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PUBLIC

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 –

THE ATTORNEY GENERAL OF ALBERTA AND VIDEOTRON LTD.

Intervenors

AFFIDAVIT OF MARK A. ISRAEL

I, Mark Israel, of the County of Montgomery, in the State of Maryland, in the United States of America, make oath and say:

1. I am a Senior Managing Director at Compass Lexecon, an economic consulting firm where I have worked since 2006. From 2000 to 2006, I served as a full-time member of the faculty at Kellogg School of Management at Northwestern University in Illinois. I am an economist by training and by profession. I received my Ph.D. from Stanford University in 2001.

2. I specialize in the economics of industrial organization—which is the study of competition in imperfectly competitive markets, including the study of antitrust and regulatory issues—as well as applied econometrics. I have been involved in the wireless industry throughout my career, have been among the lead economists on many of the recent wireless telecommunications transactions of significance in North America, and have submitted testimony related to the wireless industry before courts, tribunals, and regulatory bodies on many occasions.

3. I have been retained by Lax O'Sullivan Lisus Gottlieb LLP, counsel to the Respondent Rogers Communications Inc. ("Rogers"), to provide my expert opinion regarding the competitive effects resulting from the acquisition by Rogers of certain assets of Shaw Communications Inc.

4. I attach my Reply Expert Report in this matter setting out my opinion as Exhibit "A."

5. I attach my Acknowledgement of Expert Witness as Exhibit "B."

6. I attach my curriculum vitae as Exhibit "C."

7. I attach my Documents Relied Upon as Exhibit "D."

Zhang, "Cost Savings, Quality Improvements, and Competitive Effects of the Proposed Rogers/Shaw Merger in the Canadian Wireless Marketplace: Supplementary Analysis," December 13, 2021 as Exhibit "F."

SWORN by Mark Israel, of the County of Montgomery, in the State of Maryland, in the United States of America, before me by videoconference on October 20, 2022, in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.

Mark A. Israel

Commissioner for Taking Affidavits
(or as may be)

MATTHEW LAW

MARK ISRAEL

PUBLIC

This is Exhibit "A" referred to in the Affidavit of Mark Israel sworn by Mark Israel, of the County of Montgomery, in the State of Maryland, in the United States of America, before me by videoconference on October 20, 2022 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.

Commissioner for Taking Affidavits (or as may be)

MATTHEW R. LAW

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I. INTRODUCTION AND SUMMARY OF OPINION

A. QUALIFICATIONS AND ASSIGNMENT

1. Qualifications

1. I am a Senior Managing Director at Compass Lexecon. I served as a full-time member of the faculty at Kellogg School of Management at Northwestern University in Illinois. I am an economist by training and by profession. I received my Ph.D. from Stanford University in 2001. I specialize in the economics of industrial organization. I have particular interest, experience, and expertise in applying economic analysis to issues involving competition and regulation in telecommunications. I have been involved in the wireless industry throughout my career, have been among the lead economists on many of the recent wireless telecommunications transactions of significance in North America, and have submitted testimony related to the wireless industry before courts, tribunals, and regulatory bodies on many occasions.

2. I described my qualifications at length in my initial expert report on this matter.[1] My *curriculum vitae* is attached to this report as Exhibit "C."

2. Assignment

3. On September 23, 2022, I submitted the Israel Initial Report on this matter. On the same day, Prof. Miller submitted an expert report that had several changes compared to the report he filed on May 6 as part of the Bureau's Section 104 application.[2] In my current report, I have

[1] Affidavit and Expert Report of Mark A. Israel, September 23, 2022 (hereinafter Israel Initial Report).

[2] I hereinafter refer to the Witness Statement and Expert Report of Nathan H. Miller, September 21, 2022 as the "Miller Initial Report", and to his report as part of the Bureau's Section 104 application as the "Miller Section 104 Report."

been asked to reply to the Miller Initial Report, and also to opine on the Bureau's [redacted]

3. I understand that Prof. Osberg has submitted a witness statement on behalf of the Bureau in which he addresses the issue of consumer welfare effects and socially adverse transfers.[3] While I have not been asked to respond to this witness statement, I have been asked to quantify the consumer welfare benefits arising from certain commitments Rogers has made as part of the transaction that would be relevant to an assessment of the transaction's total impact on consumer welfare.

4. Compass Lexecon is paid for my work at my standard hourly fee. Neither my compensation nor Compass Lexecon's is contingent in any way on the outcome of this proceeding.

B. Overview of the Miller Initial Report and my responses

5. The Miller Initial Report is not materially different from the Miller Section 104 Report. Specifically, it includes:

- The same merger simulation models with the same fundamental flaws that I identified in the Israel Initial Report.
- A further attempt to justify the use of share of gross adds (SOGA) from [redacted] to calibrate Prof. Miller's merger simulation model.

[3] Witness Statement of Lars Spencer Osberg, PhD, September 21, 2022 (hereinafter "Osberg Report").

  - o These justifications are incorrect and they do not overcome the numerous problems with the use of SOGA that I identified in my Israel Initial Report.

- The same "event studies" of the Big Gig launch by Freedom and the Shaw Mobile launch.
  - o I explained in my previous report that the Big Gig event study cannot establish any harm to competition from the current transaction, because the transaction would make Freedom *more* likely to launch a similar initiative in the future.
  - o I also explained that Prof. Miller's analyses of the Shaw Mobile launch is spurious and does not show that this launch had any effect on competitors' pricing or data use.
- The same general arguments regarding the risk of coordinated effects.
  - o Prof. Miller made a few minor adjustments to his arguments, but these do not affect my conclusion that the risk of coordinated effects will diminish, not increase, as a result of the transaction; the bases for that conclusion still stand.

6. Notably missing from Prof. Miller report are the following:

- Prof. Miller has done no substantial work to adjust his findings to the new transaction in which Freedom is sold to Quebecor, which is different from the [redacted] transaction that he analyzed in the Miller Section 104 Report. Rather, he uses the same generic arguments about the inadequacy of the buyer, which are even less applicable now than they were when he filed the Miller Initial Report.

- Prof. Miller has not adjusted his model to account for the fact that Shaw Mobile is a bundled wireline-wireless product despite the fact that his theory of harm is premised on the assertion that consumers have strong preferences for bundles.
- Prof. Miller has not adjusted his model to account for the fact that Quebecor [redacted]
- Prof. Miller has not updated any of the data he uses for his analysis, such as market shares, margins, prices, and SOGA, despite presumably having access to, or the ability to get, more recent data than the data he used in the Miller Section 104 Report.
- Prof. Miller does not quantify or otherwise account for the benefits of combining Shaw's and Quebecor's network assets, notwithstanding the fact that he acknowledges that the transaction will result in such a combination.
- Prof. Miller does not account for any of the marginal costs savings or productive efficiencies created by the current transaction.
- The concerns Prof. Miller raises about the sale of Freedom to Quebecor are speculative, at best, and cannot offset the specific and tangible benefits from that transaction, which he ignores.

C. SUMMARY OF OPINION

7. In light of the failures of the Miller Initial report, discussed above, my overall conclusion has not changed since my Israel Initial Report: The transaction will be beneficial to Canadian consumers and will result in substantial welfare gains to the Canadian economy. Analyses I have done in response to the Miller Initial Report—as well as my analyses of commitments made by

Rogers to take certain actions in the event that the transaction is approved—bolster this conclusion.

8. My principal basis for this conclusion remains the same: The transaction will not reduce the number of wireless competitors in any province, but will result in substantial efficiencies, thus generating pro-competitive benefits with no more than speculative harms to weigh against those benefits. Specifically, Rogers has agreed to divest all of Shaw's wireless assets and its Freedom customer relationships to Quebecor. The transaction will therefore not diminish competition. Instead, the transaction will create marginal cost savings and productive efficiencies that will enhance competition and benefit the Canadian consumers and the Canadian economy as a whole.

9. I support this conclusion with the following more detailed findings.

10. *Prof. Miller's version of the merger simulation model that ignores the divestiture of Freedom is irrelevant for the current transaction, and in any case demonstrates large welfare gains.*

- Prof. Miller applies his quantitative merger simulation model to the effect of the full merger between Rogers and Shaw without accounting for the divestiture. This exercise is entirely artificial because there is no scenario in which the merger would occur without the divestiture. Nevertheless, I demonstrate that, properly analyzed, the full merger without the divestiture would result in substantial net benefits. Specifically, accounting for dynamic efficiencies and marginal cost savings from the transaction, but not for productive efficiencies, I estimate that the full merger without any divestitures would increase consumer surplus by approximately [redacted] per year and will increase total surplus by approximately [redacted] per year. The benefits from the full merger would arise primarily from the economies of scale from combing Rogers' and Shaw's networks and spectrum.

11. *Prof. Miller's merger simulation model that accounts for Freedom's divestiture suffers from several flaws, which cause him to substantially overstate the adverse unilateral effects resulting from the transaction; even partial adjustments to his model reverse his conclusions.*

- Prof. Miller's merger simulation model that accounts for Freedom's divestiture relies on unrealistic assumptions. One important example is that, despite his theory of competitive harm being derived from the asserted importance of wireless-wireline bundled products, Professor Miller treats wireless products the same whether or not they are bundled with a wireline product. In other words, he assumes that customers would substitute to other products in proportion to their overall shares without consideration for whether the products are bundled or unbundled. Using a more realistic approach that allows consumers who choose a bundled product to be more likely to substitute for another bundled product substantially reduces the adverse unilateral effects that Prof. Miller's model estimates and, under certain reasonable assumptions, leads to the conclusion that the merger will increase consumer and total surplus even before accounting for the substantial productive efficiencies that the transaction will generate.

- In fact, rather than decrease competition for consumers who prefer a bundle, the merger will increase such competition. This conclusion arises from the fact that [redacted]

[redacted] According to Prof. Miller's merger simulation model, [redacted] lead to the conclusion that the transaction will increase consumer and total surplus even before accounting for the substantial productive efficiencies that the transaction will generate.

- As I explained in my Israel Initial Report, Prof. Miller's reliance on share of gross adds (SOGA) to calibrate his merger simulation model is incorrect as a matter of economics and leads him to substantially overstate the adverse unilateral effects of the transaction. Prof. Miller's error is exacerbated by the fact that he uses data on [redacted] rather than more recent data. Prof. Miller's claim that Shaw Mobile's SOGA measured in the [redacted] time period reflects Shaw Mobile's long-term competitive strength is incorrect. Prof. Miller justifies his modeling approach in part based on the claim that data after that date is "colored by" the merger announcement. In fact, I show that Shaw Mobile's gross adds were trending down even before the merger announcement—a pattern that is consistent with the launch of a new product.

- [redacted]

12. *The combination of Freedom's and Videotron's network and spectrum assets will result in substantial, quantifiable, merger-specific benefits.*[4]

- Prof. Miller acknowledges both that Quebecor will acquire all of Shaw's spectrum licenses (along with other spectrum assets) and that Quebecor recently acquired its own spectrum licenses. Similarly, [redacted].[5] The efficiency with which the network utilizes licensed spectrum affects the importance of any Wi-Fi offload. However, he ignores the fact that the inherent economies of scale in wireless networks mean that this combination of network assets will result in substantial increased capacity that reflect the more efficient use of scarce assets (spectrum) through the mechanism of greater spectrum reuse.

- Using a standard methodology for calculating network capacity combined with data on Freedom's and Videotron's but-for networks and post-transaction plans, I calculate that the transaction will increase network capacity [redacted] (which is relevant for the time period before Quebecor would launch a standalone wireless network).

- Using the price of spectrum licenses derived from Canadian spectrum auctions as a conservative measure of the value of the spectrum that the transaction will effectively create (by using existing spectrum more efficiently, which has the exact same capacity

4 Throughout this report, I use Videotron and Quebecor interchangeably.

5 Witness Statement of Michael A M Davies, September 23, 2022.

expansion effects as creating new spectrum), I find that the transaction will create network capacity benefits worth at leas [redacted] relative to the standalone Freedom network.[6]

- *Thus, for each year by which the transaction accelerates the deployment of Videotron's spectrum assets, the transaction creates* [redacted] *worth of value via more efficient use of scarce spectrum.*

13. [redacted] *fails to properly account for the high certainty of substantial benefits that far outweigh any plausible competitive harm.*

- The [redacted] fails to properly account for the basic tradeoff of this transaction: On the one hand, there is high certainty that the transaction will yield very substantial benefits—arising from the facts that [redacted] On the other hand, the Bureau's estimated harms are speculative and rely primarily on economic modeling that ignores key aspects of the industry, and thus both overstate the potential adverse effects of the transaction and give a false sense of the precision of those predictions—in fact, the predictions are both inaccurate and imprecise.

6 This conclusion holds even if Shaw would be able to obtain alternative spectrum but-for the merger. Spectrum is a scarce and valuable resource and more efficient use of existing spectrum represents a real benefit to the Canadian economy.

- In this report, I respond on the economic rationale—to the extent one is offered—underlying the [redacted] I provide this response as a summary: I have already addressed at length most of these issues elsewhere in this and in my Israel Initial Report.

14. *<u>The Bureau's approach to calculating welfare effects is internally inconsistent and results in incorrect conclusions about the effects of the transaction.</u>*

- Prof. Miller's merger simulation model produces estimates of the effects of the transaction on consumer and total surplus (deadweight loss or DWL). It also generates estimates of the transfer from consumers to firms as a result of the transaction. These estimates are flawed for the reasons explained in my Israel Initial Report and further in this report. However, even if one were to ignore these flaws for the sake of argument, the Bureau misuses Prof. Miller's estimates to calculate the total "Anticompetitive Effect" as the full change in total surplus (as estimated by Prof. Miller) plus approximately three-quarters of the estimated transfer from consumers to producers.

- The Bureau's approach to computing total effects is inconsistent with sound economics and is internally inconsistent. Specifically, the Bureau's approach adopts an inconsistent approach to counting the effects of the transaction on firms' profits. It does so by counting all of the loss in profits associated with the DWL, but only approximately one quarter of the increase in profits associated with the transfer. This approach is incoherent: Either firm profits are relevant to the Bureau's assessment or they are not; it cannot be that they count fully when profits go down, but only partially when profits go up. This inconsistency in the treatment of firm profits causes the Bureau to overstate the adverse unilateral effects of the transaction (even if one ignores the other flaws in Prof. Miller's model).

- The source of the Bureau's mistake seems to be a confusion between the concept of surplus and the concept of efficiency in resource use. To understand this confusion, it is necessary to go back to basic principles. Surplus can sometimes be measured directly (*e.g.*, consumer and producer surplus in this case). Alternatively, efficiency in the use of real resources could be considered as an indirect proxy for surplus since savings in real resources would typically allow redeployment of the freed-up resources to the benefit of the economy.

- Importantly, any welfare calculation that double-counts surplus and efficient use of resources—that is, counts as a harm both the inefficient use of resources and the loss of welfare resulting from the exact same inefficient use of resources—is necessarily incorrect; this is the mistake the Bureau makes.

- The economically sound approach is to compute the effect of the transaction on consumer surplus (which is the edge case if one cares only about the effect of the transaction on consumers) or the effect of the transaction on total surplus (which is the edge case if one only cares about the effect of the transaction on the economy as a whole, including effects on profits), and then calculate a number in between these two end cases that reflects the weight given to each. To do otherwise introduces the inconsistency described above and involves double-counting, thereby overstating the effects of the transaction on welfare.

15. *The commitments that Rogers will make conditional on the transaction closing will substantially benefit consumers and increase social welfare.*

- Rogers has made several commitments conditional on the transaction closing that will directly benefit Canadian consumers, especially low-income consumers.[7]
- [redacted]
- [redacted]
- [redacted]

[7] As mentioned above, I have not been asked to respond to Prof. Osberg's witness statement. However, a complete assessment of consumer welfare results of the transaction would need to take these commitments into account.

[redacted]

16. I describe the basis for these conclusions in more detail in the following sections.

II. PROF. MILLER'S MERGER SIMULATION MODEL IS FLAWED AND DOES NOT PROVIDE ACCURATE PREDICTIONS OF THE TRANSACTION'S LIKELY EFFECTS

17. The Miller Section 104 Report presents two different versions of a merger simulation model:

- The "full merger model": This is a version of the model in which Prof. Miller assumes that Shaw—including Shaw's network assets and both the Freedom and Shaw Mobile brands—is fully absorbed into Rogers in Alberta (AB), British Colombia (BC), and Ontario (ON), and hence the number of competitors in these provinces goes from four (Bell, Telus, Rogers and Shaw) to three (Bell, Telus, and Rogers).
- The "divestiture model": This model accounts for a situation in which Freedom, along with all of Shaw's wireless assets, are fully divested to an entity not currently operating in AB, BC and ON, while Rogers is assumed to gain ownership only over Shaw Mobile. Hence, the number of competitors remains unchanged after the transaction. Nevertheless, this model finds harms due to its faulty construction.

18. As I explained in my Israel Initial Report, with the divestiture to Quebecor, only Prof. Miller's "divestiture model" is potentially relevant to assessing the transaction (though it still

suffers from many flaws; for example, it assumes that all Shaw Mobile wireless assets are transferred to Rogers, when in fact they are not).

19. Nevertheless, in the Miller Initial Report, Prof. Miller again presents both of these models. The only explanation I could find in his report for the relevancy of the "full merger model" is found at paragraph 223:[8]

> In particular, the divestiture proposal places with New Rogers those Shaw wireline assets that have been identified with Shaw's incentive and ability to offer an aggressive wireless plan through Shaw Mobile. Rogers' incentives with respect to the potential to continue with Shaw's strategy are likely to be tempered **in the same way as under a merger with no divestiture**. In addition, as I explain later in this section, the fact that Quebecor can obtain TPIA services from New Rogers, and thus resell wireline products in the relevant provinces, does not make it likely that Videotron will recreate the type of services currently offered by Shaw. Accordingly, this divestiture proposal would leave some of the harm I identified in Section 6 unaddressed—including the unquantified elements and many of the quantified elements as I will now discuss.

20. I have three comments regarding this explanation. **First**, what seems to be Prof. Miller's justification for using the "full merger model" cannot be correct. Regardless of what he believes will happen to Shaw Mobile under the ownership of Rogers, the "full merger model" assumes Rogers takes ownership of Freedom, and this is not the case. Therefore the "full merger model" does not model—and is not even a proxy for—any scenario that is currently relevant. Nevertheless, **in Subsection A below**, I show that even under the "full merger" scenario, there is no harm to competition and the transaction would be welfare positive.

21. **Second**, as I explained at length in my Israel Initial Report, a major flaw in Prof. Miller's merger simulation model is that it ignores the fact that Shaw Mobile is purchased almost exclusively as a wireline-wireless bundled product, which implies that its competitive dynamics

[8] Miller Initial Report, ¶ 223 (emphasis added).

are also—and likely primarily—driven by wireline competition. In paragraph 223 cited above, Prof. Miller seems to reaffirm the fact that the competitive effects of the transaction are driven by wireline assets. Yet, he still ignores that this conclusion undermines his entire approach: He does not model the wireline aspects of this product (*e.g.*, the fact that the choice of a bundled product is driven by the wireline carrier the customer subscribes to), and he does not account for the fact that, within wireless competition, bundled products are more similar to each other than they are similar to non-bundled products.

22. In **Subsection B.2 below** (after reviewing the findings from my Israel Initial Report in **Subsection B.1**), I demonstrate how correcting just this issue substantially lessens welfare losses, even according to Prof. Miller's model. This shows that Prof. Miller's approach significantly overstates the competitive harm and shows, more generally, that without accounting for the nature of wireless-wireline bundles, one cannot reliably quantify any alleged harm from the transaction.

23. **Third**, Prof. Miller admits that [redacted] will not completely undo the effects of the merger.[9] However, inconsistent with this acknowledgment, Prof. Miller ignores the fact that as a result of the transaction, there will be a [redacted] which will add to competition. Even if that new product is not a "full replacement" for Shaw Mobile's bundle, one cannot ignore the fact that, due to the

9 Miller Initial Report, ¶ 237 [redacted]

transaction and the divestiture, there will be one more company offering a bundle than there is today, increasing competition and benefitting consumers.

24. In **Subsection B.3** below, I demonstrate, again using Prof. Miller's model, why this omission significantly inflates Prof. Miller's claimed competitive losses resulting from the transaction: Even a relatively small (in terms of share) new bundle launched by Quebecor will reverse Prof. Miller's claim of harm and will lead to significant benefits from the transaction, even before accounting for productive efficiencies and the benefits of combining Shaw's and Quebecor's spectrum.

25. The remainder of this section includes the following:

- In **Subsection C**, I explain why Prof, Miller's 8-product model, while still flawed, is an improvement over his 11-product model, which further exacerbates the problems inherent in his 8-product model.
- In **Subsection D**, I respond to Prof. Miller's new justifications for using SOGA and show it is incorrect.

A. The Full Merger Simulation Model Shows the Merger is Highly Beneficial

26. In this section, I show that the "full merger model," without Freedom's divestiture, shows substantial benefits to Canadian consumers and the Canadian economy before accounting for productive efficiencies. For this analysis, I use the marginal costs savings and quality

improvements described in two reports I submitted to the Bureau on November 8, 2021[10] and December 13, 2021.[11] These reports are attached as Exhibits E and F.[12]

27. The merger simulation model I use for the results in Table 1 is similar to Prof. Miller's "full merger model," except for the following changes:

- I use share of subscribers (SoS) as a measure of market shares, and not SOGA like Prof. Miller does. The SoS figures I use are the same as in my Israel Initial Report and reflect the most recent SoS information available.
- I use firm margins from the "CL Supplementary Efficiencies Report," which are more accurate than the margins used by Prof. Miller.[13]
- I incorporate roaming marginal costs saving, network marginal costs savings, and network quality improvements (translated into price equivalents) using the same numbers and methodology as described in the "CL Efficiencies Report."[14]

10 Titled "Cost Savings, Quality Improvements, and Competitive Effects of the proposed Rogers/Shaw Merger in the Canadian Wireless Marketplace." Henceforth the "CL Efficiencies Report."

11 Titled "Cost Savings, Quality Improvements, and Competitive Effects of the proposed Rogers/Shaw Merger in the Canadian Wireless Marketplace: Supplementary Analyses." Henceforth the "CL Supplementary Efficiencies Report."

12 These reports were co-authored with my staff, who conducted the analyses presented in these reports under my supervision.

13 When instead of the margins I calculated I use the margins calculated by Prof. Miller, I find that increase in consumer surplus is [redacted] annually and increase in total surplus is [redacted] annually. The full results for this case are provided in Appendix A.

14 For purposes of calculating merger efficiencies, I assume that Rogers would retain Shaw's 600 MHz spectrum post-merger and that Shaw would acquire 3500 MHz spectrum but-for the merger.

28. The results are presented in Table 1 below. They show that the merger without Freedom's divestiture results in a [redacted] per year gain in consumer surplus and a $441 million per year gain in total surplus, before accounting for productive efficiencies.

Table 1: Merger Simulation Results Assuming a Full Merger with No Divestiture

	Welfare Changes ($Million/Year)	
Province	**Change in Consumer Surplus**	**Change in Total Surplus**
Alberta	[redacted]	[redacted]
British Columbia	[redacted]	[redacted]
Ontario	[redacted]	[redacted]
Total	[redacted]	[redacted]

Sources: Prof. Miller's backup materials; CL Efficiencies Report; CL Supplemental Efficiencies Report.

Notes: Results include roaming marginal costs saving, network marginal costs savings, and network quality improvements. Network marginal cost savings assume that Rogers would retain Shaw's 600 MHz spectrum post-merger and Shaw would acquire 3500 MHz spectrum but-for the merger.

29. For the remainder of this report, I return to the "divestiture model," which is the only model that is relevant to the current transaction.

B. A MORE REALISTIC MERGER SIMULATION MODEL REVERSES PROF. MILLER'S FINDINGS

30. I begin this section by repeating, for reference, the merger simulation results I presented in my Israel Initial Report using Prof. Miller's model. I then demonstrate the welfare effects of taking a more realistic approach compared to Prof. Miller's assumption that a standalone wireless product ("standalone") and a wireline-wireless bundle ("bundle") are equally close to each other from consumers' perspective, and I explain why this assumption is inconsistent with Prof. Miller's own modeling approach. Taking a more realistic approach makes the welfare effects of the merger more positive. Finally, I show that Quebecor's launch of a bundled product after the transaction (as is expected) will have an additional positive effect on welfare.

1. Findings from my Israel Initial Report

31. For reference, I present in Table 2 below the merger simulation result from my Israel Initial Report, which uses SoS as a measure of market share.[15] As I explained in my Israel Initial Report, I present two versions of Prof. Miller's model. In the first version (labelled "none" under "SM Transferred Assets") I assume that none of the assets associated with providing Shaw Mobile service are transferred from Shaw to Rogers. Because Prof. Miller's model only predicts harms to competition if some assets actually change hands—and because it is a model of wireless markets only—there are no adverse effects from lost competition if none of the assets associated with providing Shaw mobile service change hands. This version is therefore the most consistent with Prof. Miller's modeling approach. In the second version of the model (labelled "all" under "SM Transferred Assets"), I follow Prof. Miller's approach of incorrectly assuming that *all* the assets associated with providing Shaw Mobile service are transferred to Rogers. As I previously explained, this necessarily inflates the increase in concentration and the resulting adverse welfare effects, because (among other reasons) Shaw is *not* transferring all the assets used to provide Shaw Mobile wireless service (*e.g.*, Freedom keeps its spectrum, network, and stores). Nevertheless, this version provides an upper threshold that the adverse welfare effects could not exceed.

[15] As I explained in that report, that merger simulation model is biased towards showing harms from the merger, meaning the numbers presented below cannot be used under any circumstances to support a claim of harm from the merger.

I update the inputs to this model to use the same inputs (other than SOGA) as in the Miller Initial Report. This update results in minor and non-substantive changes in the numerical values relative to those reported in my Initial Expert Report.

32. This model results in estimated changes in consumer surplus ranging from [redacted] per year to [redacted] per year and estimated changes in total surplus ranging from [redacted] million per year to [redacted] per year. In all cases, the total productive efficiencies of $307.7 million per year substantially outweigh any estimate of harm.

Table 2: Merger Simulation Results from Israel Initial Report[16]

		Alberta		British Columbia		Ontario		Total	
MC Savings Scenarios	SM Assets Transferred	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus
Low end	None	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	All	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
High end	None	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	All	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total productive efficiencies									[redacted]

Sources: Prof. Miller's backup materials; Israel Initial Report and backup materials; Harington Report.

Notes: "None" assumes none of the assets associated with providing Shaw Mobile services are transferred from Shaw to Rogers while "All" assumes all of the assets associated with providing Shaw Mobile services are transferred from Shaw to Rogers. The results are based on share of subscribers, and the inputs are updated to incorporate the changes in Prof. Miller's report.

2. Adding a wireline-wireless bundle nest

33. I now show the effects of replacing Prof. Miller's "flat logit" assumption (that implies all products are equally similar to each other)[17] with the more realistic assumption that bundles are more similar to each other (from the perspective of consumers) than they are to standalone

16 The MC Savings Scenarios were described in the Israel Initial Report. A similar table that also includes the scenarios in which no marginal savings are assumed and SOGA is used instead of SoS to measure market shares is presented in Appendix B – see Table 12.

17 Specifically, the "flat logit" model has the implication that the diversion ratios (a measure of substitution) from Product A to Products B and C is proportional to the B's and C's market shares.

products. In other words, a consumer who is subscribed to a bundled product is, all things being equal, more likely to switch to another bundled product than to a standalone wireless product.

34. This adjustment addresses a major inconsistency in Prof. Miller's model: On the one hand, as I explained in my Israel Initial Report, the only explanation he could give for why his model will show *any* effect—*i.e.*, for why the transferred subscribers will stay with Rogers and not immediately move back to Shaw, undoing the merger effect—is that Shaw's wireline assets are also transferred to Rogers, and these subscribers may like purchasing a bundle.[18] But if that is the case, then his model *must* account for the preferences of these subscribers for a bundled product, which it does not.

35. In other words, if Prof. Miller ignores the preferences that some subscribers have for the bundle, then his model will necessarily predict that there would be no adverse effects from loss of competition.[19] And if Prof. Miller accepts that some consumers do in fact have preferences for bundled products, then his model is necessarily deficient and unable to reliably estimate the competitive effects of the transaction.

[18] I explained that the logit model he uses assumes that every firm offers certain products based on the assets they possess, and subscribers then choose in every period the product that best matches their preferences. Therefore, in this model it only makes sense to assume the transfer of assets, not subscribers. Subscribers cannot be transferred because they are free to choose a product in any period—there is no "stickiness" built into the model. I also explained that a claim that the wireline assets are the assets that are transferred could at most be a partial explanation because Shaw is not transferring to Rogers the part of its network used to serve the Shaw Mobile subscribers. (Israel Initial Report, § III.B.2.)

[19] This is because Rogers will divest all of Shaw's wireless network assets to Quebecor and Shaw Mobile customers who prefer to stay on the legacy Shaw network (and, by assumption, have no preference for a bundled product) will want to switch to Quebecor based on the economic principle of revealed preferences.

36. The fact that some subscribers prefer a bundle while others prefer standalone can be modelled in a logit model by splitting the products in Prof. Miller's model into two "nests": a nest for bundles and a nest for standalone. This model includes "nest parameters" that determine the "strength" of each nest. A stronger nest (with a higher nest parameter) implies larger diversion between products within the nest compared to diversion between products in different nests. For example, the higher the bundled nest parameter, the more likely it is that a subscriber of a bundle who decided to switch providers following a price increase will choose another bundled product, as opposed to switching to a standalone product.

37. Introducing nesting into the model makes the welfare effects from the transaction more positive. The intuition behind this result is that the increase in concentration following the combination of Rogers' wireless products and Shaw Mobile—the effect that Prof. Miller is concerned about and tries to model in his merger simulation analysis—is less stark when accounting for the fact that these products are less similar to each other than they are to non-merging products. For example, the Shaw bundle is a closer substitute for Telus' bundle than it is for Rogers' standalone offering. (Recall that, pre-transaction, Rogers has no wireline offering in AB and BC).

38. Although I do not have a good empirical estimate of the proper value to use for the nest parameter, I demonstrate that even a moderate value for the nest parameter (meaning that the preference for a bundle is relatively mild) has a large positive effect on the welfare results arising from the model. This is a conservative conclusion, because Prof. Miller's Expert Report posits that bundling is a strong driver of consumer behavior. I demonstrate my results for two values of

the nest parameter: 0.25 and 0.5. The implied diversion ratios between Shaw Mobile and Rogers' Wireless for AB and BC are summarized in Table 3 below.[20]

Table 3: Diversion Ratios Between Shaw Mobile and Rogers Wireless Implied by Nested Logit Demand

	Alberta		British Columbia	
Nest Parameter	Rogers Wireless to Shaw Mobile	Shaw Mobile to Rogers Wireless	Rogers Wireless to Shaw Mobile	Shaw Mobile to Rogers Wireless
0	[redacted]	[redacted]	[redacted]	[redacted]
0.25	[redacted]	[redacted]	[redacted]	[redacted]
0.5	[redacted]	[redacted]	[redacted]	[redacted]

Sources: Prof. Miller's backup materials; TELUS00065079; TELUS00260183.

Notes: Diversion ratio calculates the share of subscribers leaving Rogers Wireless (Shaw Mobile) who switch to Shaw Mobile (Rogers Wireless) in response to a price increase of Rogers Wireless (Shaw Mobile). The nesting parameter of 0 is equivalent to a flat logit; nesting paramters of 0.25 and 0.5 represent increasing preference for bundled products among bundled subscribers and increasing preference for standalong products among standalong subscribers.

39. Table 3 demonstrates the following:

- Nest parameter of 0 (flat logit). I provide this as a benchmark. With a nest parameter of zero, the model is equivalent to a flat logit model, and diversion is therefore proportional to market shares. Based on those shares, in AB for example, for every 100 subscribers who leave a Shaw Mobile following a price increase, [redacted] would switch to Rogers Wireless; for every 100 subscribers who leave Rogers Wireless following a price increase, [redacted] would choose a Shaw Mobile.

[20] The diversion ratio reflects the share of subscribers leaving Product A who switch to Product B in response to a price increase of Product A. For simplicity of exposition, I do not include Fido in Table 3.

- Nest parameter of 0.25: This nest parameter implies a mild preference for bundled products among bundled subscribers and a modest preference for standalone products among standalone subscribers. For example, in AB, for every 100 subscribers who leave Shaw Mobile following a price increase, only [redacted] would switch to a Rogers Wireless; for every 100 subscribers who leave Rogers Wireless following a price increase, only [redacted] would choose Shaw Mobile (fewer than under a nest parameter of 0).

- Nest parameter of 0.5: This nest parameter implies a stronger preference for bundled products among bundled subscribers and a stronger preference for standalone products among standalone subscribers compared to the case in which the nest parameter is 0.5. For example, diversion ratios imply that in in AB, for every 100 subscribers who leave Shaw Mobile following a price increase, only [redacted] would switch to Rogers Wireless; for every 100 subscribers who leave Rogers Wireless following a price increase, only [redacted] would choose Shaw Mobile (fewer than under a parameter of 0.25).

40. The results I present below assume the following:

- There are two nests: For bundled products and for standalone products. The nest parameter I assume (applicable to both nests) is 0.25 or 0.5.

- All products are in the standalone nest, except for Shaw Mobile and [redacted] of Telus (in AB and BC) or [redacted] for Rogers and [redacted] for Bell (in ON).[21] Telus and Bell have the same price for the bundled and unbundled products.[22]

- All other parameters that are used to calibrate the model—margins, prices, and aggregate elasticity—are the same as in Table 2.

41. Table 4 below demonstrates that even a moderate amount of nesting makes a substantial difference to the overall conclusions.[23] For example, assuming the low end of the marginal cost savings and a nesting parameter of 0.25 (the lower of the two values I assume) increases consumer surplus from [redacted] Assuming the low end of the marginal cost savings and a nesting parameter of 0.5 implies the merger *increases* consumer surplus by

[21] Telus expected to have [redacted] mobility and home bundled households in the west by the end of 2021 and had an estimated [redacted] wireless accounts as of June 2021, which implies a wireless subscriber bundling rate of around [redacted]. See TELUS00065079 at 3, TELUS00260183 at 5, and my backup materials for details.

For Rogers, see S24_File10_Regional_2018_2021.xlsx, 1_RCI_Results_Jul2021_to_Apr2022_nolink.xlsb, app_wls_sub_activity_wls_sub_activity_fact, ods_v21_address_data, ods_v21_address_name_link, ods_v21_billing_account, and my backup materials for details.

For Bell, see Postpaid Bell Mobility ON bundle service detail 2021.csv, Postpaid Virgin Mobile bundle service detail 2021.csv, Q16a_EOP_20170101_20210701_NAT_EXCL_MB.txt, and my backup materials for details.

[22] In fact, Telus offers a $20 per month discount to bundled customers. The presence of such bundled discounts is likely to strengthen the nest and therefore ignoring the discount in the model is likely conservative. (See, *e.g.*, Telus, "Deals and Bundles," *available at* https://www.telus.com/en/deals-and-bundles/internet-tv-phone/add-mobility).

[23] I only present in this table the "full asset transfer" scenario and not the "no transfer asset" scenario. As explained above, the "full asset transfer" scenario that I present is likely to substantially inflate the adverse welfare effects from the transaction, because it assumes that, in addition to the wireline assets, Shaw is transferring to Rogers *all* the assets used for serving Shaw Mobile customers, including network assets and spectrum. Since these assets are not transferred to Rogers, the model overstates the increase in asset concentration from the transaction and therefore the adverse competition effects.

[redacted]. Assuming the high end of marginal cost savings, a nesting parameter of either 0.25 or 0.5 yields consumer surplus increases.

42. While I do not know the precise nesting parameter, it is clear as a matter of economics and the Bureau's and Prof. Miller's own logic[24] that there must be some degree of nesting—some consumers have a preference for bundles and thus bundle-to-bundle diversion is stronger than bundle-to-standalone diversion—and thus Prof. Miller's model with no nesting cannot be accurate.

Table 4: Merger Simulation Results Assuming a Bundle Nest[25]

MC Savings Scenarios	Alberta		British Columbia		Ontario		Total	
	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus
Nest Parameter 0.25								
Low end	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
High end	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Nest Parameter 0.5								
Low end	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
High end	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total productive efficiencies								[redacted]

Sources: Prof. Miller's backup materials; Israel Initial Report backup materials; TELUS00065079; TELUS00260183; S24_File10_Regional_2018_2021.xlsx, 1_RCI_Results_Jul2021_to_Apr2022_nolink.xlsb, app_wls_sub_activity_wls_sub_activity_fact, ods_v21_address_data, ods_v21_address_name_link, ods_v21_billing_account; Postpaid Bell Mobility ON bundle service detail 2021.csv, Postpaid Virgin Mobile bundle service detail 2021.csv, Q16a_EOP_20170101_20210701_NAT_EXCL_MB.txt.

Notes: All products are in the standalone nest, except for Shaw Mobile and [redacted] of Telus (in AB and BC) or [redacted] for Rogers and [redacted] for Bell (in ON). Telus and Bell have the same price for the bundled and unbundled products.

24 The [redacted] emphasizes the importance to a wireless carrier of having a bundled offering. Having a bundled offering would only be relevant if some wireless subscribers had a preference for a bundled product.

25 A similar table that also includes the scenarios in which no marginal savings are assumed and SOGA is used for markets shares instead of SoS is presented in Appendix B – see Table 12.

3. [redacted]

43. The results presented in the section above account for the differentiation between standalone and bundled products, but they do not account for the fact that, following the transaction, [redacted] Such a product will reduce concentration and increase competition [redacted] thus benefiting consumers and increasing total surplus. This is true even if the new product is not as valued by consumers, on average, as much as the Shaw Mobile bundle; the existence of [redacted] still creates consumer benefits, and those benefits are quite large in Prof. Miller's model, [redacted]

44. In the model below, I assume, based on Quebecor's projection, that [redacted].[26] (In Appendix C, I show the results are not qualitatively different if instead I assume that the [redacted] will get a market share equivalent to only a quarter of Freedom Mobile's pre-merger subscribers.) I also assume the following regarding [redacted]: it has the same price as Freedom's pre-merger price and has the same marginal cost and marginal cost savings as Freedom post-merger.[27] All the other assumptions of the model are unchanged relative to Table 4.

[26] Witness Statement of Jean-Francois Lescadres, September 23, 2022, ¶¶ 9, 112-114 and Exhibit 47. See also Witness Statement of Dean Prevost, October 20, 2022, ¶¶ 48-49 (affirming that [redacted]

[27] I implement the estimation in four steps: (1) I calibrate the merger to pre-merger values assuming the set of existing products; (2) I add a new [redacted] and recalibrate the model; (3) I simulate the merger; and (4) I compare the results of Step 3 to Step 1. Intermediate Step 2 is necessary to calibrate the "quality parameter" of the [redacted] which I then hold fixed in Step 3.

45. Table 5 shows the results associated with assuming that the merger allows Quebecor to introduce a [redacted] according to the assumptions described above.[28] Under any set of parameters, the merger generates large increases in consumer surplus and total surplus. Moreover, both consumer surplus and total surplus increase in each province.

46. This reflects the fact that the merger is likely to generate better options for consumers on multiple dimensions. Specifically, Rogers will [redacted] As such, the market will have [redacted], a substantial boon to those consumers who prefer [redacted] (rather than the harm that Prof. Miller's model suggests without accounting for the [redacted]).

[28] As with Table 4, I only present in this table the "full asset transfer" scenario and not the "no asset transfer" scenario. As explained in the context of Table 4, this is likely to substantially inflate the adverse welfare effects from the transaction.

Table 5: Merger Simulation Results Assuming a Bundle Nest [redacted] Post-Merger[29]

MC Savings Scenarios	Alberta		British Columbia		Ontario		Total	
	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus
Nest Parameter 0.25								
Low end	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
High end	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Nest Parameter 0.5								
Low end	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
High end	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total productive efficiencies								[redacted]

Sources: Prof. Miller's backup materials; Israel Initial Report backup materials; TELUS00065079; TELUS00260183; S24_File10_Regional_2018_2021.xlsx, 1_RCI_Results_Jul2021_to_Apr2022_nolink.xlsb, app_wls_sub_activity_wls_sub_activity_fact, ods_v21_address_data, ods_v21_address_name_link, ods_v21_billing_account; Postpaid Bell Mobility ON bundle service detail 2021.csv, Postpaid Virgin Mobile bundle service detail 2021.csv, Q16a_EOP_20170101_20210701_NAT_EXCL_MB.txt.

Notes: All products are in the standalone nest, except for Shaw Mobile and [redacted] of Telus (in AB and BC) or [redacted] for Rogers and [redacted] for Bell (in ON). Telus and Bell are assumed to have the same price for the bundled and unbundled products. The [redacted] assumed to achieve a market share equivalent to [redacted] of Freedom's pre-merger subscribers and to have the same pre-merger price and marginal costs as Freedom.

C. Use of Prof. Miller's 8-Brand Versus 11-Brand Model

47. Prof. Miller implements two versions of his merger simulation model.[30] One version, which he refers to as his "8-brand" model, includes just the premium, flanker, and Shaw brands, all of which are post-paid brands. A second version, which he refers to as his "11-brand" model, adds the prepaid brands owned by Bell, Rogers, and Telus to the 8-brand model. For the reasons described below, I focus my response on Prof. Miller's 8-brand model.

29 A similar table that also includes the scenarios in which no marginal savings are assumed and SOGA is used for market shares instead of SoS is presented in Appendix B – see Table 13.

30 Miller Initial Report, ¶ 173.

48. Prof. Miller acknowledges that prepaid brands are "somewhat differentiated from premium and flanker brands."[31] For example, prepaid brands tend to have lower prices and higher churn than postpaid brands.[32] Despite these differences, Prof. Miller explicitly "does not impose any differentiation for prepaid brands" in his 11-brand model (he excludes the prepaid brands entirely from his 8-brand model).[33] Due to these factors, Prof. Miller acknowledges that the 8-brand model "appears to better match the data inputs" and "is likely to deliver more informative predictions about the merger of Rogers with a competitor that does not operate a prepaid brand."[34]

49. I conclude, consistent with Prof. Miller's conclusions, that the inclusion of differentiated prepaid brands in the 11-brand model as if they were the same as post-paid brands exacerbates the underlying flaws in Prof. Miller's modeling approach that I discussed in my Israel Initial Report. This follows because Prof. Miller's model imposes the assumption that, as described above, diversion ratios are proportional to market share (that is what Prof. Miller appears to mean by his statement that he "does not impose any differentiation for prepaid brands"). This implies that consumer choice is not affected by whether a brand offers prepaid or postpaid wireless services; consumer choice is only affected by shares.

50. For example, the model requires that a subscriber to postpaid brand X will view, on average, a prepaid brand Y as a better alternative than postpaid brand Z if the market share of Y

[31] Miller Initial Report, ¶ 176.

[32] Miller Initial Report, ¶ 176.

[33] Miller Initial Report, ¶ 176.

[34] Miller Initial Report, ¶ 177.

exceeds the market share of Z. Because the 8-brand model does not include prepaid brands, that model does not have this unrealistic feature (though, as described above, this type of problem remains present in the 8-brand model with respect to other dimensions of differentiation between products).

51. In addition, it is my understanding that Videotron intends [redacted].[35] But Prof. Miller does not account for this introduction [redacted] in his 11-brand model.[36] As I have shown above, introduction of new products can result in substantial welfare improvements according to Prof. Miller's model. Hence, including prepaid brands (as in Prof. Miller's 11-brand model) but leaving out this [redacted] is particularly inconsistent and problematic in that it ignores a potentially procompetitive aspect of the transaction.

D. PROF. MILLER'S CLAIM THAT SOGA FOR [redacted] REPRESENTS SHAW MOBILE'S LONG-TERM COMPETITIVE STRENGTH IS INCORRECT

52. The only *analysis* added to the Initial Miller Report (relative to the Miller Section 104 Report) is found in Appendix 8.4, where Prof. Miller defends the use of SOGA from [redacted] in his merger simulation model *as if* they were market shares. His claim is that SOGA figures from after the time period he used—which would substantially increase welfare predicted by his model compared to the period he uses—are "colored" by the announcement of the merger.[37] Before I explain why I disagree with this assessment, it is important to note that it

35 See, *e.g.*, VID00077988.

36 Indeed, Prof. Miller does not mention [redacted] at all in his report.

37 Miller Initial Report, ¶ 171.

still does not address several other significant flaws in using SOGA for this purpose, which I explained in my Israel Initial Report:[38]

- The SOGA achieved by a new product shortly after its launch inflates the long-term competitive importance of the product because a new product typically gets a burst of customers who would have purchased the product earlier had it been available. In the current matter, Shaw Mobile's SOGA was measured as early as [redacted] months after its launch.[39] Moreover, it is common for new products to engage in "penetration pricing" shortly after their launch. Hence, whatever one makes of Prof. Miller's claims about SOGA figures from *after* the period he uses, it is clear that SOGA figures from the period Prof. Miller uses cannot reliably be relevant for his simulation model.
- The use of SOGA figures *as if* they were market shares, and without adjusting the model in any away, is inconsistent with the logit demand model and contradicts central assumptions of this model.
- Prof. Miller's claim that SOGA represents the competitive significance among "actively shopping" customers is incorrect because it ignores the fact that many "shopping"

38 Israel Initial Report, § III.C.

39 In the Israel Initial Report, I gave the following simple example: In a market with 10,000 total buyers, a new product is introduced, and 200 subscribers who have been waiting for this product to enter switch to it, all in the first month, while all other subscribers remain with their current provider. In that case, the new product will have a SOGA of 100% in the first month due to its introduction as the key event driving switching in a given period, even though its market share will then settle in at only 2%.

customers decide to stay with their current provider.[40] This likely biases upwards the SOGA of smaller brands like Shaw Mobile that have a smaller installed base.

- Prof. Miller's use of SOGA is rejected by his own model that fails basic diagnostics and produces implausible implied marginal costs,[41] especially for Freedom.[42]

53. Each of these reasons, by itself, is enough to make Prof. Miller's use of SOGA inappropriate, regardless of his analysis in Appendix 8.4. But below I show that his analysis in Appendix 8.4 is also highly misleading and does not provide a justification for measuring SOGA over the time period that he uses.

54. Shaw Mobile's gross adds have generally been [redacted] since its launch in July 2020, a trend that I discussed in my Israel Initial Report.[43] Figure 1 below extends the analysis through August 2022. As is evident from the figure, the [redacted] in Shaw Mobile's gross adds began before the merger announcement (indeed it began immediately after the product launched) and continued well after the announcement (albeit with a short [redacted] in late summer/early fall of 2021, which coincided with increased demand associated with the "back-to-school" season). In the most recent data available, Shaw Mobile's level of gross adds is [redacted] that of the period that Prof. Miller used to calculate SOGA in his analysis, providing further evidence that

40 Miller Initial Report, ¶ 61.

41 These are the marginal costs that the model assumes when simulating the effects of the merger. They differ from measured marginal costs because Prof. Miller's model is not flexible enough to match actual marginal costs of the parties.

42 Israel Initial Report, § III.D.

43 Israel Initial Report, ¶ 64.

his SOGA calculation, based on data from shortly after Shaw Mobile's introduction, substantially overstates its competitive significance.

Figure 1: Shaw Mobile Gross Adds Over Time

[redacted]

Sources: SJRB-CC00895997.

55. Prof. Miller incorrectly claims that Shaw Mobile's [redacted] in gross adds after the transaction was announced was a result of actions that Shaw Mobile took in consideration of their effects on the merger.[44] Specifically, he points to changes in Shaw Mobile's pricing

[44] Miller Initial Report, ¶ 342.

structure and marketing strategy, which coincide with further [redacted] in gross adds, as being "hard to explain in the absence of the proposed acquisition."[45]

56. In fact, these changes are easy to explain for reasons that are unrelated to Shaw's transaction with Rogers. As I explain below, witness testimony and ordinary course plans reflects that Shaw's executives were focused on maximizing the *profitability* of the Shaw Mobile brand, and not just subscriber growth. Indeed, Prof. Miller himself acknowledges that Shaw's internal, ordinary-course documents characterize the change in strategy as being "aimed at increasing the marginal profitability of new users at the expense of growth."[46]

57. This focus led to a change in pricing structure from low, introductory prices to prices that were more sustainable for the business and more consistent with what rivals in the marketplace were charging. Without consideration of what business strategies are profitable to Shaw, Prof. Miller's analysis of actual and projected gross adds and his speculation about the motives for Shaw's pricing strategy are groundless.

58. I understand that Shaw Mobile was [redacted]

45 Miller Initial Report, ¶ 342.

46 Miller Initial Report, ¶ 349.

47 Witness Statement of Paul McAleese, September 23, 2022, ¶¶ 236-237, 245.

48 Witness Statement of Paul McAleese, September 23, 2022, ¶¶ 233-234.

[redacted][49] Only existing customers were eligible to sign up when Shaw Mobile launched, and those customers have received the best prices on Shaw Mobile plans as an incentive to stay with Shaw's wireline service.[50] Notably, I understand that [redacted].[51]

59. I understand that Shaw Mobile's initial pricing structure was [redacted][52] It offered wireless plans at low rates compared to other wireless carriers, as long as subscribers also had a Shaw wireline broadband plan. I understand that [redacted]

60. Contrary to Prof. Miller's claim, [redacted] In making that decision, [redacted]

[49] Witness Statement of Paul McAleese, September 23, 2022, ¶¶ 278.

[50] Witness Statement of Paul McAleese, September 23, 2022, ¶¶ 248, 251 and charts showing the prices tiers associated with Shaw's wireline plans at pp. 85 and 87.

[51] Witness Statement of Paul McAleese, September 23, 2022, ¶ 280; see also charts showing the prices for unbundled standalone plans at pp. 85 and 87.

[52] Witness Statement of Paul McAleese, September 23, 2022, ¶ 236-237, 245.

[53] Witness Statement of Paul McAleese, September 23, 2022, ¶ 253; SJRB-CCB00353664, pp. 11, 15.

[54] SJRB-CCB00872845.

[redacted] By only analyzing gross adds and ignoring the impact on profits, Prof. Miller misses the fundamental motivation for Shaw Mobile to change its prices.

61. Moreover, the timing of Shaw's change in strategy was unrelated to the merger announcement or the merger itself. [redacted]

62. Before Shaw could change the pricing structure of Shaw Mobile, it needed to [redacted] The timing of the change was thus based on the timing of the company's ability to meet the technical requirements and marketplace realities, both unrelated to the transaction.

55 Responding Witness Statement of Paul McAleese, October 20, 2022, ¶ 94.

56 SJRB-CCB00823226.

57 Responding Witness Statement of Paul McAleese, October 20, 2022, ¶ 105.

III. THE MERGER WILL GENERATE SUBSTANTIAL BENEFITS FROM COMBINING FREEDOM'S AND QUEBECOR'S SPECTRUM HOLDINGS

63. Although Prof. Miller acknowledges that Quebecor will acquire all of Shaw's spectrum licenses (along with other spectrum assets) and that Quebecor recently acquired its own spectrum licenses,[58] Prof. Miller's model and quantification of the effects of the merger ignore the fact that the combination of Quebecor's and Shaw's wireless network assets will lead to substantial capacity benefits by using spectrum more efficiently. I quantify those benefits below.

64. In simple math, the divestiture transaction can be seen as equivalent to creating more spectrum, due to the multiplicative way spectrum and towers work together to create capacity. If one firm has spectrum holdings represented by A and towers represented by B, then it has capacity of $A \times B$ (times a spectral efficiency factor). If another firm has spectrum holdings represented by C and towers represented by D, then it has capacity of $C \times D$. But as long as they are separately owned, the A spectrum is not being multiplied (or re-used) by the D towers and the C spectrum is not being multiplied by the B towers. The merger allows deployment of both parties' spectrum on both parties' towers, thus unlocking the cross-multiples $A \times D$ and $B \times C$ to create more capacity.

65. This extra capacity is the same as if each party "created" additional spectrum, scaling up its spectrum holdings by the ratio of the combined firm's towers to its own towers. For this reason, the merger's benefits are equivalent to creating new spectrum—with no need to buy scarce spectrum to do so—something that is clearly socially good. This conclusion holds even if one firm only has spectrum licenses, but not towers. In this case, the merger still adds one cross-

[58] Miller Initial Report, ¶ 220 and fn. 302.

multiple, by deploying that spectrum on the other party's towers. This conclusion also holds even if one or both of the parties could have acquired additional spectrum from alternative sources but-for the merger. This is because spectrum is a scarce and valuable resource, so more efficient use of it represents a real gain to the economy.

66. In order to understand how the proposed merger affects Freedom's and Quebecor's incentives and ability to compete, it is essential to understand how the merger will affect the combined entity's total network capacity. Below, I provide a conceptual framework for assessing that capacity and then a quantification of the effects of the merger. Applying this framework indicates that for each year by which the transaction accelerates the deployment of Videotron's 3.5GHz spectrum assets, the transaction creates [redacted] worth of value via more efficient use of scarce spectrum.[59]

A. Measuring Network Capacity

67. To be able to make a voice call or connect to the internet, a consumer's device needs a radio connection to the network. A network consists of a set of cell sites, which connect to the core network via backhaul. The cell site's ability to provide service depends on the nature of the radio connection between the cell site and the access device deployed on it. The radio connection is characterized, in part, by its carrier (or center) frequency and the amount of spectrum (bandwidth) used by it. For any given spectrum band (*i.e.*, range of frequencies), the greater the amount of spectrum deployed, the greater the number of users that can be served and data transmitted while maintaining a given network service quality level.

[59] For the purposes of simplicity, I have ignored efficiencies arising from the combination of Freedom's and Quebecor's towers and spectrum assets in Ottawa.

68. By investing in additional equipment, a network operator can make more intensive use of its spectrum. A cell site typically has three or six sectors (*i.e.*, antennas pointing in three or six different directions covering different geographic areas within that cell site's coverage footprint). The use of multiple sectors within a cell site allows for reuse of spectrum.

69. In practice, the networks of large mobile wireless service providers have thousands of cell sites. One of the reasons for having multiple cell sites is that doing so allows for even greater spectrum reuse. For that reason, combining the network assets held by the merging parties into one network increases combined capacity relative to the sum of the standalones. Effectively, the merger "creates" spectrum, through the mechanism of greater spectrum reuse.

70. The greater spectrum reuse facilitated by having additional cell sites increases a network's capacity to provide its customers with service of a given quality level. There is, however, an economic tradeoff. Although having multiple sectors and/or sites increases the network's capacity with a given amount of spectrum, having multiple sectors and/or sites also raises the costs of building and operating the wireless network.

71. A final factor that affects a wireless network's ability to serve its customers is known as spectral efficiency, which varies by radio technology and spectrum band. Spectral efficiency refers to the amount of traffic that can be carried over a given amount of spectrum bandwidth. Higher spectral efficiency corresponds to the ability to carry more traffic with the same amount of spectrum (at a given quality level). Newer generations of technologies make more efficient use of spectrum than have previous generations.

72. The following formula summarizes the relationships described above and relates a mobile wireless network's overall capacity to the total number of sectors (*i.e.*, the number of sectors per

cell times the number of cell sites), the amount of spectrum deployed on each sector, and spectral efficiency:[60,61]

$$C_i = T_i \times S_i \times E_i,$$

where:

- C_i is the capacity of Network i;
- T_i is the number of sectors deployed on Network i;
- S_i is the spectrum deployed on Network i; and
- E_i is the spectral efficiency of the spectrum deployed on Network i.

As this formula makes clear, there are three ways to increase capacity: create more sectors (either by deploying more cell sites or more sectors per cell site); deploy more spectrum; and/or increase spectral efficiency. The transaction's impacts on these different dimensions thus have a multiplicative effect that can lead to increased capacity from combining complementary network assets.

73. To quantify these benefits, one can compare the pre-transaction capacity of Shaw's mobile wireless networks to the post-merger capacity of Videotron.

60 See, *e.g.*, United States Federal Communications Commission, "The Public Safety Nationwide Interoperable Broadband Network: A New Model for Capacity, Performance and Cost," FCC White Paper, June 2010, *available at* https://transition.fcc.gov/pshs/docs/releases/DOC-298799A1.pdf, p. 5.

61 To be precise, the product of spectrum and spectral efficiency is calculated for each network technology and spectrum band and then summed. For notational simplicity, I do not include that aggregation in the formula.

74. The pre-transaction network capacity is given by:

$$C^{pre} = T_S \times S_S \times E_S$$

where the S subscript denotes Shaw.

75. The post-merger network capacity is given by:

$$C^{post} = T_K \times (S_V + S_S) \times E$$

where T_K represents the total set of sites that the Videotron retains and the V subscript denotes Videotron.

76. The ratio of the post- to pre-transaction capacity provides a measure of the incremental capacity that the transaction creates. This incremental capacity arises from two sources. First, to the extent that Videotron would not immediately deploy its spectrum, but-for the transaction, the incremental capacity arises from the use of spectrum that would otherwise be idle. Second, because of the multiplicative nature of the formula, incremental capacity arises from the deployment of Videotron's spectrum on Shaw's larger tower network.[62]

77. To calculate the "equivalent spectrum," I calculate the capacity on a band-by-band basis for each network and sum across bands to get a measure of total capacity. I then compute this capacity ratio for the post-transaction network relative to the stand-alone network. The resulting metric provides a measure of the magnitude by which the standalone network would need to

62 As a result of this second mechanism, the transaction would generate incremental capacity even relative to the sum of the Shaw and Videotron stand-alone networks in the event that Videotron were to deploy a standalone network.

increase its spectrum holdings, holding its site footprint fixed, to generate the same incremental capacity as the transaction.

B. Quantifying Merger-Specific Increases in Network Capacity

78. To quantify the merger-specific increases in network capacity, I use data on sites, sectors, spectrum, and spectral efficiency for each network.[63] I base the standalone Shaw network on its current deployment. I assume that the post-transaction network will consist of all of Freedom's sites with no new builds or upgrades, except that the 3.5 GHz spectrum is deployed on Freedom's sites according to Videotron's current post-transaction plans.[64] For each network, on a band-by-band basis, I compute the effective capacity for each network according to the equation above.

79. Table 6 summarizes these calculations, expressing capacity in terms of download Mbps. In total, the post-transaction network has capacity that is [redacted] percent higher than the standalone Freedom network.

Table 6: Quebecor and Freedom Access Network Capacity (in Download Mbps)

	Network	Alberta	British Columbia	Southern Ontario	Total
[1]	Stand-Alone Freedom	[redacted]	[redacted]	[redacted]	[redacted]
[2]	Freedom + Quebecor				
[3]	[2] - [1]				

Sources: VID00077879_EN.pdf, Spectrum Holdings_Upload_2021-7-29 - 20210924.xlsx, Shaw Specification 28, Response_1_2_6.xlsx, Government of Canada.

Notes: [1] Capacity is calculated as [Number of cell towers] x [Effective deployed downlink spectrum] x [Spectrum spectral efficiency]. [2] Stand-Alone Freedom only includes their tower count as of May 2022 and does not include

63 See my backup materials for details.

64 See VID00077879_EN. I use the sum total across all years of Videotron's expected 3.5 GHz deployment on Freedom's sites.

any potential new sites. [3] Freedom + Quebecor is assumed to only utilize Freedom's existing network with no new builds. 3.5 GHz is deployed on the towers according to Videotron's post-merger plans. [4] Spectral efficiency figures are as-of 2026 and use an assumed 4x4 MIMO deployment for all bands except for 3.5 GHz, which uses 32x32 MIMO. [5] All spectrum is assumed to have 50% used for downlink, except for 2.5 TDD and 3.5 GHz, which have 75% used for downlink.

C. Quantifying the Value of Transaction-Specific Improvements in Network Capacity

80. To convert the metrics calculated in the prior section into monetary equivalents, I apply observed auction prices (on a band-by-band basis), which provide a measure of the value of spectrum to industry participants. These spectrum prices likely provide a lower bound on the true value of the spectrum because spectrum buyers are unlikely to internalize all of the value they create (absent the ability to perfectly price discriminate, network operators will not capture customers' full willingness-to-pay for the services created using the spectrum).

81. Table 7 below summarizes the spectrum auction prices that I use. I limit my analysis to prices paid by Rogers, Bell, or Telus in auctions not subject to set-aside restrictions.[65] Although the value of spectrum has generally increased over time as the value of the complementary ecosystem (*e.g.*, apps) has increased, I do not attempt to model this increase in value. Instead, the only adjustment I make is to express all prices in terms of August 2022 nominal prices.[66]

[65] Such restrictions have the potential to distort the auction prices. Because not all bidders are eligible to bid on set-aside spectrum, the resulting prices do not reflect the full market value of the spectrum.

For example, the average price for set-aside 3500 MHz spectrum was $0.918/MHz-pop compared to $3.188/MHz-pop for non-set-aside 3500 MHz spectrum. (Quebecor, "3500 MHz Auction: Another Step Towards Expansion Outside Quebec," July 30, 2021, *available at* https://www.quebecor.com/documents/20143/49387/2021-07-30+-+Another+Step+Towards+Expansion+Outside+Qu%C3%A9bec_EN.pdf/d5811dc1-fb9e-72c0-8d9e-8064c61fd395?t=1627598966657, pp. 3).

[66] I make this adjustment using the consumer price index.

From this perspective, my analysis is conservative (*i.e.*, it understates the value of the incremental capacity that the merger would create).

Table 7: Auction Prices, by Band

	Spectrum Band	600	700	AWS-1	AWS-3	2500	3500
	Auction Completion Date	4/4/2019	2/13/2014	5/27/2008	3/3/2015	5/5/2015	7/23/2021
Bell	Population-MHz	N/A	536 5	395 6	168 9	243 1	684 0
	Price Paid (Nominal)	N/A	565 7	740 1	499 9	29 0	2,074 1
	Price Paid (Inflation Adjusted)	N/A	695 6	985 5	604 0	34 9	2,224 2
	Price per Population-MHz	N/A	1 3	2 5	3 6	0 1	3 3
Telus	Population-MHz	396 9	641 6	483 5	500 6	1,339 0	580 9
	Price Paid (Nominal)	931 2	1,143 0	879 9	1,511 1	478 8	1,947 5
	Price Paid (Inflation Adjusted)	1,044 9	1,405 4	1,171 6	1,825 8	575 8	2,088 5
	Price per Population-MHz	2 6	2 2	2 4	3 6	0 4	3 6
Rogers	Population-MHz	1,009 1	762 4	602 0	N/A	232 8	1,009 9
	Price Paid (Nominal)	1,725 0	3,291 7	1,000 2	N/A	24 1	3,325 6
	Price Paid (Inflation Adjusted)	1,935 6	4,047 7	1,331 9	N/A	29 0	3,566 3
	Price per Population-MHz	1 9	5 3	2 2	N/A	0 1	3 5

Sources: Government of Canada.

Notes: [1] Auction prices are inflation adjusted to August of 2022, and only include prices paid by Rogers, Bell, or Telus in the open portion of the auction. Population and MHz listed also are only for the open portion of the auction. [2] N/A indicates that the company did not compete in that auction. [3] Population-MHz and Price Paid are in millions.

82. Table 8 applies these spectrum values to the incremental capacity estimates in Table 6.[67] Relative to standalone Freedom, the post-transaction network creates [redacted] worth of "effective" spectrum.

[67] As one benchmark for these numbers, in 2021, Quebecor paid approximately $830 million to acquire its 3.5 GHz spectrum licenses. Due to its eligibility for set-aside spectrum, Quebecor obtained the licenses at a substantial discount (Quebecor paid an average of $0.858/MHz-pop relative to $3.188/MHz-pop for non-set-aside spectrum). (Quebecor Press Release, "Conclusion of 3500 MHz Spectrum Auction - Quebecor and Videotron Take Another Step Towards Expansion Outside Quebec," July 29, 2021, *available at* https://www.newswire.ca/news-releases/conclusion-of-3500-mhz-spectrum-auction-quebecor-and-videotron-take-another-step-towards-expansion-outside-quebec-812427486.html; Quebecor, "3500 MHz Auction: Another Step Towards Expansion Outside Quebec," July 30, 2021, *available at* https://www.quebecor.com/documents/20143/49387/2021-07-30+-+Another+Step+Towards+Expansion+Outside+Qu%C3%A9bec_EN.pdf/d5811dc1-fb9e-72c0-8d9e-8064c61fd395?t=1627598966657, pp. 4-5).

Table 8: Net Present Value of Incremental Capacity Created by the Merger (in Millions CAD)

	Network	Alberta	British Columbia	Southern Ontario	Total
[1]	Stand-Alone Freedom	[redacted]	[redacted]	[redacted]	[redacted]
[2]	Freedom + Quebecor	[redacted]	[redacted]	[redacted]	[redacted]
[3]	[2] - [1]	[redacted]	[redacted]	[redacted]	[redacted]

Sources: VID00077879_EN.pdf, Spectrum Holdings_Upload_2021-7-29 - 20210924.xlsx, Shaw Specification 28, Response_1_2_6.xlsx, Government of Canada.

Notes: [1] Stand-Alone Freedom only includes their tower count as of May 2022 and does not include any potential new sites. [2] Freedom + Quebecor is assumed to only utilize Freedom's existing network with no new builds. 3.5 GHz is deployed on the towers according to Videotron's post-merger plans. [3] Spectrum valuations use the average spectrum prices paid by Rogers, Bell, and Telus in the open portion of the most recent auction for each band, inflation adjusted to August 2022.

83. The values in Table 8 above reflect the net present value of the spectrum efficiencies. In Table 9 below, I convert the net present value to an annual value assuming that the spectrum licenses last 20 years and a discount rate of [redacted] percent.[68] The post-transaction combination creates [redacted] *per year* worth of "effective" spectrum compared to Freedom's standalone network.

84. *Thus, for each year by which the transaction accelerates the deployment of Videotron's spectrum assets, the transaction creates* [redacted] *worth of value.*

[68] For example, the recently auctioned 3500 MHz spectrum licenses had a 20-year term. Prof. Miller assumes a seven-percent discount rate for Shaw. (Innovation, Science and Economic Development Canada, "3500 MHz band spectrum auction," *available at* https://www.canada.ca/en/innovation-science-economic-development/news/2020/03/3500-mhz-band-spectrum-auction.html; Miller Initial Report, n. 383.)

Table 9: Annualized Value of Incremental Capacity Created by the Merger (in Millions CAD)

	Network	Alberta	British Columbia	Southern Ontario	Total
[1]	Stand-Alone Freedom	[redacted]	[redacted]	[redacted]	[redacted]
[2]	Freedom + Quebecor				
[3]	[2] - [1]				

Sources: VID00077879_EN.pdf, Spectrum Holdings_Upload_2021-7-29 - 20210924.xlsx, Shaw Specification 28, Response_1_2_6.xlsx, Government of Canada.

Notes: [1] Stand-Alone Freedom only includes their tower count as of May 2022 and does not include any potential new sites. [2] Freedom + Quebecor is assumed to only utilize Freedom's existing network with no new builds. 3.5 GHz is deployed on the towers according to Videotron's post-merger plans. [4] Spectrum valuations use the average spectrum prices paid by Rogers, Bell, and Telus in the open portion of the most recent auction for each band, inflation adjusted to August 2022. [5] Spectrum valuations are annualized assuming a 7% discount rate and a 20-year term.

IV. RESPONSE TO ADDITIONAL CLAIMS MADE BY THE BUREAU AND BY PROF. MILLER

85. I have also been asked to summarize my responses (the substance of which is largely contained elsewhere in my two report) to the [redacted]. My overarching conclusion is that the document fails to account properly for the basic nature of this transaction. On the one hand, there is high certainty for very substantial benefits that far outweigh any plausible competitive harm: The transaction leaves Freedom as an independent provider with more capacity, better cost terms on roaming and backhaul, and more spectrum. Freedom and Quebecor will also very likely add [redacted] to the marketplace. On top of this, very large productive efficiencies will be realized. On the other hand, there are nothing more than speculative and unspecific concerns of harm.

86. Below I summarize the main claims made by the Bureau (grouped by topic) and I then provide my short responses to these claims (as I have already expanded on most of these issues

elsewhere in this and in my Israel Initial Report). I also provide my response to additional claims made by Prof. Miller that I have not dealt with elsewhere.

87. According to the **Bureau** and to **Prof. Miller**,[69] the commitments made by Rogers to Quebecor to facilitate its ability to compete ([redacted]) are behavioral or quasi-structural remedies which require monitoring by the Bureau. The Bureau also raised concerns that these commitment would create dependency of Quebecor on Rogers, which would make Quebecor less aggressive.

- ***Response***: The Bureau seems to dismiss the importance of the contracts signed between Rogers and Quebecor, in which Rogers would provide these services that would improve Freedom's competitive position. The concerns that these contracts would not be fulfilled ignore the fact that Quebecor is provided enforceable contractual guarantees, which are more akin to structural than to behavioral remedies, since they enable Quebecor to enforce them in Court, if necessary, rather than relying on ongoing Bureau oversight.

- As the Bureau acknowledges, Rogers and Videotron have successfully engaged in a variety of agreements since Videotron introduced its MVNO product in 2006. These include [redacted] Throughout the period of these agreements, Videotron has developed as a successful competitor for wireless customers in Quebec. For example, its share of Quebec wireless subscribers increased from [redacted] percent in

[69] Miller Initial Report, ¶ 235.

2010 to [redacted] percent in 2020.[70] This does not support the Bureau's thesis that Videotron would refrain from competing against Rogers in AB, BC and ON because of fear of retaliation through not honoring the signed contracts.

88. The **Bureau** raised a concern that following the transaction, Freedom would not have the ability and incentive to compete, also because of the separation of Freedom from Shaw's wireline assets.

- ***Response***: These assertions ignore the fact that Freedom will have a very strong incentive to compete after the transaction because of its large network relative to its subscribers—that is, its substantial excess capacity. This is consistent with the Bureau's own logic on why Freedom has previously been an aggressive competitor.
- The Bureau ignores Quebecor's experience in running wireless businesses and the fact that it will receive all the assets needed to run Freedom as a wireless business (network, spectrum, employees, and distribution networks).
- The Bureau ignores the fact that the flip side of separating between Freedom's wireline and wireless assets in AB and BC is that Rogers will gain from the exact same integration that Shaw loses, and in a wider area: in all of western Canada. It is inconsistent to account only for Freedom's "vertical separation" and not for Rogers' "vertical integration." I described in my Israel Initial Report why backhaul considerations

70 ROG00307749, p. 4.

(including the contract signed and Rogers' vertical integration), on net, are highly likely to benefit competition.

- Also, the fact that Freedom has almost double the market share in ON than in AB and BC is a strong indication that wireless carriers (and Freedom in particular) can succeed without wireless-wireline integration. The Bureau is claiming that Freedom's market share in ON is higher due to historical reasons related to Wind Mobile's (Freedom's predecessor) original strength in ON. However, Figure 2 below shows no material difference in the growth over time of Freedom's subscribers in these three provinces. This does not support the Bureau's thesis that competition conditions are fundamentally different for a wireless carrier without integration with broadband.

Figure 2: Freedom's Monthly Subscriber Growth Rate in AB, BC, and ON

[redacted]

Sources:

Notes: Includes wireless phone subscribers only, calculated using Dr. Miller's methodology.

- Similarly, in other countries, wireless carriers have succeeded without offering wireline services. For example, in the United States, T-Mobile has developed into one of the largest wireless providers despite having no meaningful wireline offering.

89. The **Bureau** is concerned that post merger, Quebecor will compete against two incumbents (Telus and Rogers) which would make it harder for them to compete.

- ***Response***: This concern is inconsistent with the standard view that, all else equal, more competitors is better for competition.

90. On the one hand, the **Bureau** is concerned that "Rogers' post-transaction plans show that it intends to leverage bundles to "insulate" its base." On the other hand, it claims that "the Big 3 do not compete as aggressively as Shaw and do not have the same incentive to offer aggressive wireless bundle discounts."

- ***Response***: The Bureau describes a strategy by which Rogers will offer attractive bundles in order to increase its wireline subscribership. This aggressiveness is the exact benefit of current Shaw Mobile that the Bureau is concerned would be lost following the transaction, so Rogers' statement only confirms that the Bureau's concern is unfounded. This statement is also consistent with evidence that Shaw Mobile [redacted] and with my conclusion that these incentives will transfer to Rogers following the transaction.

91. According to **Prof. Miller**, on the one hand, "…the threat of retaliation through 'repricing the base' may be less costly for Shaw as a result of its smaller subscriber base, than to the combined entity which incorporates Rogers' large installed base."[71] On the other hand, "New Freedom will also have less incentive to maintain and grow the Freedom brand to the same extent as Shaw did because the return on that investment will be lower. Without the potential to serve Shaw Mobile customers and to sell Shaw Internet services, any potential gains from improvements in Freedom Mobile's infrastructure will be solely realized among Freedom customers."[72]

[71] Miller Initial Report, ¶ 210.

[72] Miller Initial Report, ¶ 236.

- ***Response:*** When analyzing the "full merger" (without the divestiture) that would have eliminated Freedom as an independent competitor, Prof. Miller raises the concern that small competitors are important to competition because they have less concerns of "repricing the base" and therefore have an incentive to be more aggressive. However, when Prof. Miller analyzes the transaction with a divestiture that would leave Freedom as a smaller competitor, Prof. Miller seems to reverse his views on smaller competitors, arguing that smaller competitors have less reason to invest which would make them weaker competitors. Prof. Miller fails to acknowledge that the negative effect he sees in losing a smaller competitor in the "full merger" case is a positive effect in the merger with the divestiture, when Freedom becomes smaller.

V. COMMENTS ON THE PROPER APPROACH FOR ACCOUNTING FOR WELFARE EFFECTS

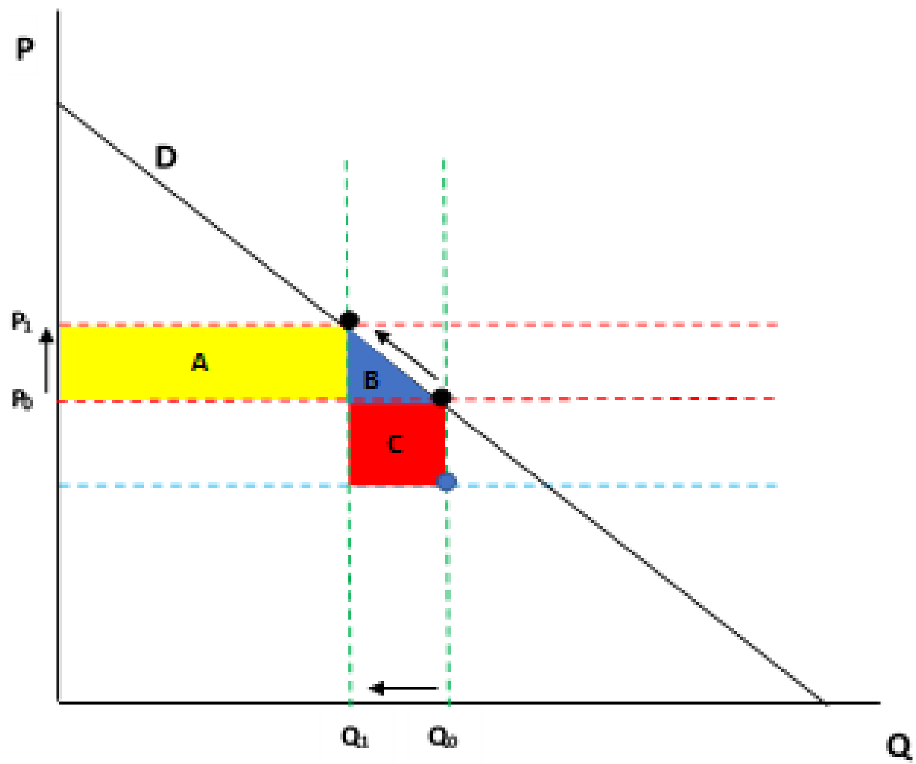
92. Although I have not been asked by counsel to Rogers to opine on the relative weight that should be assigned to the effects of the transaction on consumers and producers (the so-called "distributive" effects of the transaction), I do have an opinion, as an economist, on what would (and would not) constitute an *economically coherent* approach to account for the welfare effects from the transaction.[73]

[73] In the discussion in this section, I use both the term "surplus" (*e.g.*, consumer surplus) and the term "welfare" (*e.g.*, consumer welfare). The two concepts are strongly related. "Surplus" is usually a narrower term applying to welfare in a specific market as measured by the demand and supply curves. "Welfare" is a more general concept: it is sometimes used interchangeably with surplus, and sometimes also accounts for additional effects that are not accounted for by the demand and supply curves.

93. I start by outlining the Bureau's approach for accounting for the welfare effects of the transaction (before productive efficiencies),[74] and I explain why it is incorrect as a matter of economics. I demonstrate this with

Figure 3 below, which shows a demand curve and a hypothetical price increase from P_0 to P_1, associated with a reduction in quantity from Q_0 to Q_1.[75] The dashed blue line represents the marginal costs of production.

Figure 3: Demonstration of the Welfare Effects of an Increase in Price



74 Based on the [redacted]

75 This chart does not account for marginal costs savings and productive efficiencies. The exact shape of the demand does not matter for this discussion.

94. Based on [redacted] and the numbers in Exhibit 23 of the Initial Miller Report, across the three provinces, these are the welfare effects of the transaction assumed by the Bureau for the 8-product divestiture model (in annual $M):

- A+B: Consumer surplus (CS) loss is [redacted],[76] of which:
    - A: The "transfer" from consumers to producers is [redacted] and
    - B: The consumer portion of deadweight loss is [redacted];
- B+C: Deadweight loss (DWL) (or total surplus (TS) loss) is [redacted]; of which
    - B: The consumer portion of DWL is [redacted] and
    - C: The producer portion of DWL is [redacted];
- A-C: Producer surplus (PS), or profits,[77] is [redacted].

95. The Bureau's approach to measuring the welfare impact of the transaction is to add B, C, and a large portion of A, approximately 75 percent (I will refer to this percentage as the "discount factor"), resulting in a total harm estimate of [redacted].[78] This approach leads the Bureau to conclude that the welfare losses *exceed* CS loss.

[76] Consumer surplus is equal to the aggregate difference, across all unites purchased, between willingness to pay and the actual price paid.

[77] Before accounting for productive efficiencies. Producers surplus is equal to the difference between the actual price earned and the cost of the product, multiplied by the number of units sold.

[78] According to the Bureau Summary of Facts: "If, for example, the Tribunal considers two-thirds to three-quarters of the transfer to be socially adverse, the combined anticompetitive effects are [redacted] per year excluding the prepaid brands or [redacted] including them."

- [redacted]

96. The Bureau's calculation cannot be correct regardless of the Bureau's views on distributive matters. The mistake stems from the inconsistent treatment of firm profits: If the Bureau believes that firm profits should be discounted, it should apply the discount factor to the entire firm profits (A minus C, in this case [redacted]) and not solely to the transfer (A, in this case [redacted], which is much higher than firm profits. It is inconsistent to count 100 percent of firm profits when they are lost but a substantially smaller percentage of firm profits when they are gained.

97. The source of the mistake seems to be a confusion between the concept of surplus and the concept of efficiency in resource use. To understand this confusion, it is necessary to go back to basic principles. A policymaker is ultimately concerned about the welfare of the individuals within the economy. Welfare can sometimes be measured directly (*e.g.,* CS – welfare of consumers, and PS – profits of the firms that represent welfare to their owners). When welfare cannot be measured directly, efficiency in use of resources could be considered as an indirect proxy for welfare, since savings in resources would typically allow redeploying the freed-up resources to the benefit of the economy. But efficient use of resources only matters inasmuch as it allows for increasing individuals' welfare. Importantly, any welfare calculation that double-counts surplus and efficient use of resources is necessarily incorrect: This is the mistake the Bureau is making, as I explain below.

- [redacted]

According to [redacted] the Bureau is now using a number close to [redacted]

98. The effects of a transaction could be analyzed in two steps:

- **Step 1:** Accounting for the surplus effects of the consumers and producers involved in the market at issue. The supply and demand curves of the market allow calculating how CS, PS and total surplus (the sum of the two) are affected by the change, as the diagram above shows. For this step:
  - If the policymaker cares equally about consumer and producer welfare, the welfare effect is CS + PS = TS, *i.e.*, A+B – (A -C) = B +C = [redacted] (also equal to DWL).
  - If the policymaker cares only about consumer welfare, welfare loss is CS: A+B = [redacted]
  - If the policymaker gives higher weight to consumer surplus than to producer surplus, the welfare effect will be a weighted average of these two end cases, with the weights determined by the relative strength of the policymaker's preference for consumers versus producers. But the welfare loss cannot be greater than the total loss in consumer surplus.
- **Step 2:** Accounting for the *incremental* effects of the merger on the resources available to the economy that were not already accounted for in Step 1. This includes accounting for productive efficiencies.

99. The first thing to notice is that in Step 1, the welfare effects are between CS and DWL, regardless of the weight given to distributional matters. Also, what is absent from the calculation is the value of A, the transfer. This is not surprising. The transfer is not something that either

consumers or producers care about; they only care about their surplus, regardless of its breakdown into components.

100. Presumably, by applying the discount factor to the transfer, the Bureau had the following (incorrect) logic in mind: Of the firm's profits, the transfer A (a gain to the firm) is the part that stems from an "anti-competitive" effect, and therefore this "gain" should be discounted. On the other hand, the logic apparently goes, C (a loss to the firm) is a "real" inefficiency in resource use, so should be fully accounted for as a loss.

101. However, this logic is incorrect and entails double-counting. Once CS and PS are accounted for (with whatever weights are given to each), any inefficiencies in resource use within this market are already accounted for: there are no welfare losses from "loss of resources" *on top* of CS and PS. If anything, the lower production level Q_1 (compared to Q0) implies that resources are *released* from the market and made available for other productive uses.

102. It makes no sense to count as a loss the inefficient use of resources and **also** to count as an additional loss the surplus losses resulting from the same inefficiencies. Or said differently, CS and PS fully account for everything that matters within Step 1.

103. Next, in Step 2, one should ask if there are any additional income effects from the transaction that were not already accounted for in Step 1. Or alternatively, were there any additional resources released (or consumed) by the transaction that were not accounted for in Step 1? Productive efficiencies fall into this group. They represent a saving in resources—as fewer resources are used to produce the same amount of output—and also an increase in the profits to the producers from not having to pay for these additional resources.

104. Productive efficiencies should be accounted for even if firm profits are discounted, because the freed-up resources from the increase in efficiency would allow an increase in production that would benefit the entire economy, including consumers (though determining the exact benefit to each group of individuals is a complicated exercise).[79]

105. The discussion above leads me to the following conclusions. An analysis of the welfare effects of the economy should proceed in two steps:

- In the first step, CS and PS should be measured within the confines of the relevant supply and demand model (after accounting for marginal costs savings), with the total welfare effect being between CS and TS, depending on the relative weights assigned to producer and consumer surplus, if any.
- In the second step, productive efficiencies should be accounted for, either as measured by firm profits, or by accounting for the welfare generated to individuals in the economy from the additional production that the freed-up resources allow.
- The total effect of the transaction is the sum of these two steps.

VI. THE COMMITMENTS MADE BY ROGERS WILL SUBSTANTIALLY BENEFIT CONSUMERS AND SOCIAL WELFARE

106. It is my understanding that Rogers has made several commitments regarding projects it will undertake if the transaction is approved. These projects would disproportionally benefit

[79] The report filed by Andy C. Harington in this proceeding identifies several categories of resource savings, such as labor savings, real estate, and retail facility closures, where it is clear how the savings could be put into productive use in the wireless, wireline, or in other sectors of the Canadian economy. See Andrew C. Harington, "Report Assessing Productive Efficiencies Arising from the Proposed Transactions," filed September 23, 2022.

consumers at low socio-economic levels, and therefore should mitigate concerns that might exist regarding the adverse effects of the transaction on income distribution.[80]

107. I have been asked by Rogers' counsel to provide an economic assessment of the value of these projects. Below I provide such an assessment of three projects.

A. [redacted]

[redacted]

[redacted]

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80 In other words, it means that the measure of the competitive effects of the transaction should be closer to total surplus than to consumer surplus compared to what was otherwise considered.

81 [redacted] Witness Statement of Dean Prevost, October 20, 2022, ¶ 64.

[redacted]

[redacted]

- [redacted]

- [redacted]

[redacted]

[redacted]

111. The resulting value, calculated over ten years and discounted at an [redacted] percent rate, is $[redacted] (equivalent to $[redacted] per year). These benefits will accrue almost entirely to low-income Canadian households.

B. [redacted]

[redacted]

[82] Witness Statement of Dean Prevost, October 20, 2022, ¶ 65 and Exhibit 50.

[83] Witness Statement of Dean Prevost, October 20, 2022, Exhibit 48.

[redacted]

[redacted] [redacted]

[redacted] [redacted]

- [redacted]

- [redacted]

[redacted]

[redacted] [redacted][redacted]

[redacted] [redacted]

115. The resulting value of [redacted], calculated over ten years and discounted at an [redacted]-percent rate, is $[redacted] (equivalent to $[redacted] per year). These benefits will also accrue almost entirely to low-income Canadian households.

C. [redacted]

116. [redacted]

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84 Witness Statement of Dean Prevost, October 20, 2022, ¶ 72.

[redacted]

[redacted] [redacted]

- [redacted]
- [redacted]

[redacted] [redacted]

[redacted] [redacted]

- [redacted]
- [redacted]

Figure 4: Demonstration of the Welfare Benefits from the [redacted]

[redacted]

[redacted]

[redacted] These [redacted] projects will generate a net present value of $[redacted] (equivalent to $[redacted] per year, discounted over ten years) in benefits for underserved [redacted] Canadian households. This could be considered a transfer from Rogers to the mostly lower social-economic populations.

87 Using the average subsidy across projects is conservative because the subsidy (S) represents a lower bound on the Social Externalities (SE). In other words, the government is usually paying in the auction less than the maximum it is willing to pay. Projects with higher subsidies likely have a lower gap between (S) and (SE), and therefore these projects better represent the value that the government assigns to providing broadband to a household. The simple average that I use does not assign higher weights to projects with higher subsidies, and therefore my measure is conservative.

VII. APPENDIX A: ROBUSTNESS TEST FOR TABLE 1

Table 10: Merger Simulation Results Assuming a Full Merger with No Divestiture; Using Prof. Miller's Margins

Province	Welfare Changes ($Million/Year)	
	Change in Consumer Surplus	Change in Total Surplus
Alberta	[redacted]	[redacted]
British Columbia	[redacted]	[redacted]
Ontario	[redacted]	[redacted]
Total	[redacted]	[redacted]

Sources: Prof. Miller's backup materials; CL Efficiencies Report; CL Supplemental Efficiencies Report.

Notes: Results include roaming marginal costs saving, network marginal costs savings, and network quality improvements. Network marginal cost savings assume that Rogers would retain Shaw's 600 MHz spectrum post-merger and Shaw would acquire 3500 MHz spectrum but-for the merger.

VIII. APPENDIX B: ADDITIONAL SCENARIOS FOR TABLE 2, TABLE 4, AND TABLE 5

Table 11: Merger Simulation Results from Israel Initial Report; with Additional Scenarios

MC Savings Scenarios	SM Assets Transferred	Alberta Consumer Surplus	Alberta Total Surplus	British Columbia Consumer Surplus	British Columbia Total Surplus	Ontario Consumer Surplus	Ontario Total Surplus	Total Consumer Surplus	Total Total Surplus
Using SoS		[redacted]							
No savings	None								
	All								
Low end	None								
	All								
High end	None								
	All								
Using SoGA									
No savings	None								
	All								
Low end	None								
	All								
High end	None								
	All								
Total productive efficiencies									[redacted]

Sources: Prof. Miller's backup materials; Israel Initial Report and backup materials; Harington Report.

Notes: "None" assumes none of the assets associated with providing Shaw Mobile services are transferred from Shaw to Rogers while "All" assumes all of the assets associated with providing Shaw Mobile services are transferred from Shaw to Rogers. The results are based on share of subscribers, and the inputs are updated to incorporate the changes in Prof. Miller's report.

Table 12: Merger Simulation Results Assuming a Bundle Nest; with Additional Scenarios

MC Savings Scenarios	Alberta		British Columbia		Ontario		Total	
	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus
Using SoS								
Nest Parameter 0.25	[redacted]							
No savings								
Low end								
High end								
Nest Parameter 0.5								
No savings								
Low end								
High end								
Using SoGA								
Nest Parameter 0.25								
No savings								
Low end								
High end								
Nest Parameter 0.5								
No savings								
Low end								
High end								
Total productive efficiencies								[redacted]

Sources: Prof. Miller's backup materials; Israel Initial Report backup materials; TELUS00065079; TELUS00260183; S24_File10_Regional_2018_2021.xlsx, 1_RCI_Results_Jul2021_to_Apr2022_nolink.xlsb, app_wls_sub_activity_wls_sub_activity_fact, ods_v21_address_data, ods_v21_address_name_link, ods_v21_billing_account; Postpaid Bell Mobility ON bundle service detail 2021.csv, Postpaid Virgin Mobile bundle service detail 2021.csv, Q16a_EOP_20170101_20210701_NAT_EXCL_MB.txt.

Notes: All products are in the standalone nest, except for Shaw Mobile and [redacted] of Telus (in AB and BC) or [redacted] for Rogers and [redacted] for Bell (in ON). Telus and Bell have the same price for the bundled and unbundled products.

Table 13: Merger Simulation Results Assuming a Bundle Nest and that Quebecor Introduces a New Bundle Post-Merger

MC Savings Scenarios	Alberta		British Columbia		Ontario		Total	
	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus
Using SoS								
Nest Parameter 0.25								
No savings	[redacted]							
Low end								
High end								
Nest Parameter 0.5								
No savings								
Low end								
High end								
Using SoGA								
Nest Parameter 0.25								
No savings								
Low end								
High end								
Nest Parameter 0.5								
No savings								
Low end								
High end								
Total productive efficiencies								[redacted]

Sources: Prof. Miller's backup materials; Israel Initial Report backup materials; TELUS00065079; TELUS00260183; S24_File10_Regional_2018_2021.xlsx, 1_RCI_Results_Jul2021_to_Apr2022_nolink.xlsb, app_wls_sub_activity_wls_sub_activity_fact, ods_v21_address_data, ods_v21_address_name_link, ods_v21_billing_account; Postpaid Bell Mobility ON bundle service detail 2021.csv, Postpaid Virgin Mobile bundle service detail 2021.csv, Q16a_EOP_20170101_20210701_NAT_EXCL_MB.txt.

Notes: All products are in the standalone nest, except for Shaw Mobile and [redacted] of Telus (in AB and BC) or [redacted] for Rogers and [redacted] for Bell (in ON). Telus and Bell have the same price for the bundled and unbundled products. The [redacted] is assumed to achieve a market share equivalent to [redacted] of Freedom's pre-merger subscribers and it has the same pre-merger price and marginal costs as Freedom.

IX. APPENDIX C: ROBUSTNESS TEST FOR TABLE 5

Table 14: Merger Simulation Results Assuming a Bundle Nest and that Quebecor Introduces a New Bundle Post-Merger; Using a Lower Freedom Bundle Penetration

MC Savings Scenarios	Alberta		British Columbia		Ontario		Total	
	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus	Consumer Surplus	Total Surplus
Using SoS								
Nest Parameter 0.25	[redacted]							
No savings								
Low end								
High end								
Nest Parameter 0.5								
No savings								
Low end								
High end								
Using SoGA								
Nest Parameter 0.25								
No savings								
Low end								
High end								
Nest Parameter 0.5								
No savings								
Low end								
High end								
Total productive efficiencies								[redacted]

Sources: Prof. Miller's backup materials; Israel Initial Report backup materials; TELUS00065079; TELUS00260183; S24_File10_Regional_2018_2021.xlsx, 1_RCI_Results_Jul2021_to_Apr2022_nolink.xlsb, app_wls_sub_activity_wls_sub_activity_fact, ods_v21_address_data, ods_v21_address_name_link, ods_v21_billing_account; Postpaid Bell Mobility ON bundle service detail 2021.csv, Postpaid Virgin Mobile bundle service detail 2021.csv, Q16a_EOP_20170101_20210701_NAT_EXCL_MB.txt.

Notes: All products are in the standalone nest, except for Shaw Mobile and [redacted] of Telus (in AB and BC) or [redacted] for Rogers and [redacted] for Bell (in ON). Telus and Bell have the same price for the bundled and unbundled products. The [redacted] is assumed to achieve a market share equivalent to [redacted] lower than in *Table 5*, of Freedom's pre-merger subscribers and it has the same pre-merger price and marginal costs as Freedom.

This is Exhibit "B" referred to in the Affidavit of Mark Israel
sworn by Mark Israel, of the County of Montgomery, in the State
of Maryland, in the United States of America, before me by
videoconference on October 20, 2022 in accordance with
O. Reg. 431/20, Administering Oath or Declaration Remotely.

Commissioner for Taking Affidavits (or as may be)

MATTHEW R. LAW

PUBLIC

Exhibit B

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 EXPERT WITNESS

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

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.

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.

October 20, 2022

Mark A. Israel
Compass Lexecon
555 12th Street NW, Suite 501
Washington, DC 20004 USA
misrael@compasslexecon.com

This is Exhibit "C" referred to in the Affidavit of Mark Israel sworn by Mark Israel, of the County of Montgomery, in the State of Maryland, in the United States of America, before me by videoconference on October 20, 2022 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.

Commissioner for Taking Affidavits (or as may be)

MATTHEW R. LAW

Mark A. Israel **October 2022**
Senior Managing Director, Compass Lexecon

555 12th Street NW, Suite 501
Washington, DC 20004
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PROFESSIONAL EXPERIENCE HIGHLIGHTS

- Served as an expert for the Federal Government and private parties in cases involving: fixed and mobile telecommunications, cable television, broadband internet service, airlines, social media, other high technology industries, food distribution, coal and other energy markets, railroads, shipping, health insurance, financial markets, credit cards, retail, and many others.
- Testified in Federal Court, in multiple state courts, in front of the United States Copyright Royalty Judges, in front of international competition authorities, and in arbitration proceedings. Appeared in front of government agencies including DOJ, FTC, and FCC, and state agencies on behalf of numerous clients.
- Submitted expert reports in Federal Court, and affidavits, declarations, and papers to U.S. competition agencies, FCC, DOT, international competition authorities, and state regulators.
- Written numerous academic articles on topics including competition economics, merger policy, telecommunications, airlines, insurance markets, and labor markets. Research published in leading scholarly and applied journals including *The American Economic Review*, *The Rand Journal of Economics*, *International Journal of Industrial Organization*, *The Journal of Competition Law and Economics,* and many others, and presented to business, government, and academic audiences worldwide.
- Co-author of the chapter on Econometrics and Regression Analysis in the ABA Treatise, *Proving Economic Damages: Legal and Economic Issues,* 2017.

AREAS OF EXPERTISE

- Antitrust and competition economics; industrial organization economics
- Applied econometrics
- Economic and econometric analysis of horizontal and vertical mergers
- Economic and econometric analysis of antitrust litigation topics, including: Class certification, damages, and liability issues in cases involving price fixing, exclusive dealing, monopolization, bundling, price discrimination, and exclusionary practices

EDUCATION

- Ph.D., Economics, STANFORD UNIVERSITY, June 2001.
- M.S., Economics, UNIVERSITY OF WISCONSIN-MADISON, August 1992.
- B.A., Economics, ILLINOIS WESLEYAN UNIVERSITY, Summa Cum Laude, May 1991.

EMPLOYMENT HISTORY

Compass Lexecon: *Senior Managing Director*, Head of Compass Lexecon North American Antitrust Practice, January 2016 – Present.

(Previously: *Executive Vice President*, April 2013 – January 2016; *Senior Vice President*, January 2009 – March 2013; *Vice President*, January 2008 – December 2008; *Economist*, January 2006 – December 2007.)

Kellogg School of Management, Northwestern University: *Assistant Professor of Management and Strategy*, 2000 – 2006; *Associate Professor of Management and Strategy*, 2007 – 2008.

State Farm Insurance: *Research Administrator*, 1992 – 1995.

RECENT PROFESSIONAL RECOGNITIONS

Global Competition Review Who's Who Legal, Thought Leader in Competition: 2019, 2020.

Global Competition Review Who's Who Legal, Global Leader in Competition – Economists 2020; Experts – Economics – Competition Economists 2020; Experts – Financial Advisory and Valuation – Quantum of Damages 2020.

Global Arbitration Review's International Who's Who of Commercial Arbitration, Leading Expert Witness, 2018.

LIVE TESTIMONIAL EXPERIENCE

Testimony as Economic Expert on behalf of American Airlines, Inc., In the Matter of *United States of America, et al. v. American Airlines Group Inc. and JetBlue Airways Corporation*, In the United States District Court for the District of Massachusetts, Civil Action No. 1:21-cv-11558-LTS, Deposition: August 22, 2022; Live Trial Testimony: October 17, 2022.

Testimony as Economic Expert on behalf of KOA Corporation and KOA Speer Electronics, Inc., In the Matter between *Sean Allott and Panasonic Corporation; Panasonic Corporation of North American; Panasonic Canada Inc.; KOA Corporation; KOA Speer Electronics, Inc., et al.,* In the Ontario Superior Court of Justice, Court File No. 1899-2015 CP, Deposition: August 16, 2022.

Testimony as Economic Expert on behalf of Arconic, Inc. et al., In the Matter of *Arconic, Corp., and Howmet Aerospace, Inc. v Novelis, Inc., and Novelis, Corp.,* United States District Court for the Western District of Pennsylvania, Case No. 2:17-cv-014340-JFC, Deposition: April 29, 2022.

Testimony as Economic Expert on behalf of Norfolk Southern Railway Corporation, "Reciprocal Switching," In Front of the Surface Transportation Board, Docket No. EP 711 (Sub-No. 1), Live Testimony: March 16, 2022.

Live testimony in front of arbitration panel in confidential arbitration regarding wholesale roaming rate for wireless telecommunications: December 13-14, 2021.

Testimony as Economic Expert on behalf of Nippon Chemi-Con and United Chemi-Con, *In Re Capacitors Antitrust Litigation,* United States District Court for the Northern District of California Division, No. 3:14-CV-03264, Deposition: March 14, 2020; Live Jury Trial Testimony: December 8, 2021.

Testimony as Economic Expert on behalf of Norfolk Southern Railway Company, *In Re Rail Freight Fuel Surcharge Antitrust Litigation*, In the United States District Court for the District of Columbia, MDL No. 1869, Case No. 07-0489 (PLF/GMH), Deposition: November 18, 2021.

Testimony as Economic Expert on behalf of JPMorgan, Goldman Sachs and Glencore, *In Re Aluminum Warehousing Antitrust Litigation*, MDL 2481, In the United States District Court Southern District of New York, No. 16-CV-5955, Deposition: November 5, 2021.

Testimony as Economic Expert on behalf of Cox Automotive, Inc. et al., In the Matter between *Cox Automotive, Inc., Autotrader.com, Inc., Dealer Dot Com, Inc., Dealertrack, Inc.; Homenet, Inc.; Kelley Blue Book Co., Inc.; Vauto, Inc.; Vinsolutions, Inc.; and Xtime, Inc. vs. The Reynolds and Reynolds Company*, American Arbitration Association, Case No. 01-19-0000-4548, Deposition: October 21, 2021.

Testimony as Economic Expert on behalf of the Joint Defense Group, In the Matter between *Cygnus Electronics Corporation and Sean Allott and Panasonic Corporation et al.*, In the Ontario Superior Court of Justice, Court File No. 3795-14 CP, Deposition: September 29, 2021.

Testimony as Economic Expert on behalf of American Express, In the Matter of *B & R Supermarket, Inc., d/b/a Milam's Market, et al., Individually and on Behalf of All Others Similarly Situated v. Visa, Inc., et al.,* In the United States District Court Eastern District of New York, Case No. 117-cv-02738-MKB-VMS, Deposition: August 6, 2021.

Testimony as Economic Expert on behalf of Bio-Rad Laboratories, Inc., In the Matter of *Bio-Rad Laboratories, Inc. and President and Fellow of Harvard College v. 10X Genomics, Inc., and 10X Genomics, Inc. v. Bio-Rad Labs, Inc. and President and Fellow of Harvard College as Counterclaimants,* In the United States District Court for the District of Massachusetts, Civil Action No. 1:19-cv-12533-wgy, Deposition: June 1, 2021.

Testimony as Economic Expert on behalf of Joint Applicants, In the Matter of *TracFone Wireless, Inc. (U4321C), América Móvil, S.A.B. de C.V. and Verizon Communications, Inc. for Approval of Transfer of Control over TracFone Wireless, Inc.*, Public Utilities Commission of the State of California, Application 20-11-001, Opening Testimony: March 12, 2021; Rebuttal Testimony: April 9, 2021; Live Trial Testimony: May 5, 2021; Supplemental Testimony: May 28, 2021.

Testimony as Economic Expert on behalf of Peabody Energy Corporation and Arch Coal, Inc., In the Matter of *Federal Trade Commission v. Peabody Energy Corporation and Arch Coal, Inc.*, In the United States District Court for the Eastern District of Missouri, Civil Action No. 4-20-cv-000317-SEP, Deposition: June 29, 2020; Live Trial Testimony: July 24, 2020.

Testimony as Economic Expert on behalf of Authenticom, Inc., *In Re Dealer Management Systems Antitrust Litigation*, MDL 2817, United States District Court for the Northern District of Illinois Eastern Division, No. 1:18-CV-864, Deposition: January 16-17, 2020.

Testimony as Economic Expert on behalf of Trinity, In the Matter of *Jackson County, Missouri, Individually and on behalf of a class of others similarly situated, v. Trinity Industries, Inc., and Trinity Highway Products, LLC*, In the Circuit Court of Jackson County, Missouri at Independence, Case No. 1516-CV23684, Stage 1 Testimony: May 24, 2017; Stage 2 Deposition: November 14, 2019.

Testimony as Economic Expert on behalf of Joint Applicants, In the Proposed Merger of T-Mobile US, Inc. and Sprint Communications, Inc., Public Utilities Commission, State of California, San Francisco, California, Docket Nos. A.18-07-011 and A.18-07-012, Direct Rebuttal Testimony: January 29, 2019; Live Testimony: February 7, 2019; Direct Supplemental Testimony: November 7, 2019.

Testimony as Economic Expert on behalf of Turner Network Sales, Inc., In the Matter of *DISH Network L.L.C. v. Turner Network Sales, Inc.*, JAMS Arbitration No. 1100103066, Deposition: August 9, 2019; Live Trial Testimony: August 29, 2019.

Testimony of Economic Expert on behalf of Marriott Vacations Worldwide Corporation, et al., In the Matter of *RCHFU, LLC, et al. v. Marriott Vacations Worldwide Corporation, et al.*, In the United States District Court for the Eastern District of Colorado, Civil Action No. 1:16-cv-01301-PAB-GPG, Deposition: July 12, 2019.

Testimony as Economic Expert on behalf of Oscar Insurance Company of Florida, In the Matter of *Oscar Insurance Company of Florida v. Blue Cross and Blue Shield of Florida, Inc., d/b/a/ Florida Blue; Health Options Inc., d/b/a/ Florida Blue HMO; and Florida Health Care Plan Inc., d/b/a/ Florida Health Care Plans*, In the United States District Court Middle District of Florida Orlando Division, Case No. 6:18-cv-01944, Live Preliminary Injunction Hearing Testimony: January 23, 2019.

Testimony as Economic Expert on behalf of Wilh. Wilhelmsen Holding ASA, In the Matter of the *Federal Trade Commission v. Wilh. Wilhelmsen Holding ASA Wilhelmsen Maritime Services As Resolute Fund II, L.P. Drew Marine Intermediate II B.V. and Drew Marine Group, Inc.*, In the United States District Court for the District of Columbia, No. 1:18-cv-00414-TSC, Deposition: May 24, 2018; Live Trial Testimony: June 12, June 13, 2018.

Testimony as Economic Expert on behalf of Joint Sports Claimants, In the Matter of *Determination of Cable Royalty Funds*, United States Copyright Royalty Judges in the Library of Congress, Docket No. 14-CRB-0010-CD (2010-2013), Live Testimony: March 12, 2018.

Testimony as Economic Expert on behalf of Comcast Corporation, In the Matter of *Viamedia, Inc. v. Comcast Corporation and Comcast Spotlight, LP*, In the United States District Court Northern District of Illinois Eastern Division, Case No. 16-cv-5486, Deposition: January 5, 2018.

Testimony as Economic Expert on behalf of Energy Solutions, Inc., In the Matter of the *United States of America v. Energy Solutions, Inc., Rockwell Holdco, Inc., Andrews County Holdings, Inc., and Waste Control Specialists, LLC*, In the United States District Court for the District of Delaware, Civil Action No. 16-cv-01056-SLR, Deposition: April 17, 2017; Live Trial Testimony: May 2, May 3, 2017.

Testimony as Economic Expert on behalf of Facebook, Inc., In the Matter of *Social Ranger, LLC v. Facebook, Inc.*, In the District Court of Delaware, C.A. No. 14-1525-LPS, Deposition: March 6, 2017.

Testimony as Economic Expert on behalf of Regal Entertainment Group, In the Matter of *iPic – Gold Class Entertainment, LLC et al., v. Regal Entertainment Group, AMC Entertainment Holdings, Inc., et al.*, In the District Court of Harris County, Texas, 234th Judicial District, No. 2015-68745, Deposition: January 12, 2016, February 15, 2017; Live Trial Testimony: January 21, 2016.

Testimony as Economic Expert on behalf of Anthem Inc., In the Matter of the *United States of America et al. v. Anthem Inc. and Cigna Corp.*, In the District Court of the District of Columbia, No. 16-cv-01493 (ABJ), Deposition: November 9, 2016; Phase 1 Live Trial Testimony: December 1, December 2, 2016; Phase 2 Live Trial Testimony: December 22, 2016.

Testimony as Economic Expert on behalf of Defendants, In the Matter of *Darren Ewert v. Nippon Yusen Kabushiki Kaisha et al.*, Supreme Court of British Columbia, No. S-134895, Deposition: September 14, 2016.

Testimony in Commercial Arbitration on Issues Related to Mobile Wireless Competition, New York, NY, April 12, 2016.

Testimony as Economic Expert on behalf of Federal Trade Commission, In the Matter of *Federal Trade Commission et al. v. Sysco Corporation and USF Holding Corp.*, Civil Action No. 15-cv-00256 (APM), Deposition: April 28, 2015; Live Trial Testimony: May 7, May 8, May 14, 2015.

Appearances in Federal Communications Commission, Economists Panels:

- Comcast/Time Warner, January 2015
- AT&T/T-Mobile, July 2011
- Comcast/NBCUniversal, August 2010

Appearance before California Public Utility Commission, Public Hearings on Comcast/Time Warner Merger, Los Angeles, April 2015.

Appearance as Economic Expert in front of Department of Justice, Federal Trade Commission, Federal Communications Commission, and State Regulatory Agencies in many additional transactions, including: Danaher/NetScout, AT&T/Leap Wireless, T-Mobile/MetroPCS, American Airlines/US Airways, SpectrumCo/Cox/Verizon Wireless, oneworld antitrust immunity application, PepsiCo/bottlers, Houghton Mifflin/Harcourt, Chicago Mercantile Exchange/Chicago Board of Trade.

<u>EXPERT REPORTS, AFFIDAVITS, AND DECLARATIONS</u>

Expert Report of Mark A. Israel, Ph.D., In the Matter of *City of Rockford, on behalf of itself and all others similarly situated v. Mallinckrodt ARD, Inc. formerly known as Questcor Pharmaceuticals, Inc., et al.*, In the United States District Court for the Northern District of Illinois Western Division, Case No. 3:17-cv-50107, October 17, 2022.

Expert Reports of Mark A. Israel, In the Matters of *United States of America, et al. v. Google LLC* (Case No. 1:20-cv-03010-APM), and *State of Colorado, et al. v. Google LLC* (Case No. 1-20-cv-03715-APM), In the United States District Court for the District of Columbia, Initial Report: June 4, 2022; Rebuttal Report: August 5, 2022; Reply Report: September 23, 2022.

Affidavit of Mark A. Israel, 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,* Between Commissioner of Competition and Rogers Communications Inc. and Shaw Communications Inc. and the Attorney General of Alberta and Videotron Ltd., the Competition Tribunal, CT-2022-002, September 23, 2022.

Reports of Dr. Mark A. Israel, In the Matter of *Viamedia, Inc. v. Comcast Corporation and Comcast Cable Communications Management, LLC*, In the United States District Court for the Northern District of Illinois Eastern Division, Case No. 16-cv-5486, Rebuttal Report: November 30, 2017; Errata Sheet for Rebuttal Report: January 4, 2018; Rebuttal Report: September 21, 2022.

Expert Declaration of Mark Israel, In the Matter of *Phil Mickelson, Taylor Gooch, Hudson Swafford, et al. v. PGA Tour, Inc.*, In the United States District Court for the Northern District of California San Jose Division, Civil Action No. 5:22-cv-04486-BLF, August 7, 2022.

Expert Report of Mark A. Israel, Ph.D., In the Matter of *United States of America, et al. v. American Airlines Group Inc. and JetBlue Airways Corporation*, In the United States District Court for the District of Massachusetts, Civil Action No. 1:21-cv-11558-LTS, July 11, 2022.

Expert Reports of Mark A. Israel, Ph.D., *In Re Rail Freight Fuel Surcharge Antitrust Litigation*, In the United States District Court for the District of Columbia, MDL No. 1869, Case No. 07-489, Initial Report: April 15, 2021; Surrebuttal Report: May 10, 2022.

Expert Reports of Mark A. Israel, Ph.D., In the Matter of *Arconic Inc. v. Novelis Inc., Novelis Corp.*, In the United States District Court for the Western District of Pennsylvania, No. 2:17-CV-01434, Initial Report: February 11, 2022; Reply Report: March 18, 2022.

Verified Statement of Mark A. Israel, Ph.D., "Reciprocal Switching," Surface Transportation Board, Docket No. EP 711 (Sub-No. 1), February 14, 2022.

Expert Report of Mark A. Israel, In the Matter between *Sean Allott and Panasonic Corporation; Panasonic Corporation of North American; Panasonic Canada Inc.; KOA Corporation; KOA Speer Electronics, Inc., et al.,* In the Ontario Superior Court of Justice, Court File No. 1899-2015 CP, January 17, 2022.

Expert Reports of Mark A. Israel, Ph.D., *In Re Aluminum Warehousing Antitrust Litigation*, In the United States District Court Southern District of New York, MDL No. 2481, Initial Report: September 17, 2021; Supplemental Declaration: January 14, 2022.

Affidavits in confidential arbitration regarding wholesale roaming rate for wireless telecommunications, Initial Affidavit: August 23, 2021; Reply Affidavit: November 15, 2021.

Expert Report of Mark A. Israel, In the Matter of *Bio-Rad Laboratories, Inc. and President and Fellow of Harvard College v. 10X Genomics, Inc., and 10X Genomics, Inc. v. Bio-Rad Labs., Inc. and President and Fellow of Harvard College as Counterclaimants*, In the United States District Court for the District of Massachusetts, Civil Action No. 1:19-cv-12533-wgy, May 14, 2021.

Expert Report of Mark A. Israel, In the Matter of *B & R Supermarket, Inc., d/b/a Milam's Market, Grove Liquors LLC, Strouk Group LLC, d/b/a Monsieur Marcel, and Palero Food Corp. and Cagueyes Food Corp., d/b/a Fine Fare Supermarket v. Mastercard International Inc., Visa Inc., Visa U.S.A., Inc., Discover Financial Services, and American Express Company*, In the United States District Court for the Eastern District of New York, Case No. 17-CV-02738 (MKB) (JO), March 22, 2021.

Expert Report of Dr. Mark A. Israel, In the Matter of *Joshua M. Harman Qui Tam v. Trinity Industries, Inc., et al.,* In the Commonwealth of Massachusetts, Superior Court Department, Civil Action No. 2014-02364-D, February 26, 2021.

Verified Statement of Mark Israel, "Review of Commodity, Boxcar, and TOFC/COFC Exemptions," Surface Transportation Board, Docket No. EP 704 (Sub-No. 1), January 29, 2021.

Expert Report of Mark A. Israel, Ph.D., *In Re Comtech/Gilat Merger Litigation*, Court of Chancery of the State of Delaware, Consolidated C.A. No. 2020-0605-JRS, September 24, 2020.

Declaration of Mark Israel and Allan Shampine, In the Matter of *AMC Networks Inc. v. AT&T Inc.*, Before the Federal Communications Commission, MB Docket No. 20-254, File No. CSR-8993, August 20, 2020.

Expert Report of Mark A. Israel, In the Matter between *Ryan Kett and Mitsubishi Materials Corporation, Mitsubishi Cable Industries, Ltd., Mitsubishi Shindoh Co., Ltd., Mitsubishi Aluminum Co., Ltd., Tachibana Metal Mfg. Co., Ltd., and Diamet Corporation,* In the Supreme Court of British Columbia, Case No. VLC-S-S-1813758, July 15, 2020.

Expert Reports of Mark A. Israel, Ph.D., In the Matter of *Federal Trade Commission v. Peabody Energy Corporation and Arch Coal, Inc.*, In the United States District Court for the Eastern District of Missouri, Civil Action No. 4-20-cv-000317-SEP, Initial Report: May 26, 2020; Reply Report: June 19, 2020.

Expert Reports of Mark A. Israel, Ph.D., *In Re Dealer Management Systems Antitrust Litigation*, United States District Court for the Northern District of Illinois Eastern Division, MDL 2817, No. 1:18-CV-864, Initial Report: August 26, 2019; Reply Report: December 19, 2019.

Expert Reports of Mark A. Israel, Ph.D., *In Re Domestic Airline Travel Antitrust Litigation*, United States District Court for the District of Columbia, MDL Docket No. 2656, Misc. No. 15-1404 (CKK), Initial Report: September 30, 2019; Rebuttal Report: November 14, 2019.

Expert Reports of Mark A. Israel, In the Matter of *DISH Network L.L.C. v. Turner Network Sales, Inc.*, JAMS Arbitration No. 1100103066, Initial Report: July 23, 2019; Reply Report: August 2, 2019.

Submission of Mark A. Israel, Maya Meidan, and Robert J. Calzaretta, Jr., "The Atlantic Joint Business Generates Substantial Consumer Benefits," Competition and Markets Authority, United Kingdom, July 1, 2019.

Submission of Philip Haile and Mark Israel, "Alternative Approaches to Airport Slot Allocation: Objectives and Challenges," Department for Transport, United Kingdom, June 20, 2019.

Submission of Mark A. Israel, Maya Meidan, and Robert J. Calzaretta, Jr., "The Atlantic Joint Business Has Not Harmed Competition on Nonstop Overlap Routes, Including Focus Routes," Competition and Markets Authority, United Kingdom, June 14, 2019.

Expert Reports of Mark A. Israel, In the Matter of *RCHFU, LLC, et al. v. Marriott Vacations Worldwide Corporation, et al.,* In the United States District Court for the District of Colorado, Civil Action No. 16-01301-PAB-GPG, Initial Report: December 28, 2018; Supplemental Rebuttal Report, June 14, 2019.

Submission of Mark Israel, "The Fidelity/Stewart Merger Does Not Raise Competitive Concerns in the New York Title Insurance Industry," Revised Section 1506 Application Regarding the Proposed Acquisition of Stewart Title Insurance Company by Fidelity National Financial, Inc., New York State Department of Financial Services, April 12, 2019.

Second Report of Dr. Mark A. Israel, Between *UK Trucks Claim Limited and (1) – (5) Fiat Chrysler Automobiles NV and (1) – (4) MAN Truck & Bus AG & ORS*, In the Competition Appeal Tribunal, Case No. 1282/7/7/18, April 11, 2019.

Expert Report of Mark A. Israel, In the Matter between *Ryan Kett, Erik Oun and Jim Wong and Kobe Steel, Ltd., Shinko Metal Products Co., Ltd., Shinko Aluminum Wire Co., Ltd., Shinko Wire Stainless Company, Ltd., Kobelco & Materials Copper Tube Co., and Nippon Koshuha Steel Co., Ltd.*, In the Supreme Court of British Columbia, Case No. S-1710805, March 28, 2019.

Expert Report of Dr. Mark A. Israel, Between *Road Haulage Association and (1) – (10) MAN SE and Others and (1) Daimler AG, (2) Volvo Lastvagnar Aktiebolag*, In the Competition Appeal Tribunal, Case No. 1289/7/7/18, March 22, 2019.

Submission of Robert J. Calzaretta, Jr., Mark A. Israel, and Maya Meidan, "Assessing the Effects of ATI and JV Overlaps on Nonstop Fares: An Event Study Approach," submitted as part of a Supplement to Joint Motion to Amend Order 2010-7-8 for Approval of and Antitrust Immunity for Amended Joint Business Agreement, In the Application of American Airlines, Inc., British Airways PLC, OpenSkies SAS, Iberia Líneas Aéreas de España, S.A., Finnair OYJ, Aer Lingus Group DAC, Before the U.S. Department of Transportation, Washington, DC, Docket DOT-OST-2008-0252-, January 11, 2019.

Declarations of Mark A. Israel, In the Matter of *Oscar Insurance Company of Florida v. Blue Cross and Blue Shield of Florida, Inc., d/b/a Florida Blue; Health Options Inc., d/b/a Florida Blue HMO; and Florida Health Care Plan Inc., d/b/a Florida Health Care Plans,* In the United States District Court Middle District of Florida Orlando Division, Case No. 6:18-cv-01944, Declaration: November 19, 2018; Supplemental Declaration: December 21, 2018.

Reply Declaration of Mark Israel, Michael Katz, and Bryan Keating, In the Matter of Applications of T-Mobile US, Inc. and Sprint Corporation, Consolidated Applications for Consent to Transfer Control of Licenses and Authorizations, Federal Communications Commission, WT Docket No. 18-197, September 17, 2018.

Expert Report of Gustavo Bamberger, Robert Calzaretta, and Mark Israel, In the Joint Application of Hawaiian Airlines, Inc. and Japan Airlines, Co., Ltd., Appendix 6 to "Joint Application for Approval of and Antitrust Immunity for Alliance Agreements," Department of Transportation, Case No. DOT-OST-2018-0084, June 13, 2018.

Expert Reports of Mark A. Israel, In the Matter between *Cygnus Electronics Corporation and Sean Allott and Panasonic Corporation et al.,* In the Ontario Superior Court of Justice, Court File No. 3795/14CP, Initial Report: November 17, 2017; Reply Report: February 23, 2018; Supplemental Report: May 22, 2018.

Expert Report of Mark A. Israel, In the Matter of the *Federal Trade Commission v. Wilh. Wilhelmsen Holding ASA Wilhelmsen Maritime Services As Resolute Fund II, L.P. Drew Marine Intermediate II B.V. and Drew Marine Group, Inc.*, In the United States District Court for the District of Columbia, No. 1:18-cv-00414-TSC, May 11, 2018.

Declaration of Mark A. Israel, In the Matter between *Robert Foster and Murray Davenport and Sears Canada Inc. et al.*, In the Ontario Superior Court of Justice, Court File No. 766-2010 CP, November 1, 2017.

Expert Report of Mark Israel and Bryan Keating, "Economic Analysis of Dr. Evans' Claims as They Relate to *Restoring Internet Freedom*," Federal Communications Commission, WC Docket No. 17-108, October 31, 2017.

Written Rebuttal Testimony of Dr. Mark A. Israel, In the Matter of *Distribution of Cable Royalty Funds*, Before the Copyright Royalty Judges, Washington, D.C., No. 14-CRB-0010-CD, September 15, 2017; Written Direct Testimony: December 22, 2016.

Declaration of Mark A. Israel, Allan L. Shampine, and Thomas A. Stemwedel, In the Matter of *Restoring Internet Freedom*, Federal Communications Commission, WC Docket No. 17-108, July 17, 2017.

Expert Report of Dr. Mark A. Israel, In the Matter of *St. Clair County, Illinois, and Macon County, Illinois, Individually and on behalf of all other counties in the State of Illinois, v. Trinity Industries, Inc. and Trinity Highway Products, LLC*, In the United States District Court for the Southern District of Illinois, Civil Action No.: 3:14-cv-1320, April 25, 2017.

Expert Reports of Mark A. Israel, In the Matter of the *United States of America v. Energy Solutions, Inc., Rockwell Holdco, Inc., Andrews County Holdings, Inc., and Waste Control Specialists, LLC*, In the United States District Court for the District of Delaware, Civil Action No. 16-cv-01056-SLR, Initial Report: March 27, 2017; Rebuttal Report: April 10, 2017.

Expert Report of Mark A. Israel, In the Matter of *Jackson County, Missouri, Individually and on behalf of a class of others similarly situated, v. Trinity Industries, Inc., and Trinity Highway Products, LLC*, In the Circuit Court of Jackson County, Missouri at Independence, Case No. 1516-CV23684, March 24, 2017.

Expert Report of Mark A. Israel, In the Matter of *Honeywell International Inc. v. iControl Networks, Inc. and Alarm.com Holdings, Inc.*, In the United States District Court for the District of New Jersey, No. 2:17-cv-01227, February 26, 2017.

Expert Report of Mark Israel, In the Matter of *Social Ranger, LLC v. Facebook, Inc.*, In the United States District Court for the District of Delaware, C.A. No. 14-1525-LPS, November 23, 2016.

Expert Report of Mark A. Israel, In the Matter between *Darren Ewert and DENSO Corporation et al.*, In the Supreme Court of British Columbia, Vancouver Registry, No. S-135610, November 15, 2016.

Expert Reports of Mark A. Israel, In the Matter of the *United States of America et al. v. Anthem Inc. and Cigna Corp.*, In the United States District Court, District of Columbia, No. 16-cv-01493 (ABJ), Initial Report: October 7, 2016; Supplemental and Rebuttal Report: October 28,2016.

Verified Statements of Mark Israel and Jonathan Orszag, "Review of Commodity, Boxcar, and TOFC/COFC Exemptions," Surface Transportation Board, Docket No. EP 704 (Sub-No. 1), Initial Verified Statement: July 26, 2016; Reply Verified Statement: August 26, 2016.

Declarations of Mark Israel, Daniel Rubinfeld, and Glenn Woroch, "Analysis of the Regressions and Other Data Relied Upon in the Business Data Services FNPRM And a Proposed Competitive Market Test," Federal Communications Commission, WC Docket Nos. 16-143, 15-247, 05-25, RM-10593, Second Declaration: June 28, 2016; Third Declaration: August 9, 2016.

Expert Declaration of Mark A. Israel, In the Matter of *Liberman Broadcasting, Inc. and LBI Media, Inc. v. Comcast Corporation and Comcast Cable Communications, LLC*, Federal Communications Commission, MB Docket No. 16-121, June 7, 2016.

Expert Report of Mark A. Israel, In the Matter of *La Crosse County, Individually, and on behalf of all others similarly situated v. Trinity Industries, INC. and Trinity Highway Products, LLC*, In the United States District Court, Western District of Wisconsin, Case No. 3:15-cv-00117-scl, May 27, 2016.

Expert Report of Mark A. Israel, In the Matter between *Darren Ewert and Nippon Yusen Kabushiki Kaisha et al.*, In the Supreme Court of British Columbia, Vancouver Registry, No. S-134895, May 20, 2016.

Declarations of Mark Israel, Daniel Rubinfeld, and Glenn Woroch, In the Matter of *Special Access Rates for Price Cap Local Exchange Carriers*, Federal Communications Commission, WC Docket No. 05-25, Declaration: February 19, 2016; Supplemental Declaration: March 24, 2016; Second Supplemental Declaration: April 20, 2016.

Declaration of Mark Israel, Daniel Rubinfeld, and Glenn Woroch, "Competitive Analysis of the FCC's Special Access Data Collection," Federal Communications Commission, WC Docket No. 05-25, January 26, 2016.

Declaration of Dr. Mark Israel, In the Matter of *iPic – Gold Class Entertainment, LLC et al., v. Regal Entertainment Group, AMC Entertainment Holdings, Inc., et al.*, In the District Court of Harris County, Texas, 234th Judicial District, No. 2015-68745, January 18, 2016.

Declaration of Dennis Carlton, Mark Israel, Allan Shampine & Hal Sider, "Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans," Federal Communications Commission, WC Docket No. 15-247, January 7, 2016.

Declaration of Mark A. Israel, Attached to "Response of AT&T Mobility LLC to Notice of Apparent Liability for Forfeiture," Federal Communications Commission, File No. EB-IHD-14-00017504, July 17, 2015.

Reports in the Matter of *Federal Trade Commission et al. v. Sysco Corporation and USF Holding Corp.*, In the United States District Court for the District of Columbia, Civil Action No. 1:15-cv-00256 (APM), Declaration: February 18, 2015; Report: April 14, 2015; Rebuttal Report: April 21, 2015.

Declaration of Mark A. Israel, Bryan G. M. Keating, and David Weiskopf, "Economic Analysis of the Effect of the Comcast-TWC Transaction on Voice and Broadband Services in California," December 3, 2014.

Expert Report of Mark A. Israel, "Economic Analysis of the Effect of the Comcast-TWC Transaction on Broadband: Reply to Commenters," Federal Communications Commission, MB Docket No. 14-57, September 22, 2014.

Supplemental Declaration of Mark Israel and Allan Shampine, In the Matter of *Amendment of the Commission's Rules Related to Retransmission Consent, Appendix A to "Reply Comments of the National Association of Broadcasters*," Federal Communications Commission, MB Docket No. 10-71, July 24, 2014.

Declaration of Mark Israel and Allan Shampine, In the Matter of *Amendment of the Commission's Rules Related to Retransmission Consent, Appendix B to "Comments of the National Association of Broadcasters*," Federal Communications Commission, MB Docket No. 10-71, June 26, 2014.

Expert Report of Mark A. Israel, "Implications of the Comcast/Time Warner Cable Transaction for Broadband Competition," Federal Communications Commission, MB Docket No. 14-57, April 8, 2014.

Declaration of Michael L. Katz, Philip A. Haile, Mark A. Israel, and Andres V. Lerner, "Sprint's Proposed Weighted Spectrum Screen Defies Economic Logic and Is Inconsistent with Established Facts," Federal Communications Commission, WT Docket No. 12-269, March 14, 2014.

Reply Declaration of Mark A. Israel, "Competitive Effects and Consumer Benefits from the Proposed Acquisition of Leap Wireless by AT&T: A Reply Declaration," Federal Communications Commission, WT Docket No. 13-193, October 23, 2013.

Declaration of Mark A. Israel, "An Economic Analysis of Competitive Effects and Consumer Benefits from the Proposed Acquisition of Leap Wireless by AT&T," Federal Communications Commission, WT Docket No. 13-193, August 1, 2013.

Supplemental Reply Declaration of Michael L. Katz, Philip A. Haile, Mark A. Israel, and Andres V. Lerner, "Comments on Appropriate Spectrum Aggregation Policy with Application to the Upcoming 600 MHz Auction," Federal Communications Commission, WT Docket No. 12-269, June 13, 2013.

Reply Declaration of Michael L. Katz, Philip A. Haile, Mark A. Israel, and Andres V. Lerner, "Comment on the Submission of the U.S. Department of Justice Regarding Auction Participation Restrictions," Federal Communications Commission, WT Docket No. 12-269, June 13, 2013.

Reply Declaration of Michael L. Katz, Philip A. Haile, Mark A. Israel, and Andres V. Lerner, "Spectrum Aggregation Policy, Spectrum-Holdings-Based Bidding Credits, and Unlicensed Spectrum," Federal Communications Commission, GN Docket No. 12-268, March 12, 2013.

Declaration of Igal Hendel and Mark A. Israel, "Econometric Principles That Should Guide the Commission's Analysis of Competition for Special Access Service," Federal Communications Commission, WC Docket No. 05-25, February 11, 2013.

Declarations of Mark A. Israel and Michael L. Katz, "Economic Analysis of Public Policy Regarding Mobile Spectrum Holdings," Federal Communications Commission, WT Docket No. 12-269, Declaration: November 28, 2012; Reply Declaration: January 7, 2013.

Declaration of Mark Israel, "An Economic Assessment of the Prohibition on Exclusive Contracts for Satellite-Delivered, Cable-Affiliated Networks," Federal Communications Commission, MB Docket Nos. 12-68, 07-18, & 05-192, September 6, 2012.

Expert Report of Mark Israel, "Implications of the Verizon Wireless & SpectrumCo/Cox Commercial Agreements for Backhaul and Wi-Fi Services Competition," Federal Communications Commission, WT Docket No. 12-4, August 1, 2012.

Expert Report of Mark A. Israel, Michael L. Katz, and Allan L. Shampine, "Promoting Interoperability in the 700 MHz Commercial Spectrum," Federal Communications Commission, WT Docket No. 12-69, July 16, 2012.

Affidavits of Dr. Mark A. Israel in the Matter of *Bloomberg L.P. v. Comcast Cable Communications, LLC*, Federal Communications Commission, MB Docket No. 11-104, Declaration: June 21, 2012; Declaration: June 8, 2012; Supplemental Declaration: September 27, 2011; Declaration: July 27, 2011.

Expert Report of Robert Willig, Mark Israel, Bryan Keating, and Jonathan Orszag, "Response to Supplementary Comments of Hubert Horan," Docket DOT-OST-2009-1055, October 22, 2010.

Expert Report of Robert Willig, Mark Israel, Bryan Keating, and Jonathan Orszag, "Measuring Consumer Benefits from Antitrust Immunity for Delta Air Lines and Virgin Blue Carriers," Docket DOT-OST-2009-1055, October 13, 2010.

Expert Report of Mark Israel and Michael L. Katz, "Economic Analysis of the Proposed Comcast-NBCU-GE Transaction," Federal Communications Commission, MB Docket No. 10-56, July 20, 2010.

Expert Report of Mark Israel and Michael L. Katz, "The Comcast/NBCU Transaction and Online Video Distribution," Federal Communications Commission, MB Docket No. 10-56, May 4, 2010.

Expert Report of Mark Israel and Michael L. Katz, "Application of the Commission Staff Model of Vertical Foreclosure to the Proposed Comcast-NBCU Transaction," Federal Communications Commission, MB Docket No. 10-56, February 26, 2010.

Expert Report of Robert Willig, Mark Israel, and Bryan Keating, "Competitive Effects of Airline Antitrust Immunity: Response of Robert Willig, Mark Israel, and Bryan Keating" in Docket DOT-OST-2008-0252, January 11, 2010.

Affidavit of Dr. Mark A. Israel on Class Certification in the Matter of Puerto Rican Cabotage Antitrust Litigation, in the United States District Court for the District of Puerto Rico, MDL Docket No. 3:08-md-1960 (DRD), December 10, 2009.

Expert Report of Robert Willig, Mark Israel, and Bryan Keating, "Competitive Effects of Airline Antitrust Immunity," Docket DOT-OST-2008-0252, September 8, 2009.

Expert Report and Supplemental Expert Report of Dennis W. Carlton and Mark Israel in the Matter of *Toys "R" Us-Delaware, Inc., and Geoffrey Inc. v. Chase Bank USA N.A.*, in American Arbitration Association New York, New York, Commercial Arbitrations No. 13-148-02432-08, Expert Report: February 27, 2009; Supplemental Expert Report: March 20, 2009.

Expert Reports of James Levinsohn and Mark Israel, In the Matter of *2006 NPM Adjustment Proceeding pursuant to Master Settlement Agreement*, October 6, 2008; January 16, 2009; March 10, 2009.

SELECTED OTHER EXPERT WORK IN REVIEW OF MERGERS/TRANSACTIONS

Successful merger of Sony's Cruncyhroll and AT&T's Funimation anime streaming platforms. 2021. Served as lead economic expert for AT&T. Made multiple presentations to DOJ, demonstrating lack of significant competitive interaction between the parties, including extremely limited consumer switching between them, as well as extensive competition with a broader marketplace including Netflix, Amazon, and others. DOJ closed the investigation allowing the merger to proceed with no conditions.

Successful acquisition of Innovative Industries, Inc. by Ex Libris. 2020. Served as lead economist in interactions with FTC. Demonstrated that the acquisition would not harm competition due to the *de minimis* extent of head-to-head competition between Ex Libris and Innovative and the recent decline of Innovative' s business. FTC closed investigation allowing acquisition to proceed with no conditions.

Successful acquisition of TD Ameritrade by Charles Schwab. 2020. Served as lead economist in interactions with DOJ. Presented analyses demonstrating broad market for investor dollars rather than narrow market for RIA Custodian Services. DOJ closed investigation allowing acquisition to proceed with no conditions.

Successful acquisition of Reinhart Foodservice by Performance Food Group Company. 2019. Served as lead economics expert on behalf of the parties in the FTC's investigation of the merger. Presented detailed data analyses showing ample competition and lack of harm to competition in any geographic market. FTC closed the investigation with no divestitures required in late 2019.

Successful acquisition of SGA's Food Group of companies by US Foods. 2019. Served as lead economic expert on behalf of the parties in the FTC's investigation of the merger. Presented detailed economics and econometric analyses showing ample competition and lack of harm to competition in any geographic market. FTC cleared the merger subject to divestitures in three geographic markets in the Fall of 2019.

Successful acquisition of Time Warner by AT&T Inc. 2017-2019. Lead economist throughout the DOJ investigation. Then director of all economic work during trial, serving as the central connection point between all experts and counsel and directing development of all aspects of the economic case. Defendants ultimately prevailed in trial and the merger closed in June 2018.

Successful acquisition of Keystone Foods by Tyson Foods, Inc. 2018. Served as lead economic expert for U.S. jurisdiction. Presented economic analyses demonstrating that competition would remain strong post-merger. Ultimately, antitrust agencies in the U.S., China, Japan, and Korea cleared the transaction.

Successful acquisition of NEX Group PLC by CME Group Inc. 2018. Co-lead economic expert with Thomas Stemwedel. Presented several econometric analyses demonstrating that Treasury futures contracts and cash Treasury securities were economic complements rather than substitutes. Based heavily on these Compass Lexecon submissions, the DOJ and CMA closed their investigations without requiring any divestitures.

Successful acquisition of VCA Inc. by Mars, Inc. 2017. Co-lead economic expert with Mary Coleman. Made multiple presentations to FTC demonstrating ample competition in general, emergency, and specialty veterinary services, including econometric analyses showing lack of direct competitive impact of Mars and VCA on one another. Transaction was ultimately cleared subject to a small number of divestitures.

Successful acquisition of Mobileye by Intel. 2017. Served as lead economic expert for Intel. Assisted counsel in preparing FTC presentations and materials demonstrating lack of significant head-to-head competition and lack of valid vertical foreclosure theories. Investigation was closed without Second Request.

FTC litigation against DraftKings, Inc. and FanDuel Inc. (Civil Action No. 17-cv-1195 (KBJ)). 2017. Served as lead economic expert for FTC and prepared to serve as FTC's testifying expert against the merger, prior to the parties' abandonment of the proposed merger. Developed economic and econometric evidence that the merging parties were closest substitutes and thus likely would have increased prices as a result of their proposed merger.

Successful merger of ASE Group and SPIL. 2017. Lead economic expert on behalf of ASE Group. Submitted reports and testified to the Taiwan Fair Trade Commission, which ultimately cleared the transaction, then made multiple presentations to U.S. FTC, which also cleared the transaction. Economic analyses focused on implications of profit margins for market definition and competitive effects, ultimately demonstrating that the transaction was unlikely to cause significant harm to competition.

Successful acquisition of Alarm.com of two business units (Connect and Piper) from iControl Networks. 2017. Led team that demonstrated substantial and growing competition in home security and connected home marketplace and thus lack of competitive harm from acquisition. Work focused on importance of downstream market definition as well as empirical evidence of impact of competition on Alarm.com pricing and profitability.

Successful acquisition of Samsung Electronics, Ltd.'s printer business by HP Inc. 2016. Led team in evaluating the competitive effects of the acquisition, including assessing shares and competitive effects in overlap areas. Notably, the transaction gained regulatory approval in the U.S. during the initial review period without issuing a Second Request.

Successful acquisition of Sun Products Corp. by Henkel AG. 2016. Led team demonstrating lack of competitive impact despite overlaps in laundry detergent and related products.

Successful acquisition of Starwood Hotels & Resorts by Marriott International. 2016. Led team that performed detailed analysis of competitive conditions, extensive econometric analysis of pricing, and full review of Marriott's internal pricing models to demonstrate that Starwood and Marriott were not close competitors, combined ownership of the brands would not lead to upward pricing pressure, and competition would remain robust post-merger.

Successful acquisition of PR Newswire by GTCR. 2016. Lead economic expert for GTCR. Made presentations to DOJ showing lack of competitive harm from the transaction, based on detailed analysis of win/loss data, including calculations showing no possible upward pricing pressure (UPP) concerns regardless of the level of margins.

Successful acquisition of Schurz Communications' Broadcast Stations by Gray Television. 2015. Lead economic expert for Gray. Made presentations to DOJ demonstrating output expanding effects of proposed transaction in light of the scale economies in television production and advertising and the small size of the DMAs affected by the transaction.

Successful acquisition of the Communications Business of Danaher Corporation by NetScout Systems. 2015. Lead economic expert for NetScout. Made presentations to DOJ describing proper economic framework for analysis of competition and potential merger harms, and demonstrated that the presence of multiple viable competitors and numerous other credible threats to be used by powerful buyers in a dynamic industry made theories of anti-competitive harm from the merger implausible.

Successful acquisition of Windmill Distribution Co. by Manhattan Beer Distributors. 2015. Lead economic expert for Manhattan Beer Distributors. Submitted White Paper to DOJ demonstrating, based on margin data, that the merger would be highly unlikely to lead to anti-competitive effects. Transaction was granted early termination from the Hart Scott Rodino process by the DOJ.

Proposed acquisition of Time Warner Cable by Comcast Corporation. 2014-2015. Served as lead economic expert on broadband issues on behalf of Comcast Corporation. Submitted multiple Declarations and made multiple presentations to DOJ and FCC, explaining lack of horizontal, bargaining, or vertical/foreclosure concerns with regard to broadband competition as a result of the transaction.

Successful acquisition of Leap Wireless by AT&T. 2014. Lead economic expert for AT&T. Submitted multiple Declarations to FCC and made presentation to DOJ, demonstrating the transaction would generate substantial consumer benefits, while generating at most minimal upward pricing pressure in a properly defined mobile wireless services market and no issues related to spectrum concentration or other competitive concerns.

Successful merger of American Airline and US Airways. 2013. Lead consulting expert, managing Compass Lexecon team of over 25 economists supporting multiple experts. Made multiple presentations to DOJ, worked on expert reports in litigation, and assisted counsel with the analysis leading to settlement of litigation, permitting transaction to close.

Successful merger of T-Mobile USA and MetroPCS. 2013. Lead economic expert for T-Mobile USA. Conducted economic analyses of competitive effects of the transaction, as well as consumer benefits from reduced costs and increased network quality. Presented analyses to both DOJ and FCC.

FTC investigation of acquisition of Dollar Thrifty Automotive Group by Hertz. 2012. Served as a lead economic expert for FTC and prepared to serve as FTC's testifying expert against the merger, prior to case settlement. Conducted empirical analyses based on previous rental car mergers demonstrating likely price increases from the transaction.

Decision by Federal Communications Commission not to extend the ban on exclusive contracts for satellite-delivered, cable-affiliated networks. 2012. Lead economic expert for National Cable and Telecommunications Association. Submitted economic analysis demonstrating that the ban on exclusive distribution of satellite-delivered, cable affiliated networks is no longer warranted given increased marketplace competition. FCC made decision to allow the ban to sunset.

Successful sale of wireless spectrum by SpectrumCo and Cox ("Cable Companies") to Verizon Wireless and successful completion of related commercial agreements. 2012. On behalf of the Cable Companies, performed economic analyses demonstrating lack of competitive harm from the transaction on markets for backhaul and Wi-Fi services. Presented analyses to FCC.

Successful acquisition by LIN Media of broadcast television stations from NVTV. 2012. Lead economic expert for LIN Media. Prepared economic analysis demonstrating lack of competitive concern over potential issues related to Shared Service and Joint Sale Arrangements.

Proposed acquisition of T-Mobile USA by AT&T. 2011. Served as one of the lead economists, initially for T-Mobile (along with Michael Katz) and ultimately for both parties (along with Michael Katz and Dennis Carlton). Made multiple presentations to DOJ and FCC. Appeared in FCC Workshop, ex parte meeting.

S*uccessful application for antitrust immunity by Delta and Virgin Blue*. 2010. Together with Robert Willig, Bryan Keating, and Jon Orszag, prepared economic analyses demonstrating substantial net consumer benefits from antitrust immunity. Submitted results in expert reports to Department of Transportation.

Successful joint venture between Comcast and NBC Universal (and ultimate full acquisition of NBC Universal by Comcast). 2010. Served as one of the lead economists (along with Michael Katz) on behalf of the merging parties. Wrote multiple reports submitted to FCC (with Michael Katz) demonstrating lack of significant competitive concerns from the transaction. Made multiple presentations to DOJ and FCC. Appeared in FCC Workshop of economists, ex parte meeting.

Successful application for antitrust immunity for oneworld alliance and associated joint venture of American Airlines, British Airways, and Iberia Airlines. 2009-2010. Together with Robert Willig and Bryan Keating, prepared economic analyses demonstrating substantial net consumer benefits associated with antitrust immunity for the joint venture. Submitted results in expert reports to Department of Transportation.

Successful acquisition by PepsiCo of bottlers, PBG and PAS. 2009. Performed econometric and simulation analyses demonstrating pro-competitive effect of merger on PepsiCo's own brands, other brands distributed by PBG and PAS, and overall marketplace. Presented results to FTC (together with Dennis Carlton).

Successful merger of Delta Airlines and Northwest Airlines. 2008. In support of Dennis Carlton, developed empirical and theoretical analyses to demonstrate merger's pro-competitive nature. Work focused on (ultimately settled) private litigation opposing the merger.

Successful acquisition of Harcourt Education by Houghton Mifflin. 2007. Along with Daniel Rubinfeld and Frederick Flyer, developed econometric analyses demonstrating lack of competitive harm from proposed merger. Presented results to DOJ.

Successful acquisition of Chicago Board of Trade by Chicago Mercantile Exchange. 2007. Along with Robert Willig and Hal Sider, developed and presented multiple empirical analyses demonstrating lack of competitive harm from merger. Submitted multiple white papers and made multiple presentations to DOJ.

SELECTED OTHER EXPERT/CONSULTING WORK

Led team supporting Dennis Carlton's testimony in Toshiba/Hannstar TFT-LCD Antitrust litigation vs. Plaintiff Best Buy, 2013.

Led team supporting Dennis Carlton's testimony in Toshiba's TFT-LCD Class Action Antitrust litigation. Named Litigation Matter of the Year for 2012 by *Global Competition Review*, 2012.

As economic expert for US Airways, developed econometric analysis of air traffic at major US airports, presented to Philadelphia Airport management team, 2011.

Prepared analysis of the competitive impact of low-cost-carrier competition in Washington, D.C. and New York airports. Filed with DOT, 2011.

On behalf of major pharmaceutical firm, developed econometric model to forecast pharmaceutical expenditures, 2009.

Developed econometric model to measure of the importance of network effects in credit cards in the context of measuring damages incurred by a major credit card issuer, 2007-2008.

OTHER CONFIDENTIAL CONSULTING WORK IN THE FOLLOWING INDUSTRIES

Automobiles and Components

Consumer Durables

Consumer Services

Financial Services

Energy

Food, Beverage, and Tobacco

Healthcare Equipment and Services

Media

Pharmaceuticals, Biotechnology, and Life Sciences

Retail

Semiconductors and Semiconductor Equipment

Software and Related Services

Technology: Hardware and Equipment

Telecommunication Services

Transportation

Utilities

PUBLICATIONS

"The Economics of the LCD Cartel: Organization, Incentives, and Practical Challenges," *Cartels Diagnosed: New Insight on Collusion* (with Dennis W. Carlton, Ian MacSwain, and Allan Shampine), available at *https://ssrn.com/abstract=4190535*, August 15, 2022.

"A Retrospective Analysis of the AT&T/Time Warner Merger" (with Dennis W. Carlton, Georgi V. Giozov, and Allan L. Shampine), Forthcoming in the *Journal of Law and Economics*, available at *https://ssrn.com/abstract=3911492*, October 1, 2021.

"Vertical Mergers with Bilateral Contracting and Upstream and Downstream Investment," (with Daniel P. O'Brien), available at *https://ssrn.com/abstract=3886048*, July 15, 2021.

"International Broadband Price Comparisons Tell Us Little about Competition and Do Not Justify Broadband Regulation," working paper (with Michael Katz and Bryan Keating), commissioned by NCTA – The Internet & Television Association, May 11, 2021.

"Effects of the 2010 Horizontal Merger Guidelines on Merger Review: Based on Ten Years of Practical Experience," (with Dennis W. Carlton), Volume 58, Issue 2, in the *Review of Industrial Organization*, March 2021.

"Lessons from *AT&T/Time Warner,*" (with Dennis W. Carlton and Allan L. Shampine), *Competition Policy International*, July 2019.

"Are You Pushing Too Hard? Lower Negotiated Input Prices as a Merger Efficiency," (with Thomas A. Stemwedel and Ka Hei Tse), Volume 82, Issue 2, Pages 623-642, in the *Antitrust Law Journal*, April 2019.

"Vertical Integration in Multichannel Television Markets: Revisiting Regional Sports Networks Using Updated Data," (with Georgi Giozov, Nauman Ilias, and Allan Shampine), Volume 4:1 in *The Criterion Journal on Innovation*, 2019.

"Are Legacy Airline Mergers Pro- or Anti-Competitive? Evidence from Recent U.S. Airline Mergers," (with Dennis Carlton, Ian MacSwain, and Eugene Orlov), Volume 62, Pages 58-95, in the *International Journal of Industrial Organization*, January 2018.

"Competitive Effects of International Airline Cooperation," (with Robert J. Calzaretta and Yair Eilat), Volume 13, Issue 3, Pages 501-548, in the *Journal of Competition Law & Economics*, September 2017.

"Econometrics and Regression Analysis," (with Chris Cavanagh, Paul Denis, and Bryan Keating), Chapter 6 in the *American Bar Association's Proving Antitrust Damages: Legal and Economic Issues, Third Edition*, 2017.

"Complementarity without Superadditivity," (with Steven Berry, Philip Haile, and Michael Katz), Volume 151, Pages 28-30, in *Economics Letters*, February 2017.

"Antitrust in a Mobile World," (with Yonatan Even, Jonathan M. Jacobson, Scott Martin, and Dr. Helen Weeds), Chapter 17 of *International Antitrust Law & Policy: Fordham Competition Law 2015*, Edited by James Keyte, Juris Publishing, Inc., 2016.

"Buyer Power in Merger Review," (with Dennis W. Carlton and Mary Coleman), Chapter 22 of *The Oxford Handbook of International Antitrust Economics*, Volume 1, Roger D. Blair and D. Daniel Sokol, eds, Oxford University Press, 2015.

"The Evolution of Internet Interconnection from Hierarchy to 'Mesh': Implications for Government Regulation," (with Stanley M. Besen), *Information Economics and Policy*, December 2013.

"Airline Network Effects and Consumer Welfare," (with Bryan Keating, Dan Rubinfeld, and Robert Willig), *Review of Network Economics*, November 2013.

"The Delta-Northwest Merger: Consumer Benefits from Airline Network Effects (2008)," (with Bryan Keating, Daniel L. Rubinfeld, and Robert D. Willig), *The Antitrust Revolution*, Sixth Edition, Edited by John E. Kwoka, Jr. and Lawrence J. White, Oxford University Press, New York, July 2013.

"Proper Treatment of Buyer Power in Merger Review," (with Dennis W. Carlton), *Review of Industrial Organization*, July 2011.

"Response to Gopal Das Varma's Market Definition, Upward Pricing Pressure, and the Role of the Courts: A Response to Carlton and Israel," (with Dennis W. Carlton), *The Antitrust Source*, December 2010.

"Will the New Guidelines Clarify or Obscure Antitrust Policy?" (with Dennis W. Carlton), *The Antitrust Source,* October 2010.

"Should Competition Policy Prohibit Price Discrimination?" (with Dennis W. Carlton), *Global Competition Review*, 2009.

"The Empirical Effects of Collegiate Athletics: An Update Based on 2004-2007 Data," (with Jonathan Orszag), Paper commissioned by National Collegiate Athletic Association, available *at http://www.epi.soe.vt.edu/perspectives/policy_news/pdf/NCAASpending.pdf*, February 2009.

"Services as Experience Goods: An Empirical Examination of Consumer Learning in Automobile Insurance," *The American Economic Review*, December 2005.

"Tenure Dependence in Consumer-Firm Relationships: An Empirical Analysis of Consumer Departures from Automobile Insurance Firms," *The Rand Journal of Economics*, Spring 2005.

"The Impact of Youth Characteristics and Experiences on Transitions Out of Poverty," (with Michael Seeborg), *Journal of Socio-Economics*, 1998.

"Racial Differences in Adult Labor Force Transition Trends," (with Michael Seeborg), *Journal of Economics*, 1994.

SELECTED RECENT PRESENTATIONS

American Bar Association Section of Antitrust Law, "Nuts & Bolts of Presenting Economic Evidence to the Agencies: Common Pitfalls and Best Practices, Panelist, October 2019.

Dechert LLP, 2019 Annual Antitrust Spring Seminar, Keynote Speaker, March 2019.

Concurrences Review and The George Washington University Law School, 6th Bill Kovacic Antitrust Salon: Where is Antitrust Policy Going?, "A Judge's Eye View on Antitrust: Mergers, Cartels, Remedies…," Panelist, September 2018.

Fordham Competition Law Institute, 45th Annual Conference on International Antitrust Law and Policy, "Merger Remedies," Panelist, September 2018.

Georgetown Center for Business and Public Policy, "Airline Competition Conference," Panelist, July 2017.

J.P. Morgan Special Situations Investor Forum, "The Antitrust Merger Review Process," Panelist, March 2017.

American Bar Association Section of Antitrust Law, "Economic Issues Raised In The Comcast – Time Warner Cable Merger," Panelist, February 2016.

Fordham Competition Law Institute, 42nd Annual Conference on International Antitrust Law and Policy, "Antitrust in a Mobile World," Panelist, October 2015.

American Bar Association Section of Antitrust Law, "Merger Practice Workshop," Faculty Member, October 2015.

Searle Center Conference on Antitrust Economics and Competition Policy, Panel on Recent Transactions in the Telecom Industry, Panelist, September 2015.

National Bureau of Economic Research, Summer Institute 2015, Industrial Organization Meetings, "Panel Discussion of the Comcast-Time Warner Merger," Panelist, July 2015.

Federal Communications Bar Association, "How the Antitrust Agencies and the FCC are Likely to Analyze Vertical Mergers," Panelist, November 2014.

The Coca Cola Company Global Antitrust Forum, "Round Table Discussion on Use of Economics and Economists," Panel Chair, November 2014.

Compass Lexecon Competition Policy Forum, Lake Como Italy, "Consolidation of the Telecoms Industry in the EU and the U.S.," Panelist, October 2014.

The IATA Legal Symposium 2014, Aviation Law: Upfront and Center, "Merger Analysis – A sudden shift in approach by DOJ in the American Airlines and US Airways merger," Panelist, February 2014.

Georgetown Law 7th Annual Global Antitrust Enforcement Symposium, "Merger Enforcement and Policy," Panelist, September 2013.

American Bar Association Section of Antitrust Law, "Airline Mergers: First Class Results or Middle-Seat Misery?" Panelist, May 2013.

American Bar Association Section of Antitrust Law, "Go Low or Go Home! Monopsony a Problem?" Panelist, March 2012.

Federal Communications Bar Association Transactional Committee CLE Seminar, "The FCC's Approach to Analyzing Vertical Mergers," Panelist, October 2011.

The Technology Policy Institute Aspen Forum, "Watching the Future: The Economic Implications of Online Video," Panelist, August 2011.

American Bar Association Forum on Air & Space Law, 2011 Update Conference, "Antitrust Issues: What's on the Horizon for the Industry," Panelist, February 2011.

American Bar Association Section of Antitrust Law, "Antitrust in the Airline Industry," Panelist, September 2010.

GRANTS AND HONORS

Searle Fund for Policy Research Grant, 2004-2006, for "An Empirical Examination of Asymmetric Information in Insurance Markets."

Kellogg School of Management Chairs' Core Course Teaching Award, 2003 & 2005.

Bradley Dissertation Fellowship, Stanford University, 1999-2000.

Stanford University, Outstanding Second Year Paper Prize, 1997.

ADVISORY, EDITORIAL, AND TRUSTEE BOARDS

Global Competition Review, Editorial Board, Member

Holton-Arms School, Board of Trustees, Trustee

Illinois Wesleyan University, Board of Trustees, Trustee

PUBLIC

This is Exhibit “D” referred to in the Affidavit of Mark Israel sworn by Mark Israel, of the County of Montgomery, in the State of Maryland, in the United States of America, before me by videoconference on October 20, 2022 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.

Commissioner for Taking Affidavits (or as may be)

MATTHEW R. LAW

MATERIALS RELIED UPON

LEGAL FILINGS

Affidavit and Expert Report of Mark A. Israel, September 23, 2022

Andrew C. Harington, "Report Assessing Productive Efficiencies Arising from the Proposed Transactions," filed September 23, 2022.

Cost Savings, Quality Improvements, and Competitive Effects of the proposed Rogers/Shaw Merger in the Canadian Wireless Marketplace. ("CL Efficiencies Report")

Cost Savings, Quality Improvements, and Competitive Effects of the proposed Rogers/Shaw Merger in the Canadian Wireless Marketplace: Supplementary Analyses. ("CL Supplementary Efficiencies Report")

Miller Section 104 Report

Summary of Facts – Recommendation regarding Rogers' proposed divestiture of Freedom Mobile to Quebecor

Witness Statement and Expert Report of Nathan H. Miller, September 21, 2022

Witness Statement of Dean Prevost, October 20, 2022

Witness Statement of Jean-Francois Lescadres, September 23, 2022

Witness Statement of Lars Spencer Osberg, PhD, September 21, 2022

Witness Statement of Michael A M Davies, September 22, 2022.

Witness Statement of Paul McAleese, October 20, 2022

Witness Statement of Paul McAleese, September 23, 2022

PRODUCED DATA

1_RCI_Results_Jul2021_to_Apr2022_nolink.xlsb

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CFS Product Tier Distribution V2

ods_v21_address_data

ods_v21_address_name_link

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Postpaid Bell Mobility ON bundle service detail 2021.csv

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PRODUCED DOCUMENTS

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Government of Canada, "Selected Universal Broadband Fund projects," Https://ised-isde.canada.ca/site/high-speed-internet-canada/en/universal-broadband-fund/selected-universal-broadband-fund-projects

Innovation, Science and Economic Development Canada, "3500 MHz band spectrum auction," available at https://www.canada.ca/en/innovation-science-economic-development/news/2020/03/3500-mhz-band-spectrum-auction.html

Quebecor Press Release, "Conclusion of 3500 MHz Spectrum Auction - Quebecor and Videotron Take Another Step Towards Expansion Outside Quebec," July 29, 2021, available at https://www.newswire.ca/news-releases/conclusion-of-3500-mhz-spectrum-auction-quebecor-and-videotron-take-another-step-towards-expansion-outside-quebec-812427486.html

Quebecor, "3500 MHz Auction: Another Step Towards Expansion Outside Quebec," July 30, 2021, available at https://www.quebecor.com/documents/20143/49387/2021-07-30+-

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Telus, "Deals and Bundles," available at https://www.telus.com/en/deals-and-bundles/internet-tv-phone/add-mobility

United States Federal Communications Commission, "The Public Safety Nationwide Interoperable Broadband Network: A New Model for Capacity, Performance and Cost," FCC White Paper, June 2010, available at https://transition.fcc.gov/pshs/docs/releases/DOC-298799A1.pdf.

This is Exhibit "E" referred to in the Affidavit of Mark Israel sworn by Mark Israel, of the County of Montgomery, in the State of Maryland, in the United States of America, before me by videoconference on October 20, 2022 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.

Commissioner for Taking Affidavits (or as may be)

MATTHEW R. LAW

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[redacted]

PUBLIC

This is Exhibit "F" referred to in the Affidavit of Mark Israel sworn by Mark Israel, of the County of Montgomery, in the State of Maryland, in the United States of America, before me by videoconference on October 20, 2022 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.

Commissioner for Taking Affidavits (or as may be)

MATTHEW R. LAW

[redacted]