SCHOLARS PANEL ON NON-PRICE EFFECTS: TURNING SMOKE INTO FIRE

INNOVATION EFFECTS IN CANADIAN MERGER ANALYSIS

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Recent amendments to the Canadian Competition Act direct the Competition Tribunal to consider non-price competitive effects under the merger and other civil provisions of the Act. This commentary first provides an overview of the economics literature on the effects of mergers on innovation incentives, and then summarizes the challenges to mergers that potentially threaten innovation by antitrust authorities in the US and Europe, and the much smaller number of such challenges in Canada. Canadian real GDP per capita and innovation by Canadian businesses, which are keys to Canadians' standards of living, lag other advanced economies. This commentary considers whether the fact that relatively few mergers have been challenged by the Competition Bureau on the basis of concerns about innovation effects may be a partial cause of lagging innovation in Canada. It concludes that there is little evidence that innovation-reducing mergers in Canada have been allowed because of deficiencies in the Act, Tribunal jurisprudence, or Bureau enforcement practices. Several commentators have noted that the relatively poor innovation performance of Canadian businesses is likely caused in part by the challenges that start-ups face in obtaining sufficient financing to successfully commercialize their innovations, and by Canada's relatively weak intellectual property rights regime, which can make it difficult for Canadian business to capture more of the returns from their investments in innovation. Mergers can help overcome these challenges, such that more aggressive merger enforcement can undermine firms' investment incentives. Repeal of the Section 96 efficiencies defence, if Bill 56 is enacted, may also reduce incentives to invest in innovation in some cases.

Avec ses récentes modifications, la Loi sur la concurrence canadienne impose désormais au Tribunal de la concurrence de prendre en compte les effets sur la concurrence autres que de nature tarifaire dans le cadre de ses dispositions relatives aux fusionnements et autres dispositions civiles. Dans le présent commentaire, nous passerons d'abord en revue la littérature économique qui concerne l'effet des fusions sur l'incitation à l'innovation, puis ferons la synthèse des contestations contre les fusions potentiellement nuisibles à l'innovation qu'ont faites les autorités antitrust aux États-Unis

et en Europe (et, en nombre bien plus modeste, les autorités au Canada). Le PIB réel par habitant et les innovations que génèrent nos entreprises sont le moteur de notre qualité de vie au Canada; or, la machine est plus lente ici que dans d'autres économies avancées. Nous nous demanderons si ce retard en innovation pourrait être en partie imputé au fait que le Bureau de la concurrence stoppe assez rarement les fusions par souci des effets à ce chapitre. Notre conclusion : il y a peu d'indications que cela résulte de lacunes du côté de la Loi, de la jurisprudence ou du travail du Bureau si des fusions jugulant l'innovation ont été admises. Plusieurs commentateurs sont d'avis que si les entreprises canadiennes font relativement mauvaise figure sur le plan de l'innovation, c'est probablement à cause de la difficulté qu'ont les jeunes pousses à obtenir un financement adéquat pour commercialiser leurs concepts, et aussi du régime assez mou du pays en matière de propriété intellectuelle qui peut les empêcher d'en tirer un rendement intéressant. La fusion peut toutefois être une solution à ces problèmes, et donc, un encadrement trop strict pourrait freiner l'investissement privé dans l'innovation. Ce sera potentiellement le cas si le projet de loi 56 est adopté : certains investisseurs pourraient se voir découragés par son abrogation de l'article 96, ce qui les priverait de la « défense fondée sur les gains en efficience ».

1. Introduction

The 2022 amendments to the Canadian *Competition Act* ("Act") explicitly direct the Competition Tribunal ("Tribunal") to consider non-price competitive effects in the merger, abuse of dominance, and competitor collaboration provisions of the Act. Notwithstanding that non-price effects were not specifically included in the Act prior to the 2022 amendments, the Tribunal has, for some time, already been reading such effects into the merger and abuse provisions. Even so, the effects of firm conduct on non-price dimensions of competition have played a significant role in only a small number of Competition Bureau ("Bureau") merger and abuse of dominance investigations and have been secondary (to price effects) concerns in several others. Non-price effects have been much more predominant in competition investigations in the US and Europe.[2]

This commentary focuses on innovation, a key non-price dimension of competition, and in particular on how innovation effects are assessed in the analysis of mergers. It begins with an overview of the economic analysis of innovation in antitrust reviews of mergers. The relatively simple indicators of the price effects of mergers, such as market concentration measures and pricing pressure tests, are reasonably well developed and have long been used by competition authorities and merging firms to identify potential

problematic mergers. These simple tests do a reasonable job of identifying mergers that are likely to result in price increases, at least before efficiencies are considered. Other, more sophisticated, economic tools for assessing price effects, such as demand estimation and merger simulation modelling, have also been frequently applied to estimate price effects and are widely used by the enforcement agencies and firms' experts.

There is much less agreement on how to assess the effects of mergers and other firm conduct on non-price dimensions of competition, including innovation. Most commentators agree that the link between market concentration and anticompetitive price effects is much tighter than the link between concentration (or any other simple statistics or observables) and non-price effects, and depending on the theory of anticompetitive harm, there may not be a link at all. The OECD, for example, has noted that "(t)he studies investigating the effect of competition on innovation are numerous, and generally do not support a simple, unidirectional relationship. Rather, as is often the case with antitrust theories of harm, the literature suggests that innovation effects depend on the particular characteristics of a market,"[3] and "a broad-brush conclusion on the impact of mergers on innovation may not be advisable."[4] Furthermore, while economists estimate price effects using a widely accepted set of models, there are no such general and widely accepted economic models for the assessment of innovation and other non-price effects.

The next section of this commentary discusses the European Commission's analysis of the Dow/DuPont merger, an important merger case involving concerns about innovation effects. An Appendix contains a summary of the analysis of other innovation mergers by the US enforcement agencies and the European Commission. This section is followed by an overview of analyses of innovation effects by the Bureau and Tribunal. The Bureau has alleged non-price anticompetitive effects to meet its burden to demonstrate a substantial lessening or prevention of competition ("SLPC") in several litigated merger cases, although with one partial exception, its concerns about non-price effects appeared to be secondary to its concerns about price effects. It has successfully met its burden to prove an SLPC in relation to non-price effects in most of these litigated cases. The Bureau has also resolved its concerns about innovation effects arising from mergers with a Consent Agreement in a small number of cases, including Dow/DuPont, [5] Bayer AG/Monsanto, [6] and Thoma Bravo. [7] Arguably, the most important litigated non-price effects matter in Canada was the *Toronto Real Estate Board* ("*TREB*") abuse of dominance case, in which the Bureau alleged that the respondent's practices were likely to result in a SLPC based

on non-price effects. The Commissioner's evidence in support of an SLPC in this case was almost exclusively qualitative, consisting mainly of the testimony of frustrated entrants, with no or limited quantitative support. The Tribunal agreed with the Commissioner and concluded that the impugned practices were likely to result in an SLPC. This case suggests that proving non-price effects in Canadian civil cases, even using only qualitative evidence, may not be excessively burdensome.

The last section of this commentary begins with a discussion of the importance of innovation to Canadian standards of living. This section explains that real GDP per capita growth has been lagging in Canada relative to other advanced countries (and is expected, according to the OECD, to continue to be lower than most other advanced economies), and documents how low levels of R&D spending and innovation have been an important cause. It then discusses the role of the merger provisions of the Act and the Bureau's merger enforcement practices in Canada's lagging innovation performance. The Competition Bureau has challenged few mergers in which it has identified innovation concerns, relative to the US and the EU agencies. While this is to be expected given the relatively small size of the Canadian economy, the number of challenges nevertheless seems to be proportionally small. Some commentators have argued that Canadian firms have too much market power and the merger provisions of the Act are underenforced, and the Bureau itself has recommended that the Act be amended to strengthen its enforcement power.

This last section argues that there is little evidence of underenforcement of innovation mergers in Canada. Moreover, certain features of the Canadian economy, such as the relatively poor record of Canadian firms in commercializing their innovations and Canada's relatively weak property rights, may support (and explain) more lenient enforcement of mergers involving innovating firms. Mergers can help address both of these challenges: acquisition by a larger firm with complementary capabilities can facilitate the commercialization of a smaller firm's innovation and provide necessary financing; and when property rights are weak a merger can increase the extent to which firms capture the returns to their investment in innovation.

The Section 96 efficiencies exception may also help explain why there have been fewer merger challenges based on innovation concerns in Canada, although the Bureau does not appear to have publicly commented on a merger where it had innovation concerns but nevertheless refrained from challenging because of the efficiencies defence. This section also discusses how a total surplus standard potentially allows some innovation-increasing

mergers that would be blocked if the government's Bill 56, which would repeal the efficiencies defence, is enacted. Innovation-increasing mergers could also be blocked if section 96 is not repealed but the total surplus standard is instead replaced by a consumer welfare standard. Increases in merging firm profits resulting from higher post-merger prices are not anti-competitive effects in an efficiencies trade-off under a total surplus standard. Higher post-merger profits may also create incentives for firms to innovate. Repeal of Section 96 may therefore reduce incentives for firms to innovate.[8]

2. Overview of the Economic Analysis of Innovation Effects in Mergers

Innovation includes the creation of new products that provide benefits to consumers, improvements to existing products ('product innovations'), and reductions in the cost of producing new or existing products ('process innovations'). The foundational economic analyses of the effects of mergers on innovation were provided by Joseph Schumpeter[9] and Kenneth Arrow,[10] both giants of 20th century economics. Schumpeter is often associated with the 'market power is good for innovation' school and Arrow is often cited for support by the 'competition promotes innovation' side, although Shapiro[11] explains that the ideas of these two scholars are not so irreconcilable.

When economists think about whether a law, regulation, or antitrust enforcement will increase innovation, they think about effects on firms' incentives and abilities. A firm will have the incentive to spend resources on R&D and other innovative activity if the expected return to innovation, RI, exceeds the cost of engaging in innovation activity, CI; that is the firm will innovate only if RI > CI. If a merger increases a firm's return to innovation or reduces its cost of innovating, then it could move from an environment in which RI < CI to one where RI > CI, in which case we would predict that the merger will increase innovation. Conversely, a merger that reduces the return to innovation (or, less likely, increases the cost of innovation), may flip the inequality from RI > CI to RI < CI, so that the merger reduces innovation.

Schumpeter focused on how increased market power, or increases in firm size more generally, can tip the scales towards the returns to innovation outweighing the costs. His reasoning was simply that a firm will invest in the creation of a new product if it expects to earn a high enough profit after it innovates, and market power creates higher profits. If, after innovating, the firm must sell its product in a market where it only earns a 'competitive' return, the firm may not incur the costs of innovating in the first place.

After all, it can earn a 'competitive' profit without innovating, so why incur the cost of innovating? The economic logic is similar to the logic supporting patent protection, where innovators are granted protection from competition for some period to give them the incentive to innovate—consumers are forced to pay high prices because of the monopoly created by the patent, which increases the profits of the innovator thus creating the incentive to spend resources on innovation. Consumers are assumed to be better off in the long run because they benefit from the new product.

A key insight of Schumpeter is the idea of 'appropriability', which represents the firm's ability to capture the benefits of its innovation—if an innovation can be easily copied by other firms, the firm's return from innovating will be competed away, which eliminates the incentive to innovate. A stronger incentive to build a better mousetrap exists if imitators will not be able to copy the design, because the innovator would be able to charge a higher price and get a better return on its investment in innovation. By the same token, if there is another firm that is most likely to copy the innovation, and the innovator acquires that firm, the firm's incentive to innovate will increase because it would be able to appropriate more of the returns, including the returns that would otherwise accrue to the acquired rival firm. In addition, if the acquired firm is a competitor, the firm may also be able to charge a higher price following the merger, which further increases the return to innovation and makes the incentive to innovate stronger.

Arrow, on the other hand, focused on the fact that a firm in a competitive market has more to gain from innovation than does a monopolist. The return to innovation for a firm in a competitive market includes the profit that it 'steals' from other firms. For example, if a firm creates a better product, it will likely retain most of its current market share and it will take some market share from the other firms in the market. A monopolist, on the other hand, would not have the ability to take market share from other firms in the market—by definition, it is the only competitor-- and therefore if it did not expand the market, innovation would only cannibalize its own sales. The effect of 'stealing' market share from competitors creates a stronger incentive for the firm in a competitive market to spend resources on innovation compared to a monopolist. That is, RI can be higher for a firm in an unconcentrated market than for a monopolist.

The 'innovation diversion ratio' ("IDR") can be used to assess the 'business stealing' effect on the incentive to innovate.[12] The IDR measures the fraction of the extra profits a firm would earn from innovation that come at the expense of a rival. When firms A and B merge, the IDR for the effect of

the merger on A's incentive to invest in an innovation is calculated as the ratio between the profits that Firm B is expected to lose from the introduction of A's new product (i.e. sales that will be diverted to A's new product from B) and the additional profits that Firm A is expected to earn from its innovation. The profits that Firm B is expected to lose is higher the more substitutable A's new product is for B (so that the volume that B loses is higher). The higher the innovation diversion ratio, the larger the 'business stealing effect'—that is, when this ratio is 'high', a merger internalizes more of the sales that would be lost to the merging partner absent the merger, so that the incremental profit from innovation is lower with a merger, reducing the incentive to innovate. When the IDR is large, so is the risk that the merger will reduce innovation relative to no merger, all else equal.

Because of the opposite incentives from 'appropriability' and 'business stealing', the direction of the net effects of mergers on innovation incentives is theoretically ambiguous, even when only downstream market considerations are taken into account—the prospect of higher downstream prices following a merger can increase returns to innovation, while the merger can reduce innovation incentives because the merger eliminates the 'business stealing' reward to innovation effort.[13] Mergers can, however, also generate efficiencies (or synergies), which can increase merging firms' abilities and incentives to innovate by combining complementary R&D assets and capabilities or by increasing the extent to which the innovating firm appropriates the returns to its investment in innovation.

A merger combining firms' R&D assets and development programs can make the firms more efficient at developing new products or making product or process improvements, which can result in new innovations or faster commercialization. A merger may also allow firms to apply a more efficient production process to a wider sales base, which creates a stronger incentive to invest in process improvements. A merger that results in reduced incremental R&D costs improves the ability and incentive for the merging firms to innovate,[14] which not only tends to benefit consumers, but also helps offset any consumer harms from higher post-merger prices.[15]

A merger can also improve merging firms' innovation incentives by increasing appropriability of returns to innovation—that is, a merger can facilitate the internalization of returns to innovation that would otherwise be captured by other firms. One way this can occur is through internal knowledge diffusion. Firm A will have a stronger incentive to spend resources on innovation the more of the returns to its investment that it can appropriate. If merging partner B has a separate research program that can benefit from

A's R&D, through knowledge sharing the merger may allow A to appropriate more of the returns to its investment (because the benefit of A's R&D on B's product is internalized by the merged firm). While A could license its innovation to B without a merger, which would allow it to appropriate some of the benefits of its innovation that it transfers to B, a merger may nevertheless increase appropriation if A cannot extract all of the benefits of the R&D through arms-length licensing, which is often the case. Accordingly, for this effect to be merger specific, the knowledge generated by A's R&D must therefore not only be useful to B, it must also be the case that A could not be able to fully capture the benefits to B through licensing.[16]

In addition to allowing a firm to capture additional returns through *voluntary* knowledge diffusion to its merger partner, mergers can also internalize *involuntary* knowledge spillovers to other firms. An example of an involuntary knowledge spillover is a new discovery spread among the researcher community as a result of scholarly publications, or 'clusters' where companies located in close proximity learn from each other's successes and failures. Involuntary knowledge transfers also can occur as a result of employee mobility, where employees move from one company to another and bring their knowledge and skills with them. When other firms benefit from A's R&D through such spillovers, A does not appropriate all of the returns from its innovation. For example, through knowledge gained by spillovers, B can partially imitate A's product without infringing on its IP.[17] In such cases, a merger can internalize involuntary spillovers and increase the returns to A's R&D spending.[18] Internalization of knowledge spillovers may not be merger-specific if, for example, firms could form a research joint venture, which would not risk the loss of downstream price competition.[19] In general, when firms can appropriate returns to R&D by licensing IP and limiting spillovers without a merger, then the incremental benefits of a merger are weaker.

A newer set of economic models, building on the work of Schumpeter, Arrow, and others, was sparked by the European Commission's analysis of 'innovation spaces' in the Dow/DuPont merger. Federico et al (2017)[20] and (2018)[21] attempt to resolve the tension between the business-stealing, or cannibalization, effects and market power, or price coordination, effects of a merger on innovation incentives. [22] The question the authors ask is whether, in an oligopoly model where firms sell differentiated products, firms are likely to innovate more or less after they merge. These models were developed by the Commission's Chief Economist team contemporaneously with the Commission's review of the Dow/DuPont merger and appears to form at least part of the theoretical basis for the Commission's 'innovation spaces'

theory of harm in that merger.[23] The European Commission's review of the Dow/Dupont merger, as well as the Bureau's review of this merger, are discussed in more detail below.

The 'price coordination' effect in this model can either improve or diminish the merging firm's investment incentives—the merger increases the merged firm's profits whether it innovates or not. On the other hand, the 'innovation externality' (business-stealing) effect unambiguously reduces the merging firm's investment incentives. The net effect on the merging firm's innovation is therefore theoretically ambiguous and depends on the features of the market, including, among other things, the effectiveness of innovation effort, the cost of innovation, the nature of the demand function for the innovated product, the number of innovating competitors, and changes in the marginal cost of production.

To explore the impact on the merged firm's innovation incentives, Federico et al choose model parameters such that the 'price coordination' channel would necessarily increase the merged firms' incentive to innovate, but nevertheless find that the 'innovation externality' tends to dominate, such that the overall effect of a merger on innovation by the merging firms is negative. Furthermore, the negative effect on the merged firm's investment incentives was found to be stronger if the merging firms were close downstream competitors.

In the models considered by Federico et al, innovation efforts are 'strategic substitutes', in the sense that, when the merging firms reduce their innovation efforts, the efforts of non-merging firms would tend to increase. Accordingly, in theory, even if a merger reduces the incentive of merging firms to innovate, the net effect of a merger on total innovation by all firms is theoretically ambiguous. The authors numerically simulate their models and find that, even under assumptions that they call 'not highly restrictive', a merger results in lower overall innovation by the industry and reduces consumer welfare.[24]

Economists have subsequently developed several models that challenge the finding by Federico et al that most mergers reduce innovation and harm consumers. Denicolò and Polo (2018)[25] show that mergers do not necessarily reduce innovation by demonstrating that if the incremental cost of innovation does not increase too quickly at higher levels of innovation effort (i.e. returns to innovation effort do not diminish too quickly), then the merged firm may shut down one of the firm's research efforts and instead concentrate efforts on one of the merged firm's labs. This could

result in an increase in overall R&D by the merged firm, relative to pre-merger levels. Bourreau et al (2021)[26] introduce a 'demand expansion' effect, which is derived from the increase in demand for the merged firm's product from an innovation and is independent of the 'margin effect' that increases the firm's return to innovation through higher post-merger prices. The demand expansion effect can increase the merging firms' innovation levels, especially if the merger reduces production costs.

In a research note, RBB Economics (a European economics consultancy) notes that Federico et al's conclusion that overall industry innovation is reduced with a merger only occurs in cases where the number of firms in the market is 'low enough', and the critical number of competitors depends on the model parameters. The authors argue that under some parameter values, only a merger to monopoly would reduce overall innovation and harm consumer welfare.[27]

A) Summary of Some Lessons From Economic Models

The following summarizes some lessons from the models outlined above:

- A merger can reduce the merging firms' innovation incentives through a 'business-stealing' effect that internalizes the sales gains from the innovation that would have been 'stolen' from a competitor absent the merger. The innovation diversion ratio can be used to assess the magnitude of this effect.

- A merger that increases market power increases the merging firm's profit whether it innovates or not. The effect of increased market power from a merger on innovation incentives is theoretically ambiguous and can either increase or decrease innovation.[28]

- A merger can therefore increase or decrease merging firms' innovation efforts, ignoring efficiencies or synergies. Federico et al (2017) and (2018) find that mergers in concentrated markets generally reduce overall innovation (even accounting for increased innovation by non-merging firms), while other models such as Denicolò and Polo (2018) and Bourreau et al (2021) show that mergers can increase innovation, even absent efficiencies.

- A smaller number of non-merging (and potentially innovating) firms generally increases the risk that a merger will reduce innovation, but the 'critical' number competitors required to ensure that innovation does not decrease with a merger depends on the nature of demand

and costs and therefore the overall effects of a merger on innovation are very case-specific. In some cases, only a merger to monopoly or near-monopoly reduces innovation.

- A merger can improve innovation incentives if the merging firms can appropriate more of the returns to innovation, either through voluntary transfers of knowledge or internalization of involuntary spillovers. The appropriability benefits of a merger are less important the more firms can, without a merger, appropriate returns through a research joint venture, licensing of intellectual property rights, or other means. Appropriability benefits of mergers may not be merger-specific if the firms can capture returns to innovation through less anticompetitive means.

- A merger that results in a substantial lessening of competition may still, on balance, benefit consumers, even absent efficiencies. This could occur, for example, if the merging firm creates a new or improved product that benefits consumers and the merging firms can exercise a materially greater market power after they merge.

- A merger can reduce the costs of innovation by combining complementary R&D assets, which increases the merging firms' incentive to innovate.

- Increased appropriability and efficiencies achieved through the combination of innovation capabilities can offset the innovation-reducing effects of mergers.

3. Innovation Merger Challenges in Other Jurisdictions

Until recently, the US agencies and the European Commission mainly challenged mergers on innovation grounds in cases where products are already in later stages of development but not yet brought to market--so-called 'pipeline' products. Concerns about pipeline products can arise when a pipeline product in development by a firm is expected to compete with existing products or with other pipeline products of another firm.

This section provides an overview of the European Commission's analysis of the Dow/Dupont merger. An Appendix summarizes some other mergers challenged by the US agencies and the European Commission based on concerns about innovation effects.

Dow/DuPont was perhaps the most important innovation merger review undertaken by the European Commission.[29] The Commission's

review consisted of a number of steps: identifying innovation spaces and research targets on which each merging firm focuses; identifying overlaps and competitors for each of the identified 'innovation spaces', based on internal company documents and RFIs to other global R&D players; calculating patent shares based on quality; considering evidence from internal documents of a significant decrease in R&D capabilities post-merger, or discontinuation, delay, or reorientation of parties' overlapping lines of research and pipeline products; and analyzing efficiencies.[30]

A key component of the Commission's review of the innovation effects of the merger was its patent analysis. The Commission looked at patents corresponding to 'discovery' or 'research' stage of the R&D process and gathered patent data on the type of crop protection that was targeted by the research. It then estimated patent quality, based on forward citations (i.e., the number of citations in subsequent patents), since patents are very heterogeneous and most are never or rarely cited, and assessed quality based alternatively on internal and external citations. It then calculated quality-adjusted patent shares, which it benchmarked with various samples ('Top 50/25/10), or weights for patent quality, after adjusting shares for patent age since the actual quality of 'young' patents is understated by citation counts. Based on this analysis, the Commission found that the merging firms had patent shares ranging from 40% to 60% for insecticides, and 30% to 50% for selective herbicides (partly depending on internal or external citations). It also found that concentration indices were high.[31]

The parties argued that expected higher profits from the merger would incentivize more investment in innovation, which should be balanced against any negative effects of the merger on innovation. The Commission responded that the net effect of higher downstream profits on innovation is *a priori* ambiguous, since less competition in product markets increases (relative to pre-merger) firm profits if firms innovate and also if they do not innovate, and the overall effect depends on a number of factors. The model constructed by the Commission's Chief Economist Team (subsequently published in Federico, Langus, and Valletti (2017) and (2018)—discussed above), although not cited in the Commission decision, was claimed to demonstrate that business-stealing effects (which reduce innovation) tend to dominate 'market power' incentives (which may increase innovation), such that, absent synergies and increase appropriability, mergers reduce innovation and harm consumers for most model parameters.

4. Non-Price Effects in Canadian Merger Cases

Even prior to the 2022 amendments to the Act, the Competition Tribunal and the Supreme Court of Canada included non-price effects in merger analysis. A substantial lessening or prevention of competition is determined by whether the merger is likely to create, maintain or enhance the ability of the merged firm to exercise market power,[32] and market power is the ability to profitably influence price, as well as quality, variety, service, advertising, innovation or other dimensions of competition, the latter of which are referred to as non-price effects.[33] Non-price effects have featured in the analysis of SLPC in several litigated merger cases (under section 92), as well in abuse cases (paragraph 79(1)(c)). In all of the litigated merger cases, the Bureau's primary concerns in relation to SLPC have been about price increases, with non-price effects having a secondary role, but non-price effects were the key allegation in the *TREB* abuse of dominance case. In the recent *Secure* merger decision, the Commissioner argued non-price effects under section 92 and these effects were by far the largest part of the Commissioner's anticompetitive effects calculation for purposes of the Section 96 efficiencies trade-off.[34] The following is an overview of Canadian merger matters involving innovation and other non-price effects.

A) Thoma Bravo

In 2019 the Bureau reviewed a proposed transaction that would have combined what were effectively the only two oil reserves software products (MOSAIC and Val Nav) used by Canadian oil and gas companies.[35] Upon review, the Bureau had concerns about the likely price and non-price effects of the transaction. The Bureau found that the merging firms' two products were each other's closest competitors, and that they competed vigorously on both price and non-price dimensions, including product features, software updates, and customer service. The Bureau further concluded that competition led to the development of product quality and capability through software updates and releases. As evidence in support of its concerns about 'dynamic competition' and innovation, the Bureau referred to the fact that the companies monitored each other's product developments, including strengths and weaknesses, and targeted each other's customers with better pricing, service, and features. After finding that reserves software suppliers in the US and other countries were not sufficiently adapted for use in Canada and also finding significant barriers to entry, the Bureau concluded that the transaction would likely reduce the incentives of the companies to 'enhance and maintain' their reserves software in Canada, and in addition to this lost dynamic competition, the merger would likely have led to higher

prices and lower service quality. Thoma Bravo agreed to divest its MOSAIC software to an independent purchaser pursuant to a Consent Agreement.

The Bureau's brief position statement does not describe in any detail any economic analysis that it undertook in one of the very few mergers it has reviewed that feature concerns about innovation and quality. The impression left by the Bureau's position statement is that any merger involving a merger to monopoly, where the merging firms compete in innovation, is likely to result in a substantial lessening of competition on the basis of concerns about the loss of dynamic competition and lower product quality.

B) Dow/DuPont

In 2017 the Bureau also reviewed the merger of Dow and DuPont.[36] The Bureau's concerns were focused on cereal broadleaf herbicides and pre-seed burn-off additives for cereal crops in Western Canada, and acid copolymers and ionomers in a North American market. The merging firms and Bayer AG were the three principal suppliers of broadleaf herbicides in Western Canada, and the Bureau concluded that entry and expansion would not effectively constrain the negative effects of the merger on competition for these products in the relevant time frame (two years). The Bureau also concluded that competition would be harmed because the loss of innovation rivalry would reduce the parties' incentives to innovate in broadleaf herbicides. The Bureau also had concerns about the effects of the merger on pre-seed burn-off additives and acid copolymers but did not indicate a concern with innovation with respect to these products.

The Bureau' position statement indicated that it relied on a 'formal economic model' to assess innovation effects, which relied primarily on qualitative information. The qualitative information used by the Bureau included party documents describing the parties' innovation assets, strategic objectives, commercialization timelines, the likelihood of commercialization, and the expected impact of innovations if commercialization were successful. The Bureau's statement also indicated that it used quantitative analysis including demand estimation and merger simulation to predict quantifiable anticompetitive effects, although this work might have been done for the purposes of the section 96 efficiencies trade-off. To resolve the Bureau's concerns, the parties agreed to divest DuPont's global cereal herbicides business to FMC Corporation.[37]

In a speech,[38] John Pecman, the then-Commissioner of Competition, highlighted the fact that the Bureau did not use the idea of 'innovation spaces' (also known as 'innovation markets') which had been used by the

European Commission to assess the merger. According to the Commissioner, the European Commission's approach of using 'innovation markets' does not require "linking innovative activity to specific innovative products that benefit consumers; instead, the argument holds that the reduction in innovative activities itself constitutes harm to competition."[39] Commissioner Pecman's observation is important because, under an 'innovation markets' approach, "the link between consumer benefit and innovation need not even be developed."[40]

While the Bureau has not provided any detail on its economic theory, its 'formal economic model' may have been based on an Arrow-type replacement or cannibalization effect where the merger reduces innovation incentives if at least one of the merging firms would capture substantial sales and margin from its merger partner if it innovated pre-merger but considers these diverted sales to be cannibalized post-merger. There is no indication in the Bureau's public statements that it considered whether the transaction would result in merger synergies that would enhance innovation incentives or reduce the costs of R&D. Efficiencies arguments were considered by the US DOJ and the European Commission in their respective reviews of the merger.

C) Bayer AG/Monsanto

In September 2016, Bayer agreed to acquire Monsanto. In May 2018, the Commissioner and Bayer entered into a Consent Agreement to resolve the Commissioner's concerns that the acquisition would likely substantially lessen and prevent competition in the supply of seeds and seed products for canola, soybeans, carrots, and other products, although the Bureau's primary focus appeared to be on products related to canola, which is Canada's largest crop in terms of acreage.[41] Bayer and Monsanto were two of the three leading suppliers of canola seeds in Canada, and there appeared to be a fringe of four other suppliers. According to the Bureau, seed companies invest heavily in the development of varieties that deliver higher yields, better drought and disease resistance, and better structural properties to assist with harvest. Seed firms also develop herbicide tolerance traits for canola.

The Bureau concluded that the acquisition would result in an SLPC in canola seeds and traits because it would eliminate rivalry between the merging companies, which would likely result in higher prices and a decrease in the rate of innovative activity directed towards the development of improved canola varieties. The Bureau also found that Bayer would have

an incentive to increase royalty rates to other seed company competitors for the use of Monsanto's Roundup Ready trait, which would raise competitors' costs. In reaching its conclusions, and to design the appropriate remedy, the Bureau 'relied heavily' on a merger simulation model, which it did not describe in any detail. The Bureau's statement does not specifically mention that this model was used to analyze the effects of the transaction on innovation incentives.

D) Rogers-Shaw

In the litigated *Rogers-Shaw* merger, the Commissioner's SLPC claim related mainly to price effects, but it also included allegations that the merger, even with the divestiture of Shaw's discount Freedom Mobile cellular telephone business to Videotron, would slow the introduction of 5G.

The Commissioner made several other claims about the prevention of competition relating to non-price effects, including that Shaw was a maverick disruptor and innovator, was on a growth trajectory, had planned to purchase 3500 MHz of spectrum to begin offering 5G services, and planned to expand its network and enter new markets.[42] The Tribunal agreed with the Commissioner that Shaw, had the merger never been proposed, would likely have acquired 3500 MHz spectrum, and with this spectrum would eventually have launched full 5G service.[43] The issue for the Tribunal was whether, with the divestiture to Videotron, Freedom Mobile would still likely launch full 5G service within two years of when Shaw would have done so and in roughly the same areas.[44]

The Tribunal rejected the Commissioner's argument that Freedom Mobile—which would be transferred by Shaw to Videotron before Rogers purchased the remainder of Shaw—would be a less effective competitor than Shaw, including in relation to the rollout of 5G. The Commissioner claimed that Videotron would have smaller scale than the combined Freedom and Shaw Mobile, which would reduce its ability to invest in and expand its network.[45] The Tribunal, however, considered that Videotron was likely to have more wireless revenue and subscribers and more spectrum such that Freedom would not have smaller scale under Videotron's ownership[46]. The Tribunal also found that, relative to Shaw, Videotron would have a more advantageous cost base with which to compete, which would allow it to better invest in and expand its network[47]. Videotron also obtained its own 3500MHz spectrum licences in the recent set-aside auction[48], and was already operating and building a 5G network in Quebec.[49]

For these reasons, the Tribunal concluded that, although Freedom's 5G rollout may take somewhat longer under Videotron, "consumers are not likely to be materially worse off with respect to 5G services, as a result of the Merger and Divestiture."[50] The Tribunal found the evidence about the timing of Freedom's 5G rollout and the nature of additional services under Shaw that was put forth by the Commissioner was 'thin', and ultimately "the Tribunal [did] not consider that any delays that might be associated with Videotron's rollout of full 5G services, relative to Shaw's corresponding deployment, warrant substantial weight in the assessment of whether competition is likely to be prevented or lessened substantially."[51] The Tribunal also found that "Videotron, which is in the process of rolling out 5G services in Quebec, would likely do the same in Alberta and British Columbia, within a time frame that will ensure that competition is not substantially prevented or lessened."[52]

To date, this decision appears to be the only 'loss' suffered by the Bureau in a merger case involving non-price or innovation effects.

E) Secure/Tervita

In Secure, the Commissioner alleged that both price and adverse non-price effects were likely to result in an SLPC. The alleged price effects were price increases for various oilfield waste disposal services provided by the parties. The alleged non-price effect related to the amenities that oil and gas customers would have lost as a result of Secure's plans to close duplicative waste-disposal facilities following the merger with Tervita.

In agreeing with the Commissioner that the merger would likely result in an SLPC under section 92, the Tribunal made passing reference to unspecified non-price effects.[53] The Commissioner also claimed that the merger would cause consumer harm from post-merger facility closures, which are non-price effects, for the purposes of the Section 96 efficiencies trade-off. The Commissioner's expert quantified these harms, and while the Tribunal discounted many of the quantified non-price effects alleged by the Commissioner under section 96, the Tribunal did find that the harms from non-price effects were significantly larger than the harms from price effects. Ultimately, the Tribunal concluded that Secure failed to establish that efficiencies will be greater than, and offset, the effects of any SLPC.[54]

F) Toronto Real Estate Board

The Commissioner filed an application under the abuse of dominance provisions for an order that would prohibit the Toronto Real Estate *Board*

("*TREB*") from engaging in allegedly anticompetitive acts in relation to the supply of residential real estate brokerage services in the Greater Toronto Area. This case is interesting for the analysis of non-price effects because the Commissioner successfully demonstrated an SLPC case based almost exclusively on qualitative evidence.

The Commissioner's claim was that TREB restricted access to Multiple Listing Service ("MLS") information on the virtual office websites ("VOW") of its broker members and restricted the ways in which members could display and use that information (the "VOW Restrictions"). The Tribunal agreed with the Commissioner that the VOW Restrictions constituted a practice of anticompetitive acts under paragraph 79(1)(b) and that these anticompetitive acts were having and were likely to have the effects of preventing competition under paragraph 79(1)(c). With respect to the latter, the Tribunal's main finding was the VOW restrictions had substantially reduced the degree of non-price competition in the supply of MLS-based residential real estate brokerage services in the GTA, including substantial impacts on innovation, quality, and the range of real estate brokerage services offered in the GTA[55].

In response to the Commissioner's SLPC evidence, TREB argued that 'substantiality' can be assessed with qualitative evidence "only … when these effects cannot be quantitatively estimated, and that the Commissioner has the burden to demonstrate that the effects cannot be quantified before turning to qualitative evidence."[56] The Tribunal rejected this argument, citing the Supreme Court of Canada:

> In *Tervita*, the Supreme Court clearly distinguished between the measurement of anti-competitive effects under section 92 and the balancing exercise under section 96 on efficiencies. Quantification is only mandatory for the latter. In the context of a merger, the Court found that the "the statutory scheme does not bar a finding of likely substantial prevention where there has been a failure to quantity deadweight loss" (Tervita at para 166). The Tribunal is of the view that such analysis similarly applies to a finding of substantial prevention of competition in the context of an abuse of dominant position.[57]

The Tribunal clarified that the Commissioner can meet the SLPC requirements through either qualitative or quantitative evidence, or both, but also that satisfying the requirement that the Commissioner must adduce 'sufficiently clear and convincing evidence' to prove the SLPC on a balance of probabilities may be more difficult to meet with qualitative evidence because such evidence may be less 'probative' than quantitative evidence.

Furthermore, the Tribunal could draw an adverse inference "if evidence that would or could be available has not been adduced",[58] which presumably means that the Tribunal could draw an adverse inference if the Commissioner tried to prove an SLPC with qualitative evidence when quantitative evidence to prove the same point was available. Furthermore, the Tribunal recognized that "there may be a greater need for the Commissioner to rely on qualitative evidence in innovation cases like this one. This is because dynamic competition is generally more difficult to measure and to quantify."[59]

Most of the Commissioner's evidence, which the Tribunal relied on in reaching its conclusion on SLPC was based on the testimony of VOW entrants. ViewPoint, the largest independent real estate brokerage in Nova Scotia, testified that it needed the VOW data feed, especially data about sold and recently sold properties to compete effectively using its brokerage model[60]. TheRedPin testified that the VOW restrictions have limited its ability to "get better traction as a brokerage"—it believes that, among other things, access to the disputed data would let it offer better and more services and attract more people to its brokerage.[61] According to Realosophy, another virtual brokerage, the absence of sold data was constraining Realosophy's growth: "…its inability to obtain a data feed with sold and "pending sold" data limits Realosophy's ability to provide services to consumers online and to its clients."[62]

Based on this testimony, the Tribunal concluded that "the VOW Restrictions have had a significant adverse impact on entry into, and expansion within, the Relevant Market by web-based and other brokerages that would like to offer full-information VOWs in the GTA."[63] Specifically, the Tribunal noted that "those restrictions have prevented ViewPoint, a very disruptive and substantial potential competitor, from entering into the Relevant Market; and have prevented two additional disruptive brokerages, TheRedPin and Realosophy, from expanding within that market."[64]

The Tribunal considered and rejected TREB's claims that the Commissioner should have been required to adduce quantitative evidence, arguing that "if full-information VOWs were as much of a disruptive technology as the Commissioner has suggested, the impact of their presence on residential real estate brokerage markets in the United States and in Nova Scotia would be observable,"[65] and noting that the Commissioner's evidence did not include any empirical analysis of the effects of full-information VOWs in other markets. The Tribunal, however, agreed with the opinion of the Commissioner's expert that to conduct such empirical analysis it would

have been necessary to obtain a "tremendous amount" of data, and would have required a great deal of effort, for results that may not have been reliable or particularly informative given the need to control for local market factors.[66] As such, the Tribunal declined to draw an adverse inference from the Commissioner's failure to conduct an empirical assessment.

Whether prohibition of the VOW Restrictions had the anticipated effects of increasing competition in the Toronto real estate brokerage market is unclear. However, it seems that many of the entrants who said they would compete in the market without the restrictions have not yet done so. As of November 2023, ViewPoint appears to only list properties in Nova Scotia. The search bar on www.viewpoint.ca says 'Enter any address, PID, street, town or city in Nova Scotia', and the main header on this site says "Search Nova Scotia Real Estate: See real-time data on all 6,967 MLS® listings and 674,092 properties in Nova Scotia."[67] TheRedPin left the market in June 2018.[68] Realosophy's website lists six agents,[69] and Realosophy had five properties listed on Realtor.ca for sale as of August 4, 2023.[70] If these entrants have not in fact entered the Toronto brokerage market in a significant way, and no other effective VOW competitors have entered the market, perhaps the Tribunal will reconsider its exclusive reliance on qualitative evidence in establishing a SLPC in future cases.

G) Summary of Innovation Concerns in Canadian Mergers

To this point, we have limited guidance with respect to the treatment of innovation and other non-price effects in merger analysis by the Competition Bureau and Tribunal. With the exception of *Rogers-Shaw*, none of the key innovation cases were litigated, and all we know from public sources is what we see in Bureau position statements, which unfortunately do not provide a lot of detail on the Bureau's analysis. What we may infer is the following:

- To date, innovation effects have rarely been the Bureau's primary concern when assessing a merger. Concerns about innovation appear to have been mainly an 'add-on' when the Bureau also had more traditional concerns about the price effects of mergers in specific product markets. The general pattern in the Bureau's theory of harm related to innovation seems to have been that the merging firms had very high market shares in concentrated markets, and they innovated to improve their products, such that—presumably based on 'business stealing' effects—a merger would likely result in reduced innovation in addition to upward pressure on prices. It is unclear whether

innovation concerns resulted in the Bureau challenging a merger that it would not have challenged on traditional price-effects grounds. The incremental impact of innovation concerns may have been that in some cases, such as Dow/DuPont and Bayer/Monsanto, remedies were expanded to include R&D facilities.

- The Bureau appears to have rejected the European 'innovation spaces' (or 'innovation markets') approach to addressing innovation concerns. That said, the Bureau's statements indicated generalized concerns about innovation where the merging firms competed in downstream markets, rather than concerns with specific 'pipeline' products. It is unclear whether the Bureau has ruled out applying this theory of harm in future cases. To the extent the merging parties may have provided evidence on these points in efforts to resist R&D divestitures, the Bureau's position statements justifying the remedies in the Consent Agreements are silent.

- The Bureau's position statements describing its analysis in innovation mergers provide no guidance on how any claim about cost reductions or improved appropriability (which potentially enhance the incentive to innovate) would impact a competitive effects analysis under section 92 or the efficiencies trade-off under section 96 (which will be repealed if Bill 56 is enacted into law). Neither efficiencies nor appropriability are discussed in any of the Bureau statements in the three merger cases discussed above.

- The Tribunal's SLPC findings in *TREB* relied almost exclusively on the testimony of prospective entrants, who said they would enter the market if it were not for the alleged anti-competitive practices. It's not clear that any of the entrants who testified that they would enter have done so in any meaningful way since the VOW restrictions were removed some time after 2017. It may be the case that traditional brokerages improved the quality of their offerings, or reduced their commissions, in response to actual entry by VOWs or the threat of entry. i.e., that they responded to the potential for innovation by innovating themselves. This would be a good case for a retrospective analysis, which would include consideration of whether the Tribunal's acceptance of the entrants' testimony and its finding that time-consuming and costly empirical analysis need not be undertaken was prudent.

5. Merger Enforcement and Innovation in the Canadian Economy

According to a recent report from TD Bank,[71] "when adjusting for the rising population, Canada's real GDP per capita has been deteriorating for many years." The report notes that although Canada's GPD per capita was about $4,000 more than the average advanced economy at the beginning of the 1980s, Canada's advantage relative to other advanced economies had disappeared by 2000 and was significantly lower than the average GDP per capita among its peers, and especially relative to the US, by 2023[72]. Since the oil shock in 2014-2015, Canadian real GDP grew by only 0.4% per year, compared to an average growth of 1.4% in advanced economies[73]. As the underlying reasons for this lagging performance, the TD Bank report points to weak investment, including in intellectual property, and a decline in R&D spending. The report notes that "(o)ver the last 20 years, Canadian R&D investment has been in perpetual decline, while all other G7 countries have seen increases to varying degrees. This issue is being compounded by already-low absolute levels of R&D investment as a per cent of GDP. As of 2021, Canadian R&D spending accounted for roughly 1.7% of GDP, half of the current U.S. share and lower than most other countries."[74] The OECD forecasted in 2021 that Canada's annual growth in real per capita GDP would be only 0.7% from 2020-2030, last among advanced countries, and growth to 2060 would be only 0.8% per year, also last among advanced countries.[75]

Innovation is widely understood to be a key driver of improved productivity and standards of living. As noted by Globerman and Emes, "(i)nnovation is an important contributor to productivity, and productivity underlies improvements in standards of living."[76] Globerman and Emes explain that "it is widely acknowledged that Canada's innovation performance has been, and remains, relatively weak by international standards."[77] They show that Canada's competitiveness, as measured by the Global Competitiveness Index ("GCI"), has been weak, compared to many other countries.[78] The Conference Board of Canada notes that "(u)ntil recently, Canadian businesses have had little competition, high resource prices, generally good trade with the United States, and other favourable conditions. This has meant that they haven't had to innovate as much as businesses in other countries to be profitable…But a low-innovation, high standard of living equilibrium is unsustainable. Volatile resource prices, changing demographics, and increasing economic protectionism are exposing Canada's business innovation weakness and generating pressure to become more innovative in the coming years."[79] According to a June 2023 Senate Report, citing Statistics

Canada, between 2018 and 2020, Canada's ratio of domestic expenditures on R&D to GDP was about 33% lower than the OECD average, and in 2021 Canada had the lowest number of resident patent applications per million inhabitants in the G7.[80]

Is there scope for further amendments to the Act or changes to Bureau enforcement practices to help improve innovation in the Canadian economy? The Bureau has challenged few mergers on innovation grounds relative to the European Commission and the US agencies.[81] Of course, the European and US economies are much larger than Canada's, so we would not expect the same number of merger challenges. Nevertheless, the fact that the Bureau has challenged only three mergers on innovation grounds over the last six years, only one of which was not also challenged by the European Commission and the US agencies, seems like a small number. Is there a problem of underenforcement of innovation mergers in Canada?

Part of the answer as to why there are relatively few innovation merger challenges in Canada may be that, since Canadian firms spend less on R&D compared to most other countries, there are simply fewer firms in Canada for which innovation is an important competitive variable. As such, it may make sense that fewer mergers of Canadian firms involve innovation concerns.[82] The Council of Canadian Academies notes that the issue may be the structure of the Canadian economy: "Canada's traditional R&D gap relative to the United States is explained by the greater specialization of the U.S. manufacturing sector in higher-technology, R&D-intensive industries than is the case for Canadian manufacturing."[83]

Others have pointed to Canadian competition law and enforcement as a reason for poor R&D performance by Canadian firms. Hearn, in Policy Options, claims that "(o)ur nation has long struggled with below-average entrepreneurship rates, low business entry and exit rates, stifled innovation and high consumer prices. A key cause of these trends is industry concentration from decades of unchallenged merger waves."[84] Bester finds that "evidence suggests that current approaches to merger law in Canada and abroad have underestimated the harms these transactions can pose to competition and overestimated the effectiveness of the remedies intended to mitigate those harms", and "there is evidence that the harms arising from anticompetitive mergers have been discounted, the potential benefits generated by them overstated and that the competition law remedies applied to address identified harms have been ineffective."[85] And of course, the Competition Bureau is seeking to strengthen its powers under the Competition Act, eliminate the Section 96 efficiencies defence, and lighten its burden

to prove a substantial lessening or prevention of competition, including by adopting a US-style structural presumption, at least in part because of concerns that current legislation does not allow it to properly enforce the Act in matters involving non-price effects.[86] The federal government's Bill-56, introduced on September 21, 2023, would repeal the section 96 efficiencies defence, as recommended by the Bureau, if enacted into law.

Is there evidence that the Act does not give sufficient powers to the Bureau, or that a more stringent competition law is required to encourage innovation in the Canadian economy? Or, more generally, is there evidence that there is significant underenforcement of the merger (or other) provisions of the Act in relation to mergers that may reduce innovation? It is difficult to identify a merger that was not challenged by the Bureau on innovation grounds because of deficiencies in the merger provisions of the Act, or with the Bureau's enforcement decisions. Baziliauskas and Sanderson[87] argue that major revisions are not needed to address alleged underenforcement of the merger provisions of the Act, including with respect to the analysis of non-price effects, although some changes to the law and enforcement practice could be considered. These changes include some of the clarifying amendments to Section 93 as suggested by Professor Iacobucci,[88] increasing Bureau funding to limit concerns about the costs of litigation and complexity, enabling more merger retrospectives (which could be extended to abuse of dominance and other provisions for matters involving innovation concerns), and extending the Section 97 limitation period beyond one year.[89]

The following are some possible reasons for more lenient enforcement of mergers in Canada where innovation may be a concern, relative to some other countries, which may also explain why there are seemingly relatively few mergers challenged on innovation grounds in Canada.

A) Smaller Canadian Firms Lag in Commercializing Their Innovations

When considering the causes of poor innovation performance by Canadian companies, Globerman and Emes note that "the available evidence suggests that the weak link in Canada's innovation process is the limited success that start-up companies have in using new technologies to become anchor firms in a growing innovation ecosystem."[90] A 2016 report by the Government of Canada notes that "Canada has a strong record in starting businesses, with 78,000 new companies established in 2013. However, we have less success in developing companies to a global scale. Growing firms must have the ability to source top talent from anywhere in the world.

Start-up companies, in particular, must also have enough financing to get them through critical stages of their development." [91]

In a 2021 letter to Ontario innovation policymakers, the C.D. Howe Institute argued that "that there is no lack of good Canadian ideas, research, or access to intellectual property (IP). The failure, instead, stems from a lack of success in turning these ideas and IP, and the skills of Canadians, into commercial successes…Part of this commercialization deficit is connected to Canada's difficulty growing smaller businesses into larger ones."[92] The letter also says that "(u)nder-investment by Canadian firms and governments, relatively low levels of angel and seed capital financing, the size of Canada's own market, protectionism and over-regulation in many sectors combine to stifle innovation. One can add our habit of policies that tend to favour businesses that stay small."

The OECD notes that "investment markets are not always as competitive as is sometimes assumed. In that case, a larger firm might also have the advantage of having better access to funding to enable the firm to bring the product to market."[93] Furthermore, nascent firms may lack the ability to develop their products compared to larger, more established firms, who may have more experience and expertise in later stages of development.[94]

This suggests one reason why it may be prudent for the Bureau to be cautious when challenging acquisitions of smaller competitors on innovation grounds: Canadian start-ups have historically been relatively unsuccessful at developing their products in part because of insufficient financing and expertise at commercializing their innovations, and acquisitions by competitors can help overcome these challenges.

B) Canada's Intellectual Property Rights Regime

As noted above, if a firm cannot capture enough of the returns from its investment in innovation, it will have a weaker incentive to innovate, and a merger can strengthen this incentive. For example, if a firm cannot capture all of the returns to its investment in intellectual property through arms-length licensing, a merger can facilitate the appropriation of additional returns through the voluntary transfer of knowledge to a merger partner. Similarly, mergers can allow a firm to capture some of the returns to knowledge creation that would otherwise spill over to other firms. When intellectual property rights are strong, firms can capture more of the returns to their investment without a merger (this is one of the factors enforcement agencies consider when assessing whether a merger increases innovation incentives), and when property rights are weak, mergers can facilitate the

capture of more of the returns to innovation. In its Dow/DuPont decision, the European Commission noted that "(h)igh appropriability supports innovation incentive by ensuring that the successful innovator can capture a large share of the innovation's value….However, if imitation concerns are properly dealt by with effective IPRs, then this channel is largely irrelevant."[95]

An assessment of Canada's intellectual property rights regime is well beyond the scope of this commentary. However, some commentators have argued that Canada's intellectual property protections are weak relative to other countries. For example, a Fraser Institute study of Canadian intellectual property rights in the biopharmaceutical industry finds that:

> The intellectual property environment in Canada clearly has consequences for this country's global competitiveness. Overall, there are numerous deficiencies that weaken intellectual property protections within Canada relative to what is provided in other industrialized nations. The result is an IP regime characterized by significant uncertainty and instability for biopharmaceutical firms. Weaknesses such as onerous patentability requirements, insufficient enforcement mechanisms, and inadequate anti-counterfeiting measures place Canada in the company of Mexico, Malaysia, China, and Russia in the IP Index rankings.[96]

Canada is one of 22 countries on the 2023 'Watch List' of the Office of the United States Trade Representative ("USTR").[97] A country is placed on the Priority Watch List or Watch List if "particular problems exist in that country with respect to IP protection, enforcement, or market access for U.S. persons relying on IP."[98] The report notes that "Canada made significant progress in intellectual property (IP) protection and enforcement with the implementation of important IP provisions in the United States-Mexico-Canada Agreement (USMCA)"[99] but "(d)espite this progress, various challenges to the adequate and effective protection of IP rights in Canada remain."[100] In an international comparison of the effectiveness of intellectual property frameworks, the Global Innovation Policy Center ranked Canada 16th, behind most other 'high-income' OECD members.[101] A Canadian Senate report said that witnesses "expressed concerns that Canadian companies face challenges when competing globally due to a lack of protection in areas such as data and intellectual property."[102]

As discussed in the Economics section, mergers can improve incentives for firms to innovate by increasing the extent to which they can appropriate the returns to their investments in innovation, by, for example, voluntarily transferring knowledge to their merger partner and thereby internalizing more of the returns to innovation, or by capturing some of the returns to

the firm's investment that involuntarily spill over to other firms. When intellectual property rights are well protected, firms can capture more of the returns to their investments without a merger, and as a result the innovation-enhancing benefits of a merger tend to be weaker. If a firm can already capture most of the returns to its IP by licensing to other firms or can limit knowledge spillovers to other firms because its IP rights are protected, then a merger provides fewer benefits in the form of appropriability of returns to innovations.[103] When IP rights are relatively weak, mergers can act as a substitute for IP rights by allowing firms to appropriate more of the returns to innovation. Thus, to the extent that IP rights in Canada are weak, a more lenient merger policy may be warranted as a way to increase appropriability of investments in innovation.

C) The Efficiencies Defence and Producer Surplus

The Competition Act's Section 96 efficiencies defence places more weight on producer surplus in the assessment of the effects of a merger compared to most other jurisdictions. This should imply that some mergers that cause innovation concerns that would be blocked in the US and Europe under a consumer welfare standard would, because of section 96, be allowed in Canada, and not only because fixed cost savings (including savings in R&D expenditures) to producers are balanced against harms to consumers. Under a total welfare standard, higher producer profits resulting from higher post-merger prices, which occur at the expense of consumer welfare, are not anticompetitive effects in the trade-off. These higher profits also allow firms to appropriate more of the returns to their innovation investments, which, as explained above, may improve investment incentives.[104] A total surplus standard under Section 96 (which would be repealed if Bill 56 is enacted) would therefore justify more lenient enforcement relative to other countries, or at least potentially explain why the Bureau challenges fewer mergers based on innovation concerns relative to other countries.

A corollary of this logic is that, if the federal government's recent Bill to eliminate the efficiencies defence is enacted, some mergers that improve firms' innovation incentives may be blocked. In particular, Bill 56 would repeal the efficiencies defence but would not, as recommended by the Bureau,[105] explicitly incorporate efficiencies as a section 93 factor. The latter would allow for consideration of efficiencies in the determination of whether a merger is likely to substantially lessen or prevent competition. If efficiencies considerations are not added to the Act or are not read in by the Tribunal, enactment of Bill 56 would allow the Tribunal to issue an order to block even a merger that benefits consumers through efficiencies, including

through the introduction of new products. That is, mergers that result in an increase in market power but also result in lower prices and/or better products for consumers may potentially be blocked if Bill 56 is enacted.[106]

Of course, retaining a total surplus standard would also permit mergers that harm consumers and reduce firms' innovation incentives. This situation may occur if a merger reduces the firms' production costs by enough to offset harms to consumers, including likely harms from lost innovation to the extent these are proven. If the section 96 efficiencies defence is to be repealed, in light of Canada's poor R&D record it would be prudent to consider a carve-out for mergers that harm consumers (or just substantially lessen or prevent competition) but nevertheless improve firms' investment incentives.

D) Summary of Innovation Merger Enforcement in Canada

Merger enforcement, especially when it involves innovating firms, does not occur in a vacuum. Canadian real GDP growth, and therefore growth in Canadian living standards, has lagged compared to other countries, and is expected, according to the OECD among others, to continue to be slow. An important cause of Canada's lagging performance is that Canadian businesses do not innovate and commercialize their innovations as much as businesses in other countries do. Although mergers between competitors can stifle innovation in some cases, they can also improve firms' abilities and incentives to innovate because of R&D complementarities, improved appropriability of the returns to innovation, and market power effects.

Certain features of the Canadian landscape have been identified by other commentators as contributing to Canada's lagging R&D performance, two of which are discussed above—namely, the difficulties faced by Canadian start-ups and other small firms in commercializing their innovations, and Canada's relatively weak intellectual property rights. Mergers can help overcome these challenges, and it would be prudent for the Bureau and Tribunal to acknowledge, or continue to acknowledge, this fact.

The economic modelling of innovation effects is in its relative infancy, and there is enough uncertainty among economists and their existing models to warrant caution when enforcing merger laws. There appears to be consensus among economists that enforcement agencies should not take a hands-off approach to mergers for fear of harming innovation incentives, especially in pipeline-pipeline or pipeline-product mergers when there are few firms with 'pipeline' products in development. However, given that mergers may increase the ability and incentive for firms to innovate, an

aggressive approach to mergers on the basis of harms to innovation is also not warranted, especially when a merger will not create a monopoly.

APPENDIX: MERGERS INVOLVING INNOVATION EFFECTS IN THE US AND EUROPE

In 2014, the European Commission challenged the merger of Medtronic—the incumbent producer of drug-coated balloons for the treatment of vascular diseases—and Covidien, which had a product in late development that would compete with Medtronic's product, also in late development, and for which there was only one other credible competitor.[107] The Commission also challenged the merger of Pfizer and Hospira in 2015. Pfizer had an infliximab biosimilar drug in testing that would compete with Hospira's existing product, and there was only one other competitor developing a similar product.[108] The companies divested Pfizer's pipeline product to resolve the Commission's concerns.

The above cases are examples of 'pipeline to product' mergers, where the concern revolved around a product that was under development as a competitor to an existing product. On the other hand, concerns around 'pipeline to pipeline' mergers revolve around the amalgamation of two R&D streams. Examples of 'pipeline to pipeline' mergers that have been challenged by the European Commission include *Novartis/GSK Oncology Business* in 2015, where the Commission had concerns about overlaps in innovative cancer treatments.[109] GSK and Novartis were two of only three firms with an existing product or product in development for skin cancer and ovarian cancer. The European Commission's primary concern was that the merger would have reduced Novartis' incentive to develop and commercialize its own product in competition with GSK, whose drugs were closer to the market. An additional concern was that development efforts for treatments for other cancers in earlier stages of development would suffer because Novartis would rationalize its research efforts in favour of GSK's products in development. The Commission's concerns were resolved through divestiture of Novartis' licensed MEK inhibitor to the owner of the drug (Array) for which Novartis had the exclusive license. *J&J/Actelion* in 2017 was a merger of firms with treatments for insomnia in Phase II trials, and the European Commission was concerned about a reduction in the number of orexin-antagonistic (the mechanism of action) products that would likely enter the insomnia treatment market.[110]

In a 'pipeline to pipeline' case not involving pharmaceuticals or medical devices, the Commission challenged the merger of *General Electric and Alstom* in 2015.[111] At the time of the merger, GE had started to commercialize its 'very large' heavy-duty gas turbine, and Alstom had a similar product in late development. The Commission concluded that the merger would

have caused GE to discontinue Alstom's R&D efforts, including development and commercialization, in heavy-duty gas turbines ("HDGT"). The Commission also had a broader set of innovation concerns besides HDGT, so that the remedy included a broad range of innovation assets, including Alstom's technology for heavy-duty gas turbines, existing upgrades and the technology for future upgrades, several Alstom engineers, and two test facilities for HDGT. This case is an early example of the Commission's concerns about the effects of combining firms with overlaps in innovation capabilities.

A) Mergers Involving Innovation Capabilities

Under the economic theories of the effects of mergers on innovation, the incentives for firms to innovate depend on the extent of downstream competition between the merging firms, either currently or in future markets, as well as on synergies that the firms may realize post merger. That is, the change in firms' incentives to innovate is driven by competitive constraints in identified downstream markets—a merger can strengthen the incentive to innovate by increasing returns because the merger increases appropriability (i.e., the firm captures profit that would have been competed away by its merger partner) or by increasing prices in the downstream market (i.e., more market power). On the other hand, a merger can weaken innovation incentives because of the 'cannibalization' effect in downstream markets. These downstream markets can be either existing markets, or future markets that do not yet exist, but are likely to exist when innovation bears fruit. As such, these theories have typically been used to assess the innovation effects of mergers involving late 'pipeline' products that are in the final development stage, where specific innovation efforts are linked to specific downstream markets.

US cases involving overlapping innovation capabilities include *Nielsen/Arbitron* in 2013, which raised concerns about audience measurement services. The specific concern was that the two merging firms were, because of their strength in traditional television and radio rating services, in the best position to enter into cross-platform ratings services.[112] The FTC found that the merging companies were the only firms with large and demographically representative panels and had already initiated development of cross-panel products. In this case, the FTC was concerned that the merger would diminish future competition in an innovative product. The transaction was cleared subject to the divestment and licensing of assets that would allow a competitor to replicate Arbitron's cross-platform rating services.

Applied Materials/Tokyo Electron in 2015 involved two of the largest suppliers of tools for manufacturing semiconductor chips.[113] The DOJ concluded that the merging firms were the two firms most capable of developing leading-edge semiconductor tools for high-volume manufacturing (HVM). The DOJ identified overlaps in specific tools, including pipeline-to-product overlaps. The DOJ also had broader innovation concerns relating to dynamic competition. DOJ economists explained that "the Division found that the existing overlap between the specifically identified tools is emblematic of a broader competition to develop new deposition and etch semiconductor tools."[114] In particular, the DOJ's theory of harm was that the merger would combine the firms that were most likely "to develop and manufacture the *next generation* [emphasis added] of HVM deposition and etch tools"[115], and as such would have eliminated the competition between the two companies for being selected as the future development partner for down-stream suppliers, as well as any eventual competition between the companies' future products.

In *Bayer/Monsanto* in 2018, the DOJ found that the merger would reduce current and dynamic competition in several areas. In addition to harm from the loss of price competition, the DOJ alleged harm to innovation.[116] The remedies in this case included the divestment of a comprehensive package of R&D assets to a third party (BASF).

In *Halliburton/Baker Hughes* in 2016,[117] the merging firms were large global suppliers of oilfield services. The DOJ had concerns about anticompetitive harm in 23 distinct markets, and also had broader concerns about the loss of dynamic competition, since the merging firms (and a third competitor, Schlumberger) competed directly to drive technological innovation. The firms abandoned the transaction after the DOJ filed suit.[118]

Western Digital/Hitachi in 2011 was a merger of two of the three leading suppliers of hard-disk drives (HDDs). Producers continuously innovated to increase HDD storage capacity. While the European Commission did not specifically articulate a specific innovation concern in this case, concerns about innovation were part of its assessment of efficiencies and the design of the remedy.[119]

In *Deutsche Boerse/NYSE Euronext* in 2012, the merging firms were competitors in exchange-traded European financial derivatives. The European Commission concluded that the merging firms were close competitors for new product introductions and innovation, including in technology, processes, and market design. The merging firms competed to introduce new

and improved contracts, and their incentive to innovate was driven in part by actual or potential competition.[120]

ENDNOTES

[1] Andy Baziliauskas is an economist specializing in competition matters at Charles River Associates. The opinions and conclusions expressed in this article are solely those of the author and should not be attributed in any way to any other individual or organization. The author would like to thank Frank Mathewson, Susan Hutton, Margaret Sanderson, Dimitri Dimitropoulos, Lisa Stockley, and Rahim Lila for their valuable comments and suggestions. Any remaining mistakes are the responsibility of the author.

[2] See e.g. James Mancini, "Considering non-price effects in merger control—Background note by the Secretariat" (2018), online (pdf): *Organisation for Economic Co-operation and Development* <one.oecd.org/document/DAF/COMP(2018)2/en/pdf>.

[3] *Ibid* at para 9.

[4] *Ibid* at para 16.

[5] Competition Bureau Canada, "Merger between Dow and Dupont" (27 June 2017), online: <ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/education-and-outreach/position-statements/merger-between-dow-and-dupont> [Bureau Dow-Dupont Statement].

[6] Competition Bureau Canada, "Bayer AG's acquisition of Monsanto Company" (30 May 2018), online: <ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/education-and-outreach/position-statements/bayer-ags-acquisition-monsanto-company> [Bureau Monsanto Acquisition Statement].

[7] Competition Bureau Canada, "Competition Bureau statement regarding Thoma Bravo's acquisition of Aucerna" (30 August 2019), online: <ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/education-and-outreach/position-statements/competition-bureau-statement-regarding-thoma-bravos-acquisition-aucerna> [Bureau Aucerna Acquisition Statement].

[8] A total surplus standard also permits mergers that harm consumers and reduce firms' incentives to innovate, which would occur when merger-induced production cost reductions offset harms to consumers from higher prices.

[9] Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (New York: Harper and Brothers, 1942).

[10] Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention* in Universities-National Bureau Committee for Economic Research & Committee on Economic Growth of the Social Science Research Council, eds, *The Rate and Direction of Inventive Activity: Economic and Social Factors* (New Jersey: Princeton University Press, 1962) at 609-25.

[11] Carl Shapiro, "Competition and Innovation Did Arrow Hit the Bull's Eye?" in Josh Lerner & Scott Stern, eds, *The Rate and Direction of Inventive Activity Revisited* (Chicago: University of Chicago Press, 2012) at 361-404.

[12] Joseph Farrell & Carl Shapiro, "Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition" (2010) 10:1 The B.E. Journal of Theoretical Economics art 9.

[13] There is still a lively debate about whether mergers in highly concentrated markets should be presumptively illegal, or whether the merging firms should bear more of the burden of demonstrating that their merger is not anti-competitive. Even the pro-enforcement side concedes that some mergers may increase firms' incentives to innovate but argues that it is often more likely that mergers reduce these incentives. For the pro-enforcement side, see Jonathan Baker, "Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation" (2012) 74 Antitrust LJ 575 & Shapiro, *supra* note 11. On the other side, see Bruno Jullien & Yassine Lefouili, "Horizontal Mergers and Innovation" (2018) 14:3 Journal of Competition Law & Economics 364.

[14] See Giulio Federico, Fiona Scott Morton & Carl Shapiro "Antitrust and Innovation: Welcoming and Protecting Disruption" (2020) 20:1 Innovation Policy and the Economy 125.

[15] The Competition Bureau's *Merger Enforcement Guidelines* (ss 12.17-12.18) contain a section on gains in dynamic efficiency "including those attained through the optimal introduction of new products, the development of more efficient productive processes, and the improvement of product quality and service." This appears to contemplate innovation efficiencies that benefit consumers.

[16] Pierre Régibeau & Katharine E. Rockett, "Mergers and Innovation" (2019) 64:1 The Antitrust Bulletin 31 at 39.

[17] Federico, Scott Morton & Shapiro, *supra* note 14 at 133.

[18] Régibeau & Rockett, *supra* note 16 at 39-40.

[19] Federico, Scott Morton, & Shapiro, *supra* note 14 at 133.

[20] Giulio Federico, Gregor Langus & Tommaso Valletti, "A simple model of mergers and innovation" (2017) 157:C Economics Letters 136.

[21] Giulio Federico, Gregor Langus & Tommaso Valletti, "Horizontal Mergers and Product Innovation" (2018), online: <papers.ssrn.com/sol3/papers.cfm?abstract_id=2999178>.

[22] A related model developed before Dow/DuPont is Massimo Motta & Emanuele Tarantino "The Effect of a Merger on Investments" (2016), CEPR Discussion Paper No. DP11550.

[23] See Daniel Coublucq, David Kovo & Tommaso Valletti, *Innovation Concerns in European Merger Control: Dow/DuPont and Bayer/Monsanto* in John Kwoka Jr., Tommaso M. Valletti & Lawrence J. White, eds, *Antitrust at a Time of Upheaval: Recent Competition Policy Cases on Two Continents* (Competition Policy International, 2023).

[24] Federico, Langus & Valletti, *supra* note 21 at 14.

[25] Vincenzo Denicolò & Michele Polo, "Duplicative research, mergers and innovation" (2018) 166:C Economics Letters 56.

[26] Marc Bourreau, Bruno Jullien & Yassine Lefouili, "Mergers and Demand-Enhancing Innovation" (2018, revised 2021) Toulouse School of Economics Working Paper No 18-907, online: <www.tse-fr.eu/publications/mergers-and-demand-enhancing-innovation>.

[27] "An innovative leap into the theoretical abyss: Dow/Dupont and the Commissioner's novel theory of harm" (5 July 2017), online: *RBB Economics,*

Brief 54 <www.rbbecon.com/publication/article/an-innovative-leap-into-the-theoretical-abyss-dow-dupont-and-the-commission-s-nov> at 3-4.

[28] The Competition Bureau recognizes in its Intellectual Property Enforcement Guidelines (para 71) that "there may be instances when creating or increasing market power is justified because of the efficiencies created."

[29] *Commission v Dow/Dupont*, M.7932, [2004], online (pdf): <ec.europa.eu/competition/mergers/cases/decisions/m7932_13668_3.pdf> [*Dow/Dupont*].

[30] Coublucq, Kovo & Valletti, *supra* note 23.

[31] *Ibid.*

[32] *Tervita Corp v Canada (Commissioner of Competition)*, 2015 SCC 3 at para 44.

[33] *Ibid.*

[34] For a discussion of non-price effects in litigated cases in Canada, see Andy Baziliauskas & Margaret Sanderson, "Should Canada Overhaul the SLPC Test For Mergers?", Can Competition L Rev [forthcoming in 2023].

[35] Bureau Aucerna Acquisition Statement, *supra* note 7.

[36] Bureau Dow-Dupont Statement, *supra* note 5.

[37] The merged firm also agreed to divest the DuPont portfolio of cereal broadleaf and pre-seed herbicides in Canada, along with associated chemical ingredients, and Dow's global acid copolymer and ionomer business to resolve the Bureau's concerns.

[38] John Pecman, "Growing the new economy: the integral relationship between competition and innovation" (Remarks delivered at the Commissioner of Competition Vancouver Competition Policy Roundtable, Vancouver, British Columbia, 18 January 2018), online: <www.canada.ca/en/competition-bureau/news/2018/01/growing_the_new_economytheintegralrelationshipbetweencompetition.html>.

[39] *Ibid.*

[40] *Ibid.*

[41] Bureau Monsanto Acquisition Statement, *supra* note 6.

[42] *Canada (Commissioner of Competition) v Rogers Communications Inc and Shaw Communications Inc*, 2023 Comp. Trib. 1 at para 145, 163, aff'd 2023 FCA 16.

[43] *Ibid* at para 185.

[44] *Ibid* at para 187.

[45] *Ibid* at para 265.

[46] *Ibid* at para 268.

[47] *Ibid* at para 269.

[48] *Ibid* at para 272.

[49] *Ibid* at para 277.

[50] *Ibid* at para 278.

[51] *Ibid.*

[52] *Ibid* at para 5.

[53] *Canada (Commissioner of Competition) v Secure Energy Services Inc*, 2023 Comp. Trib. 02 at para 366: "In sum, the Tribunal finds that, in the 136 SLC Markets, the anti-competitive effects resulting or likely to result from the Merger

have the required magnitude in terms of price increases and reduction of non-price competition for waste disposal services. The Tribunal also finds that Secure will have the ability to impose such effects in a material part of the Relevant Markets and in respect of a material volume of sales, and that it will have the ability to sustain material price increases and material reductions in non-price benefits of competition for a duration of approximately two years or more."

[54] *Ibid* at para 710.

[55] *The Commissioner of Competition v The Toronto Real Estate Board*, 2016 Comp. Trib. 7 at para 4.

[56] *Ibid* at para 469.

[57] *Ibid*.

[58] *Ibid* at para 470.

[59] *Ibid* at para 471. The Tribunal went on to find that "when dealing with innovation, reliable statistical or empirical evidence is sometimes not available and the Commissioner may need to resort to more qualitative tools and instruments to demonstrate the competitive effects of a challenged conduct. Such evidence can take the form of business documents, witness statements and testimonies, industry analyses, etc. (*ibid*).

[60] *Ibid* at para 511.

[61] *Ibid* at para 524.

[62] *Ibid* at para 528.

[63] *Ibid* at para 550.

[64] *Ibid* at para 551.

[65] *Ibid* at para 653.

[66] *Ibid* at para 655.

[67] Accessed on 4 November 2023.

[68] Romana King, "Opinion: The End of TheRedPin" (15 June 2018), online (blog): *Zolo* <www.zolo.ca/blog/the-end-of-theredpin>; Tess Kalinowski, "Online brokerage TheRedPin closes its doors", *Toronto Star* (15 June 2018), online: <www.thestar.com/business/real_estate/2018/06/15/online-brokerage-theredpin-closes-its-doors.html>.

[69] Realosophy, "Agents" (last visited: November 14, 2023), online: <www.realosophy.com/agents>.

[70] Realtor.ca, "MLS & Real Estate Map" (last visited: August 4, 2023), online: <www.realtor.ca/map#Sort=6-D&OrganizationId=216900&IncludePins=1&Currency=CAD>.

[71] Marc Ercolao, "Mind the Gap: Canada is Falling Behind the Standard-of-Living Curve" (13 July 2023), online: *TD Bank* <economics.td.com/ca-falling-behind-standard-of-living-curve>.

[72] *Ibid*.

[73] *Ibid*.

[74] *Ibid*.

[75] Yvan Guillemette & David Turner, "The Long Game: Fiscal Outlooks to 2060 Underline Need for Structural Reform" (October 2021), online (pdf): *Organisation for Economic Co-operation and Development* <www.oecd-ilibrary.

org/deliver/a112307e-en.pdf?itemId=%2Fcontent%2Fpaper%2Fa112307e-en&mimeType=pdf>.

[76] Steven Globerman & Joel Emes, "Innovation in Canada: An Assessment of Recent Experience" (15 January 2019), online: *Fraser Institute* <www.fraserinstitute.org/studies/innovation-in-canada-an-assessment-of-recent-experience> at 5. See also "Research to Insights: Investment, Productivity and Living Standards" (1 September 2022), online: *Statistics Canada* <www150.statcan.gc.ca/n1/pub/11-631-x/11-631-x2022004-eng.htm>; "The Future of Productivity", online: *Organisation for Economic Co-operation and Development* <www.oecd.org/economy/the-future-of-productivity.htm>.

[77] Globerman & Emes (*ibid*) at i.

[78] GCI combines 114 different country attributes that are important for productivity, including attributes that are grouped into an 'innovation'. Indicators included in the 'innovation' pillar are: 1) capacity for innovation; 2) the quality of scientific research institutions; 3) company spending on R&D; 4) university-industry collaboration; 5) government procurement of advanced technology; 6) the availability of scientists and engineers and 7) patent applications; Globerman & Emes (*ibid*) at 5.

[79] "Innovation Report Card 2021" (updated 28 June 2021), online: *The Conference Board of Canada* <www.conferenceboard.ca/hcp/innovation-report-card-2021/>.

[80] Canada, Senate of Canada, *Needed: An Innovation Strategy for the Data-Driven Economy* (June 2023), (Chair: Pamela Wallin) at 10-11 [Senate Report]. Figure 1 shows that in 2021, Canada had 123 resident patent applications per million inhabitants, well behind the G7 average of 620.

[81] Gilbert & Green find that between 2004 and 2014, the Department of Justice and the FTC have identified innovation concerns in about a third of their merger challenges. See Richard Gilbert & Hillary Greene, "Merging Innovation into Antitrust Agency Enforcement of the Clayton Act" (2015) 863:6 Geo Wash L Rev 1919 at 1921 (SSRN: <ssrn.com/abstract=2716224>).

[82] Many of the mergers challenged by the US and the European Commissions are in pharmaceuticals and medical devices, possibly because firms in these industries have well-defined and organized R&D programs so that it is relatively straightforward to identify 'pipeline' products as well as the downstream products with which pipeline products would likely compete. There just aren't that many large Canadian firms in these industries.

[83] "Paradox Lost: Explaining Canada's Research Strength and Innovation Weakness" (2013), online (pdf): *Council of Canadian Academies* <cca-reports.ca/wp-content/uploads/2018/10/paradoxlost_en.pdf> at 7.

[84] Denise Hearn, "Lack of competition blunts Canadian innovation" (24 February 2022), online: *Policy Options* <policyoptions.irpp.org/magazines/february-2022/competition-hurts-innovation-canada/>.

[85] Keldon Bester, "Merger Policy for a Dynamic and Digital Canadian Economy" (26 September 2022), online: *Centre for International*

Governance Innovation <www.cigionline.org/publications/merger-policy-for-a-dynamic-and-digital-canadian-economy/>.

[86] Competition Bureau Canada, "Examining the Canadian *Competition Act* in the Digital Era, Submission by the Competition Bureau" (8 February 2022), online: *Innovation, Science and Economic Development Canada* <www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04621.html>; and Competition Bureau Canada, "The Future of Competition Policy in Canada, Submission by the Competition Bureau" (15 March 2023), online: *Innovation, Science and Economic Development Canada* <ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/promotion-and-advocacy/regulatory-adviceinterventions-competition-bureau/future-competition-policy-canada>. For a discussion of the Bureau's proposal's see Baziliauskas & Sanderson, *supra* note 34.

[87] Baziliauskas & Sanderson, *supra* note 34.

[88] Edward M. Iacobucci, "Examining the Canadian Competition Act in the Digital Era" (27 September 2021), online (pdf): <examining-the-canadian-competition-act-in-the-digital-era-en-pdf.pdf>.

[89] In a letter to the Minister of Innovation, Science and Industry, the heads of the US antitrust enforcement agencies note that "We have found that it is important for our agencies to have the authority to address unlawful mergers even after they have been consummated. In our experience, it is a valuable aspect of the United States' regime that there is no statute of limitations for suing to block transactions, and that were there one it would materially impede our ability to stop mergers that ultimately lessened competition." See United States of America, Federal Trade Commission, *Re: Ministry's Public Consultation Paper on the Future of Competition Policy in Canada*, (letter), authored by Lina Khan & Jonathan Kanter (31 March 2023), online (pdf): <www.justice.gov/atr/page/file/1578296/download>.

[90] Globerman & Emes, *supra* note 76 at 22.

[91] Innovation, Science and Economic Development Canada, "Positioning Canada to Lead: An Inclusive Innovation Agenda" (last modified 26 July 2016), online: *Government of Canada* <ised-isde.canada.ca/site/innovation-better-canada/en/long-read>.

[92] Daniel Schwanen, "Canada's Commercialization Deficit" (17 December 2021), online: *C.D. Howe Institute* <www.cdhowe.org/intelligence-memos/daniel-schwanen-canadas-commercialization-deficit>.

[93] "Start-ups, Killer Acquisitions and Merger Control" (2020), online (pdf): *Organisation for Economic Co-operation and Development (OECD)* <www.oecd.org/daf/competition/start-ups-killer-acquisitions-and-merger-control-2020.pdf> at 33.

[94] *Ibid*; See also Charles Plant, "The Missing Ingredient: Solving Canada's Shortcomings in Growing Large Firms and Increasing Productivity" (August 2023), online (pdf): *C.D. Howe Institute* <www.cdhowe.org/sites/default/files/2023-08/Commentary_645.pdf>; Jerome Gessaroli notes that, according to a 2020 survey, 60% of Canadian start-ups viewed being bought out as a

long-term goal and argues that "[r]egulations limiting acquisitions could eliminate a lucrative exit strategy for many start-up founders and their investors, with the unintended consequence of reducing the incentive for investors to provide the venture capital that is usually vital for a start-up's success" in Jerome Gessaroli "Don't let Competition Act changes suffocate innovation, productivity", *Financial Post*, online: <financialpost.com/opinion/opinion-dont-let-competition-act-changes-suffocate-innovation-productivity>.

[95] *Dow/*Dupont, *supra* note 29; Also:
[A] market is more likely to be characterised by high appropriability if the benefits from introduction of new products are protected by patents and strong IPRs. This means that the original innovator can be expected to reap the benefits from its innovation, with no significant spillovers to its competitors. Formal patent rights may be complemented by strategies to lengthen the effective economic life of a patent used in defense against generic entry for off-patent products to further raise the degree of appropriability. (Annex 4, para 95).

[96] Kristina M. L. Acri, nee Lybeck, "Intellectual Property Rights Protection and the Biopharmaceutical Industry: How Canada Measures Up" (24 January 2017), online: *Fraser Institute* <www.fraserinstitute.org/studies/intellectual-property-rights-protection-and-the-biopharmaceutical-industry-how-canada-measures-up>.

[97] Office of the United States Trade Representative, "2023 Special 301 Report", online (pdf): <ustr.gov/sites/default/files/2023-04/2023%20Special%20301%20Report.pdf> at 5. There are seven countries on the Priority Watch List, including China, India, and Russia. The only European country on the Watch List is Bulgaria.

[98] *Ibid* at 6.

[99] *Ibid* at 73.

[100] *Ibid*.

[101] "International IP Index, 2023 Eleventh Edition", online: *Value Ingenuity* <www.valueingenuity.com/ip-index/>; Sean Speer & Michael Robichaud "Fixing Canada's weak patent regime is better than handouts for spurring innovation" *Financial Post* (5 July 2016), online: <financialpost.com/opinion/fixing-canadas-weak-patent-regime-is-better-than-handouts-for-spurring-innovation>. According to Speer & Robichaud, "Onerous patentability requirements, poor pharmaceutical-related enforcement, and a lack of patent-term restoration are just some of the weaknesses with Canada's IP policy. And even after a round of IPR reforms, Canada's global ranking remains somewhere between Poland and Taiwan and well below most other nations with comparable levels of GDP per capita."

[102] Senate Report, *supra* note 80 at 14.

[103] In Dow/DuPont, the European Commission found that IP rights in the crop protection industry were strong, and as a result firms can expect to reap the returns to their investments in innovation even without a merger: "the transaction is unlikely to significantly increase appropriability on the basis of the mechanisms identified in the economic literature." *Dow/Dupont*, *supra* note 29 at Annex 4, s 5.

[104] As noted above, the Bureau's Intellectual Property Enforcement Guidelines recognize that increasing market power can be justified because of the efficiencies created. The IPRGs also state that "the Bureau considers both the short-term and long-term implications of conduct when analyzing efficiencies in cases involving IP. Efficiencies are explicitly recognized in sections 90.1 and 96 of the Act in the context of agreements or arrangements among competitors and mergers." Competition Bureau Canada, "Intellectual Property Enforcement Guidelines" (11 August 2023), online: *Innovation, Science and Economic Development Canada* <ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/education-and-outreach/intellectual-property-enforcement-guidelines> at para 71.

[105] Competition Bureau Canada, "Examining the Canadian *Competition Act* in the Digital Era, Submission by the Competition Bureau" (8 February 2022), online: *Innovation, Science and Economic Development Canada* <ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/promotion-and-advocacy/regulatory-adviceinterventions-competition-bureau/examining-canadian-competition-act-digital-era#sec02_1> at s 2.1.

[106] A merger that increases the merging firms' market power may nevertheless benefit consumers if variable cost savings are of sufficient magnitude that the resulting downward pricing pressure offsets the upward pricing pressure resulting from an increase in market power. Consumers may also benefit from a merger that increases firms' market power if the merger results in the introduction of new or improved products.

[107] *Commission v Medtronic/Covidien*, COMP/M.7326, [2014] Office for Publications of the European Union, L-2985 Luxembourg, online (pdf): <ec.europa.eu/competition/mergers/cases/decisions/m7326_20141128_20212_4138173_EN.pdf>.

[108] *Commission v Pfizer/Hospira*, COMP/M.7559, [2015] Office for Publications of the European Union, L-2985 Luxembourg, online (pdf): <ec.europa.eu/competition/mergers/cases/decisions/m7559_20150804_20212_4504355_EN.pdf>.

[109] *Commission v Novartis/GlaxosmithKline Oncology Business*, COMP/M.7275, [2015], online (pdf): <ec.europa.eu/competition/mergers/cases/decisions/m7275_20150128_20212_4158734_EN.pdf>.

[110] *Commission v J&J/Actelion*, M.8401, [2017], online (pdf): <ec.europa.eu/competition/mergers/cases/decisions/m8401_740_3.pdf>.

[111] *Commission v General Electric/Alstom (Thermal Power—Renewable Power & Grid Business)*, M.7278, [2015], online (pdf): <ec.europa.eu/competition/mergers/cases/decisions/m7278_6808_3.pdf>.

[112] "Nielsen Holdings N.V., and Arbitron Inc., In the Matter of" (last updated 2 April 2014), online: *Federal Trade Commission* <www.ftc.gov/legal-library/browse/cases-proceedings/131-0058-nielsen-holdings-nv-arbitron-inc-matter>.

[113] US, Office of Public Affairs, *Applied Materials Inc. and Tokyo Electron Ltd. Abandon Merger Plans After Justice Department Rejected Their Proposed Remedy*, (News Release), (27 April 2015) online: *US Department of Justice* <www.justice.

gov/opa/pr/applied-materials-inc-and-tokyo-electron-ltd-abandon-merger-plans-after-justice-department>.

[114] Nicholas Hill, Nancy L. Rose & Tor Winston, "Economics at the Antitrust Division 2014–2015: Comcast/Time Warner Cable and Applied Materials/Tokyo Electron" (2015) 47 Rev Ind Organ 425, online (pdf): <economics.mit.edu/sites/default/files/publications/RIO-2015.pdf> at 433.

[115] *Ibid* at 434.

[116] "U.S. v. Bayer AG, et al." (updated 30 June 2019), online: *Antitrust Division, US Department of Justice* <www.justice.gov/atr/case/us-v-bayer-ag-and-monsanto-company>.

[117] US, Office of Public Affairs, *Justice Department Sues to Block Halliburton's Acquisition of Baker Hughes*, (News Release), (6 April 2016) online: *US Department of Justice* <www.justice.gov/opa/pr/justice-department-sues-block-halliburton-s-acquisition-baker-hughes>.

[118] US, Office of Public Affairs, *Halliburton and Baker Hughes Abandon Merger After Department of Justice Sued to Block Deal*, (News Release), (1 May 2016) online: *US Department of Justice* <www.justice.gov/opa/pr/halliburton-and-baker-hughes-abandon-merger-after-department-justice-sued-block-deal>.

[119] EU, European Commission, *Mergers: Commission clear Western Digital's Acquisition of Hitachi's hard disk drive business subject to conditions*, (News Release), (23 November 2011) online: <ec.europa.eu/commission/presscorner/detail/en/IP_11_1395>.

[120] *Commission v Deutsche Borse/NYSE Euronext*, COMP/.6166 [2012], online (pdf): <ec.europa.eu/competition/mergers/cases/decisions/m6166_20120201_20610_2711467_EN.pdf>.