canada: a look at provincial level trends; Iglika Ivanova and Kaylie Tiessen, Canadian Economics Association, Ottawa June 2016
6. Discussant, European Commission /OECD seminar on Job Quality, Labour Market Performance and Well-being, Brussels, November 27-28, 2014\
7. Member, Research Advisory Committee, Poverty Action Research Project, Assembly of First Nations/ SSHRC, Montreal, June 11-13, 2013
8. Member, Nova Scotia Economic Forecast Challenge and Review, Department of Finance, Nova Scotia, February 14, 2013
9. Member, Economic Advisory Group Nova Scotia Commission on Building our New Economy, February 7, March 20,2013
10. Discussant – papers by Pestel and Nandi/Platt, Session 6C "Gender and Well-Being I", 32nd General Conference of IARIW August 9th, 2012 Boston, Mass.
11. Chair – session on development economics Canadian Economics Association, Calgary, June , 2012
12. Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities (HUMA) "Fixing the Skills Gap: Addressing Existing Labour Shortages in High Demand Occupations" and "Understanding Labour Shortages: Addressing Barriers to Filling Low-Skilled Jobs" May 1, 2012, Halifax,
13. Minister's Conference on Fiscal and Economic Policy, Department of Finance, Nova Scotia, Waegwoltic Club, Halifax, Dec. 8, 2011
14. Economic Forum on the cost benefits of public funding for early childhood programs. June 22, 2011, OISE, Toronto.
15. Chair – sessions on poverty measurement and development economics Annual Conference of the Canadian Economics Association, Ottawa, June 3 and 4, 2011.
16. Human Capital Future Trend Scanning External Panel; Policy and Delivery Division of the Ontario Cabinet Office, Monday, September 27, 2010
17. Discussant – papers by Berenger and Bresson and by Ceriani and Gigliarano, Session 6D "Poverty and Deprivation" , 31st General Conference of IARIW August 27, 2010 St-Gallen, Switzerland
18. Minister of Finance's Fourth Annual Summer Policy Retreat, August 10-11, 2010 Wakefield, Quebec
19. OECD Experts Meeting "Latin American Economic Outlook 2011 - Middle Class and Development in Latin America" , OECD Paris, 26th and 27th April 2010.

20. Member, Nova Scotia Economic Advisory Panel for Premier Darrell Dexter, Province of Nova Scotia, August to November 2009
21. Oxford Poverty & Human Development Initiative "Workshop on Robustness Methods for Multidimensional Welfare Analysis", 5-6 May 2009
22. "Make Poverty History" Advisory Committee, Assembly of First Nations, Calgary, July 19-20, 2009

Post- Doctoral Student Supervision

Bonnie Jean McDonald (2010-2016)

Theses Supervised

PhD. Paola Benaras "Women and Children First: Intimate Partner Violence, Children's Well-being & Child Labour in Ecuador" 2021

PhD. Nancy Kong "Three Essays on Economic Insecurity and Child Development" 2017

PhD: Barry Watson , "Exploring the relationship between economic insecurity and health outcomes" 2015

PhD Kelly Chen "Three Essays on Parental Health and Children's Outcomes" 2012

Ph.D. Lihui Zhang "Three Essays on Crime among Children and Youth" 2009

Ph.D. Nina Ahmed, "Two Essays on the Well-Being of Children" 2002

Ph.D. Vera Brusentsev, "A Comparison of the Labour Force Participation of Married Women in Three Countries: Australia, Canada and the United States of America," 1999.

Ph.D. Mary Kilfoil, "Two Essays Examining the Impact on Married Couples Earnings Distributions of Standardizing for Differences in Hours Worked," 1998.

Ph.D. Fiona McPhail, "Three Essays on Trends in Poverty and Inequality in Canada," 1996.

Ph.D. Kwabia Boateng, "A Comparative Analysis of Labour Supply Behaviour Among the Immigrant and Canadian-born Population in the Light of the Immigrant Selectivity Hypothesis," 1993.

Ph.D., Zhengxi Lin, "Three Essays on Inter-temporal Labour Supply," 1992.

Ph.D., Sadettin Erksoy, "The Distributional Effects of Disinflation and Unemployment in Canada, 1981-1987," 1992.

Ph.D., Victor Ketso, "Work and the Welfare Costs of Unemployment," 1988.

Ph.D., Fazley K. Siddiq, "The Distribution of Personal Wealth in Nova Scotia, 1871 and 1899," 1986.

Ph.D., John Baffoe-Bonnie, "Family Labour Supply in a Life-Cycle Setting and Labour Market Segmentation," 1985.

Ph.D., Jose W. Rossi, "Two Essays on Income Distribution in Brazil," 1979.

M.A. Nyasha Patience Mandeya "Analyzing the impact of Income Inequality on Mortality Inequality" 2020

M.A. Doug Spafford "Life Satisfaction, Victimization and Discrimination among Indigenous People in Canada" 2019 (second reader)

Lars Osberg

M.A. Syed Saad Mahmood "An Index of Economic Security for Three South Asian and Seven OECD Countries: Methodological Issues" 2013

M.A. Chong Zhou "An Estimation of the Threshold Phillips Curve Model: Evidence from G7 Plus Australia" 2013

M.A. Yinan Li "The Impacts of Overeducation on the Likelihood of Taking Continuing Education For Job or Career Purposes" 2013

M.A. Hamza Zaidi "Labor Supply and Time Allocation in Remittance-Receiving Households: Evidence from Pakistan" 2012

M.A. Michael F. Lutes "Power vs. Precision: How have the determinants of PGA Tour Golfers' Performance-Based Earnings Evolved since the 1990s" 2012

M.A. Chenze Lin "Effects of Family Background Characteristics on Youth Employment by Migration Status" 2012

M.D.E. Paola Beneras "The Intergenerational Transmission of the 'Healthy Immigrant' Effect: Examining Health Outcomes through Social Capital"2012 (reader)

M.A. Michael Schwartzentruber "The Economic Determinants of Obesity in Canadian Adults" 2012 (Reader)

M.D.E. RositaYi Ki Kwan "Alberta Welfare Reform and Employment Outcomes of Welfare Recipients and Single-Mothers" 2011 (Reader)

M.A. Weiyang Kong "Do Immigrants share the same life satisfaction profile in age as native-borne Canadians" 2011 (Reader)

M.A. Aliah Akbari "How Does the Care Giver/Receiver Relationship affect the hours spent on Caring for Senior Citizens in Canda?" 2011

M.D.E. Greg Landry "The Implications of Population Change on Nova Scotia's Retail Sector" 2008

M.D.E. Jiaping Shao "The Growth of Poor Children in China 1991-2000" 2007

M.A. Farinaz Kabir "Female Entrepreneurs in Rural Bangladesh: Evaluating a Pilot Project in Natore, Bangaldesh" 2006

M.A. Golam Mortaza "Female Labour Force Participation in Developed and Developing Countries: Consideration of Canada and Bangladesh" 2005

M.A. Jason Murray "Wage Differentials in the Canadian Labour Market: How are the Aboriginal Peoples of Canada Affected" 2005

M. A. Nan Geng "Generalized Stochastic Earnings Functions, Human Capital and Risk of Return in Urban China" 2004

M.A. Zhouran Zhou "International Comparison of Fiscal Impact on Alternative Poverty Indexes," 2004

M.A. Kim Tran "The Relationship between Trade Openness and Economic Well-Being in Canada" 2003

M.A. Tammy Schirle, "What is the Impact of Social Assistance Programs on Income Inequality in Canada?"

Lars Osberg

September, 2000

M.A. Steven Tzeferakos, “Technical Change and Productivity: With Special Emphasis on Machinery and Equipment Advanced Manufacturing Technologies, Replacement Investments, and Capital Deepening in Canadian Manufacturing Industries.” March 2000

M.A., Michael Rushe, “The Distribution of Joblessness of Women: Does Unemployment Insurance Play a Role?,” 1995.

M.D.E., Suzanne Chisholm, “Education and Economic Development in the Economies in Transition: A Survey of the Baltic States,” 1995

M.A., Lucie Zeman, “The Effects of Disability on the Labour Market Activities of Canadians,” 1994.

M.A., Carol Knox, “Canada's Voluntary Sector: Who Donates Their Time and What is the value of the Services Provided,” 1994.

M.A., Rick Audas, “Factors Influencing the Probability of Dropping Out of School,” 1994

M.D.E., Nina Ahmed, “Job Mobility and Wage Determination,” 1994.

M.A., Tom McGuire, “Unemployment Insurance Induced Unemployment,” 1993.

M.A., Todd Selby, “A Study of the Labour Supply of Single Mothers in Canada,” 1992.

M.A., Toby Sanger, “The Information Economy in Canada,” 1991.

M.A., Mary Jane Marchand, “Persistence of Poverty among Maritime Working Families,” 1991.

M.A., Randy Jewers, “An Assessment of the Role of Literacy in the Canadian Labour Market,” 1990.

M.A., Tom Butterly, “The Impact of declining Husbands income on the labour force participation of married females with an assessment of the impact of increasing labour force participation on family income levels 1973 to 1984” 1989.

M.D.E., Kau Msimango, “The Structure of Earnings in South Africa's Gold-Mining Industry,” 1989.

M.A., Mark Poirier, “A Hedonic Price Model and Demand Equation for Housing,” 1987.

M.A., Francine Noftle, “An Empirical Model of a Labour Supply Function for Married Women and an Evaluation of the Significance of Omitted Variable and Sample Selection Biases,” 1987.

M.A., G. Hack, “The Impact of Nova Scotia's Minimum Wage Law,” 1982.

M.A., Douglas J. McCann “Apprenticeship in Nova Scotia” 1982

M.A., P. Shaw, “A Micro-Level Test of Marginal Productivity and Human Capital Theory,” 1981.

M.A., J. Baffoe-Bonnie, “Education and Economic Growth in Ghana,” 1981.

M.A., C. Dumas, “Labour Supply of Low-Income Families,” 1980.

DALHOUSIE ADMINISTRATIVE DUTIES (since 2009)
Member, Senate – July 2013-December 2013
Member, Faculty of Science, Promotion and Tenure Committee, July 2013-December 2018

Chair of Economics Department 2006 – 2009, 2010 – 2013

Departmental Committees:Seminar Co-ordinator 2016-2020

Promotion and Tenure Committee, Faculty of Science, 2013-2015

Recent Grants

AUSTRALIAN RESEARCH COUNCIL Discovery Grant DP170100438 (2017-2019) "Inequality of Opportunity in Australia:" joint with D.S.Rao, K.K. Tang, and P.K. Trivedi (University of Queensland), N. Rohde (Griffith University) and X. Ramos (Autonomous University of Barcelona)

PROFESSIONAL ASSOCIATIONS

Canadian Economic Association;
Association for Research in Income and Wealth;

Canadian Economics Association
- Vice President, 1997-98
- President-Elect, 1998-99
- President, 1999-2000
- Past President, 2000-2001

International Association for Research in Income and Wealth
Chair, Search Committee for Editor and Executive Director, 2002-2003
Executive Council, 1996-2004
Review Articles Editor, The Review of Income and Wealth, 1990-2008
Editorial Board Review of Income and Wealth, 1987- 2022
Chair, Program Committee, "Measuring Income, Wealth and Well-being in Africa" IARIW / TNBS November 11-13, 2022, Arusha, Tanzania
Chair, Program Committee, Atlantic Canada Economics Association, Halifax, October 14-16, 2022

Other Professional Service Details Available on request

Exhibit C

CT-2022-002

THE COMPETITION TRIBUNAL

IN THE MATTER OF the *Competition Act*, R.S.C. 1985, c. C-34;

AND IN THE MATTER OF the proposed acquisition by Rogers Communications Inc. of Shaw Communications Inc.;

AND IN THE MATTER OF an application by the Commissioner of Competition for one or more orders pursuant to section 92 of the *Competition Act*.

B E T W E E N :

COMMISSIONER OF COMPETITION

Applicant

- and -

ROGERS COMMUNICATIONS INC. AND SHAW COMMUNICATIONS INC.

Respondents

- and -

ATTORNEY GENERAL OF ALBERTA AND VIDEOTRON LTD.

Intervenors

ACKNOWLEDGEMENT OF LARS SPENCER OSBERG, PhD

I, Lars Osberg, acknowledge that I will comply with the Competition Tribunal's code of conduct for expert witnesses which is described below:

1. An expert witness who provides a report for use as evidence has a duty to assist the Tribunal impartially on matters relevant to his or her area of expertise.

2. This duty overrides any duty to a party to the proceeding, including the person retaining the expert witness. An expert is to be independent and objective. An expert is not an advocate for a party.

Signed this 21st ____ day of September, 2022

Lars Osberg

Exhibit D
To the Statement of Lars Osberg

Sources and Documents Relied Upon

Sources and documents relied upon in my report herein are those referenced in the report and appendices.

Signed this 21st day of September, 2022

Lars Osberg