

ANALYSIS GROUP ECONOMIC, FINANCIAL and STRATEGY CONSULTANTS

# Forum

Spring 2019

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From Our CEO

When might consumer surveys provide a more accurate picture of product substitutability than typical market share measures in merger reviews? Why are “no-poach” clauses in franchise agreements drawing increasing scrutiny from antitrust regulators? How are data science tools being used to predict the onset of a particularly difficult-to-diagnose autoimmune disorder?

These are a few of the many complex and fascinating topics explored in the current issue of *Forum*. In the past year, talented employees from across our 14 offices spanning North America, Europe, and Asia have collaborated regularly to help our clients with business, litigation, and regulatory matters in virtually every sector of the global economy.

Other developments described in this issue include the effects of a landmark pharmaceutical antitrust case on class certification in future matters of this kind; issues that US states should consider when assessing cap-and-trade programs intended to reduce greenhouse gases; the increasing attention being paid to valuation methodologies in international arbitrations; and the potential tax implications of “smart” contracts. Also included is a brief summary of Analysis Group’s annual Law & Economics Symposium, which covers current topics in the life sciences.

Our firm continues to grow, and we remain committed to the distinctive, collaborative culture that allows us to draw on the best ideas for our clients’ success. I hope you enjoy this issue.

  
**MARTHA S. SAMUELSON,**  
CEO AND CHAIRMAN

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# The “Tyranny of Market Shares”: Incorporating Survey-Based Evidence into Merger Analysis

Surveying consumers to better understand the real-world choices they make when evaluating competing products or services can give merger authorities deeper insights into competitive effects.

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ADAPTED FROM “THE TYRANNY OF MARKET SHARES: INCORPORATING SURVEY-BASED EVIDENCE INTO MERGER ANALYSIS” BY REBECCA KIRK FAIR, RENE BEFURT, AND EMILY COTTON, *CORPORATE DISPUTES*, JULY–SEPTEMBER 2018.



For regulatory authorities worldwide, a central issue in determining whether to allow a merger to proceed, and under what conditions, is understanding how competition may change post-merger. During their evaluation, regulators such as the Department of Justice (DOJ) and the Federal Trade Commission (FTC) in the US, the Canadian Competition Bureau, and the Directorate-General for Competition (DG Comp) of the European Commission, rely heavily on public or internal measures of revenue or unit shares to evaluate potential competitive effects.

Because such measures are often readily available and relatively straightforward to apply, it is tempting to use them to make assumptions about substitutability – that is, how sales may be redistributed across remaining competitors following a merger. The 2010 update to the DOJ’s Horizontal Merger Guidelines underscores the importance of determining substitutability and diversion ratios post-merger, as a measure of the closeness of competition.

However, traditional measures of market share may reflect either overly broad or overly narrow market definitions, or may simply be a poor reflection of competition. These measures only track the aggregated results of consumers’ purchasing decisions, whereas a more accurate understanding of substitutability patterns for specific customer segments may be gained by examining the reasons behind these decisions.

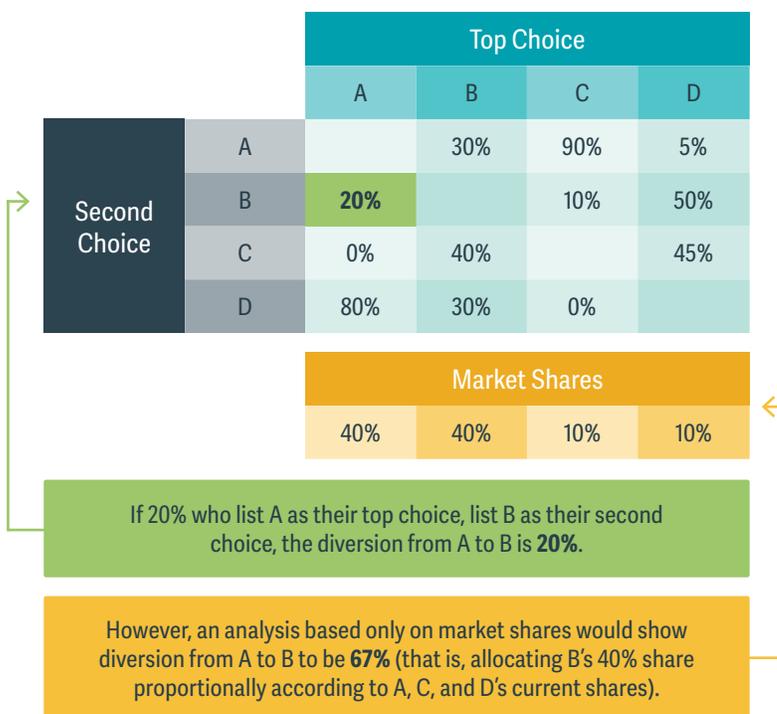
Purchasers make their decisions based on how well a product or a service meets their specific needs. While “best price” may certainly be among those needs, other factors are often

involved. (See sidebar.) Quality, availability, experience, level of service, comfort, ease of doing business – the list can be quite long, and the interplay of factors quite complex. Consideration of the complexity of these decisions can reveal that competing products may actually be poor substitutes for one another, even when both are popular and generate large revenues for the competing companies offering them.

In our experience, a user or consumer survey, when expertly designed and rigorously administered, is exceptionally well suited for helping to sort out these kinds of interrelated influences. By providing a better understanding of the decisions and processes behind consumers’ purchasing choices, a survey can help develop a more accurate market definition, and better illuminate the potential competitive effects of a merger.

Consider an industry in which companies A and B each account for 40% of revenue in a particular product category, and C and D account for 10% each. In this scenario, analyses relying on reported shares of sales from public sources may initially consider a merger of A and B to be problematic (because they are the two largest competitors), but an acquisition of the smaller company C by A to be fine.

However, some customer subsegments may view A and C to be closer competitors than A and B – these customers consider C, rather than B, to be their “second choice.” (See figure.) Shares based on industry reports or generally tracked statistics, rather than customer survey responses, may not capture these dynamics.



An example of putting this theory into action can be seen in the 2016 Fnac/Darty decision. There, the French Competition Authority (FCA) broke new ground by including both online and offline retail sales of consumer electronics within the same market, rather than just relying on geographical distribution of “brick-and-mortar” stores.

To better understand the nature of competition between online and offline distribution channels, the FCA first commissioned a survey of consumers to study consumers’ shopping habits. It then used the survey results, along with other evidence, to devise a weighted scoring method for calculating market shares and concentration measures, taking into account the relative competitive effects of online vs. offline sales. Ultimately, the FCA allowed Fnac to acquire Darty, but only conditional on the divestiture of a handful of stores in catchment areas that the FCA deemed insufficiently competitive post-merger.

In the litigation world, cases involving trademark infringement, patents, false advertising, collusive behavior, and employment-related class actions have increasingly relied on survey results to illuminate choice decisions. As part of the merger review process, these established survey methods can provide a similar level of insight into relevant competitive dynamics and substitutability. ■

## Using Survey Data to Assess Hospital Mergers

DOV ROTHMAN, MANAGING PRINCIPAL

The extent to which enrollees of commercial health insurers consider merging hospital systems to be close substitutes is an important consideration in assessing potential competitive implications of hospital mergers.

The “diversion ratio” between any two hospitals – the fraction of patients who would go from one to the other if one were no longer available – reflects the extent to which consumers consider the hospitals to be close substitutes. Patient choice models can be used to estimate “choice probabilities,” which can then be used to estimate diversion ratios.

In estimating choice probabilities, it is important to account for patients having different preferences – some patients will care most about going to a hospital that is close to home, while others may care more about specialized services, or the condition of the hospital’s facilities, or a hospital’s reputation. If choice probabilities do not take into account patient heterogeneity, the estimated diversion ratios can be misleadingly high or low.

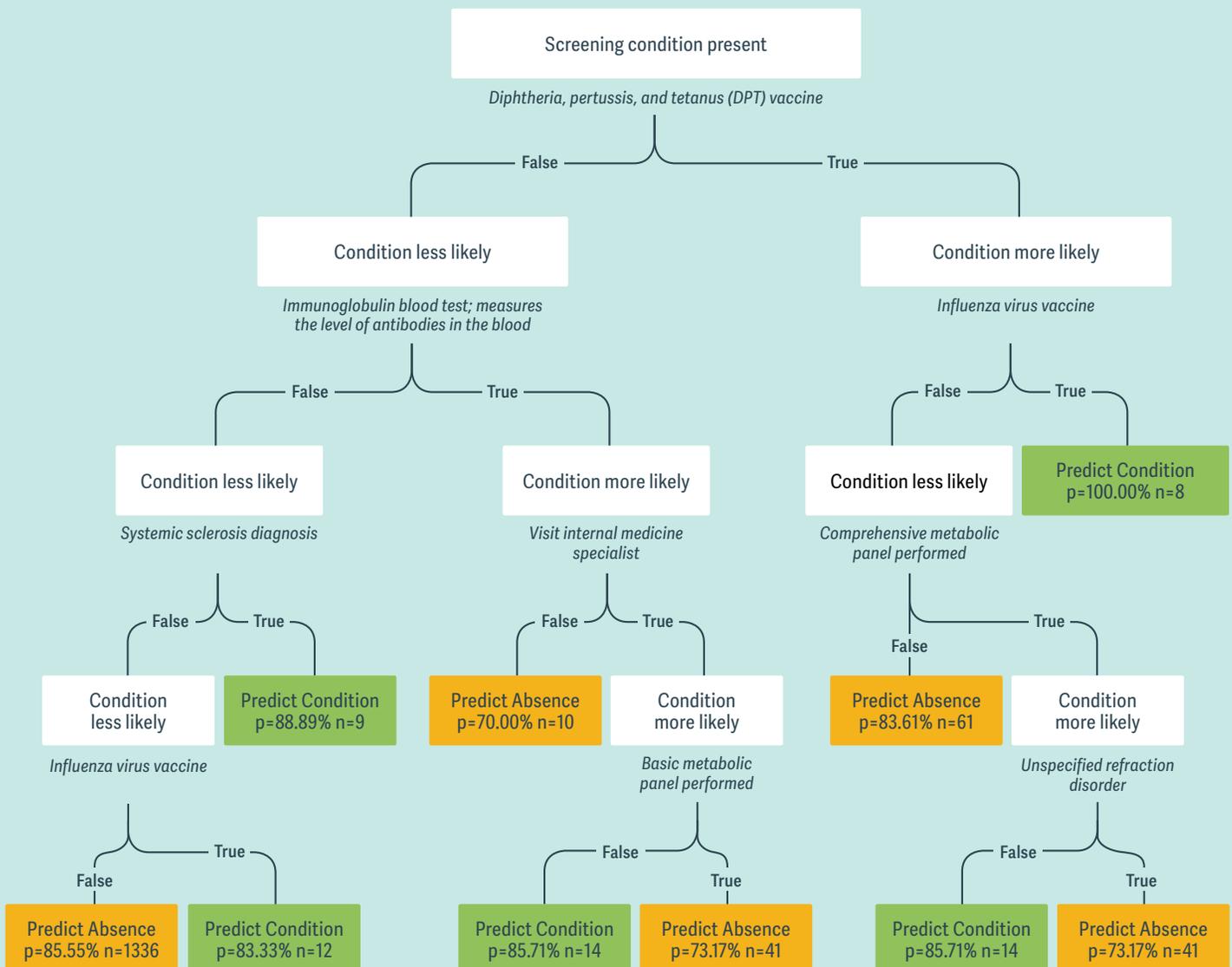
Patient choice models normally are estimated using hospital discharge data, but survey data can also be used to provide more information about individuals and elicit more information about preferences. Survey data can enable the economist to control for demographic factors such as income and education, as well as for stated preferences such as importance of hospital reputation or convenience. Doing so can allow for more flexible diversion ratios that better account for the potential that patients have different preferences for different types of hospitals.

# Using Machine Learning to Estimate the Prevalence and Onset of a Disease

Machine learning tools can be used to detect previously unobserved relationships among different kinds of data. This was an important consideration for an Analysis Group team – Managing Principal James Signorovitch, Principal Jimmy Royer, Manager Irina Pivneva, and Associates Tom Cornwall and Jutong Pan – tasked with estimating the probability of the onset of a difficult-to-diagnose disorder, as well as the true prevalence of this disorder in the population at large. The team constructed an optimal classification tree (OCT) model to analyze data from both health care claims and electronic medical records (EMRs), which was critical for a disease whose symptoms often overlap with those of other diseases.

The team’s estimation model, pictured below, sorts through a number of predictors – for example, whether a particular patient had undergone an immunoglobulin test or visited an internal medicine specialist. The colored boxes (the “leaves” at the end of each “branch”) denote both the probability (p) of developing the condition (either green or yellow) based on the preceding series of decisions, and the number (n) of instances on which that probability is based.

Work of this kind can give health care providers a starting point for more effective diagnostic and therapeutic progress. ■



# What's in the Record? Implications of the *Asacol* Case for Pharmaceutical Class Actions

The First Circuit decision in *In re: Asacol Antitrust Litigation* may prove to be a watershed for class certification questions in pharmaceutical antitrust suits.

The ramifications of the decision could signal a significant change in whether and how plaintiff classes will be certified in future suits. To see why, it is helpful to set the *Asacol* decision against the backdrop of an earlier case decided by the same circuit: *In re: Nexium Antitrust Litigation*.

In *Nexium*, the appeals court affirmed a district court decision that certified a class for trial even though the class contained members who plaintiffs conceded were not injured by the allegedly anticompetitive conduct.

The district court in *Asacol* claimed to follow *Nexium* by holding that the approximately 10% of class members who had not been injured-in-fact by the actions of *Asacol*'s manufacturer, Warner Chilcott, was "de minimis," and that they could be removed by a claims administrator during a later phase of the trial.

On appeal, however, the First Circuit ruled that this scheme ran afoul of Federal Rule of Civil Procedure 23's directive that common questions predominate over individual issues. Bruce Strombom, an Analysis Group expert for the defendant, introduced evidence of myriad

reasons why some class members would not have been injured – chief among them, that they would remain loyal to the brand version of the drug, irrespective of the lower price of a generic alternative. In addition, other patients stopped taking *Asacol* during the relevant period (and therefore wouldn't have switched to a generic) or faced no drug copay, and so had no basis for inclusion in the class.

In the aftermath of the *Asacol* opinion – which was cited by a district court in New Jersey only weeks after being handed down – experts may be called on to scrutinize class composition in a much more granular way, in order to determine the impact – or lack of impact – that the but-for world would have had on individual consumer segments differentiated by behavior, brand loyalty, cost consciousness, or other characteristics that might influence their purchase decisions.

While the *Asacol* court averred that its holding was respectful of "the practical realities of class actions," it seems to have signaled that anything less robust would violate a defendant's due process rights. ■

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ADAPTED FROM "THE STATE OF PHARMA CLASS CERTIFICATION AFTER ASACOL" BY AARON YEATER, PAVEL DARLING, AND STEPHEN FINK, *LAW360*, DECEMBER 18, 2018.

“

[W]here injury-in-fact is a required element of a claim, as it is in an antitrust action ... a class cannot be certified based on an expectation that the defendant will have no opportunity to press at trial genuine challenges to allegations of injury-in-fact.”

–IN RE: ASACOL ANTITRUST LITIGATION

# Finding “True North” in Recent Delaware Appraisal Cases

When a model results in a valuation that is at odds with market prices, it is imperative to understand the disconnect: Is it the market or the model that is wrong?



**R. GLENN HUBBARD**  
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Petitioners in Delaware appraisal cases often rely on valuation models when arguing that fair value for an acquired company exceeds the deal price. In contrast, financial economists tend to view prices from a well-functioning market as “true north.” Analysis Group academic affiliates R. Glenn Hubbard and Andrew Metrick consider recent decisions from the Delaware Chancery Court that appear to reflect a healthy skepticism of commonly used models that produce valuations far above deal price without a compelling explanation for the gap.



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## *What is your perspective on the market for corporate control in the context of valuation disputes?*

**Prof. Hubbard:** In nearly every takeover, the target firm receives a premium to its unaffected market price, indicating a higher valuation by the bidding firm. Several decades of research show that these transactions typically provide large gains in combined value, most of which accrues to the target firm. The fact that bidding firms generally do not see large gains is consistent with a competitive market – targets are able to extract full-value bids. In an appraisal context, a competitive M&A market means the deal price is a natural starting point for assessing fair value.

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## *As an economist, what is your view of fair value?*

**Prof. Metrick:** A standard definition of value is the price at which buyers and sellers agree to exchange an asset. So in that spirit, a market price is a very good place to start. Of course,

there are valuation tools such as a discounted cash flow (DCF) model or a market multiples approach that can provide alternative measures of value, but these depend critically on the inputs and assumptions. The stock market price reflects the judgment of many investors.

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## *Can the stock price provide a reliable measure of fair value?*

**Prof Hubbard:** In *Verition Partners v. Aruba Networks*, the Chancery Court selected the unaffected market price as the most reliable indicator of fair value, but this decision was reversed by the Delaware Supreme Court. My reading is that the stock market price can be a relevant factor for assessing fair value in appraisal cases, but an expert must provide evidence that it is reliable, reflecting both public and private information.

I think of there being three broad questions to this inquiry. The first is whether the market for the company's stock is consistent with semi-strong form market efficiency, which posits that prices reflect public information. Next, because fair value under Delaware General Corporation Law §262 gives consideration to information that is known within the firm but not by outside investors, it is important to consider the value impact of private information.

Finally, there is a timing issue – fair value is measured as of the merger close, whereas the unaffected market price is measured prior to the merger announcement. Adjusting for the information that occurs between signing and closing could result in a valuation that is higher or lower than the unaffected price.

1. *DELL*, PP. 102–103

2. *PETSMART*, P. 105

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### *What sort of arguments do petitioners make to explain why a deal price was below fair value?*

**Prof. Hubbard:** When petitioners advance a valuation above deal price, they are saying there was money left on the table. Of course, if multiple bidders are competing to buy the target firm, we would not expect to see the target leave significant money on the table. In *Dell*, for example, petitioners put forth a valuation that was about \$26 billion above the deal price. Petitioners often point to various perceived flaws in the sale process that might hinder competitive bidding. Potential flaws could include the lack of a pre-market canvass, restrictive deal protection terms such as break fees, and match rights. They may argue there was an unlevel playing field (particularly in an MBO transaction) so the disadvantaged bidders would not put their best offer on the table. At the end of the day, petitioners need to explain why another bidder would have been willing to pay more if the process had been run differently.

**Prof. Metrick:** Another category of arguments that petitioners make to explain a large valuation gap is the asymmetry between what management knows and what the bidders or outside investors know. One form of this argument is that management has plans that the market does not know about (or does not fully understand). An additional form of the argument that comes up most often with MBOs is that the company is currently undervalued by the market, perhaps because the price is depressed following a temporary downturn in its financial performance, leading management to opportunistically try to buy the company in a trough.

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### *Are there situations where fair value might be less than the deal price?*

**Prof. Metrick:** Fair value under Delaware §262(h) is “exclusive of any element of value arising from ... the merger” such as synergies. Synergies often arise with strategic bidders, who may be able to achieve cost savings or revenue enhancements by combining the target firm with their existing business. For example, the Chancery Court determined that fair value was about 8% below deal price in the SWS appraisal.

**Prof. Hubbard:** In addition to operational synergies, financial or tax synergies may be important, including those involving private equity. The recent *Solera* ruling adopted my opinion that fair value was the deal price less synergies. *Solera* was acquired by private equity firm Vista Equity Partners, which

had some financial synergies resulting from adding leverage, as well as some operational synergies arising from other portfolio companies that overlapped with Solera.

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### *How does the court approach projections when the opposing experts begin their valuations with different cash flows?*

**Prof. Hubbard:** My approach, which I think is consistent with the court’s preference, is to start with management projections. But they cannot be accepted blindly. For instance, in *Dell* the projections that appeared in the proxy were based on a detailed model that built off of projections for global PC sales from an industry source. By the time the deal closed nine months later, industry forecasts had declined significantly due to trends such as tablets and smartphones replacing computers. In order to reflect Dell’s “operative reality as of the merger date,” I used the most recent industry forecasts to update the cash flow projections. The court noted its general skepticism of adjustments, but found that I had “persuasively justified” my changes and used them in its DCF model.<sup>1</sup>

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### *What are the key considerations in determining the terminal value in a DCF model?*

**Prof. Metrick:** The terminal value calculation, which captures the value of all cash flows beyond the explicit forecast period (say five years), often constitutes the vast majority of a company’s value. There are really three inputs the valuation expert must provide in this calculation: the discount rate, the terminal growth rate, and the assumption about how much investment is needed. While the discount rate can have a large impact on the valuation (higher discount rates result in lower valuations), that input seems well understood.

The growth rate and investment rate assumptions are (or at least should be) linked. The critical insight is that growth is not free and that firms need to invest to grow. My approach to calculating terminal value links investment to growth. Increasing the growth rate increases investment (and therefore decreases cash flow). The DCF model that I used in *PetSmart* incorporated this approach. In its opinion, the Court stated that it was “convinced that Metrick’s formula for calculating the required amount of investment to support the terminal growth rate is proper, as it is supported by economic theory and finance literature.”<sup>2</sup> ■

# Leveraging Cap-and-Trade's Market Incentives in Climate Policies

Around the US, states are assessing the effectiveness of cap-and-trade programs for reducing greenhouse gas (GHG) emissions.

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SOURCES: SCHATZKI, T. AND ROBERT N. STAVINS, *GHG CAP-AND-TRADE: IMPLICATIONS FOR EFFECTIVE AND EFFICIENT CLIMATE POLICY IN OREGON*, THE HARVARD PROJECT ON CLIMATE AGREEMENTS, DISCUSSION PAPER 18-92, NOVEMBER 2018; SCHATZKI, T., ROBERT N. STAVINS, AND REBECCA SCOTT, *TRANSITIONING TO LONG-RUN EFFECTIVE AND EFFICIENT CLIMATE POLICIES*, MOSSAVAR-RAHMANI CENTER FOR BUSINESS & GOVERNMENT, HARVARD KENNEDY SCHOOL, M-RCBG FACULTY WORKING PAPER SERIES 2019-01, APRIL 2018.

Cap-and-trade programs are being used to set hard limits on GHG emissions at the state, regional, and national levels. These policies create a price on GHG emissions by limiting the total quantity of emissions and letting program participants buy and sell emission allowances.

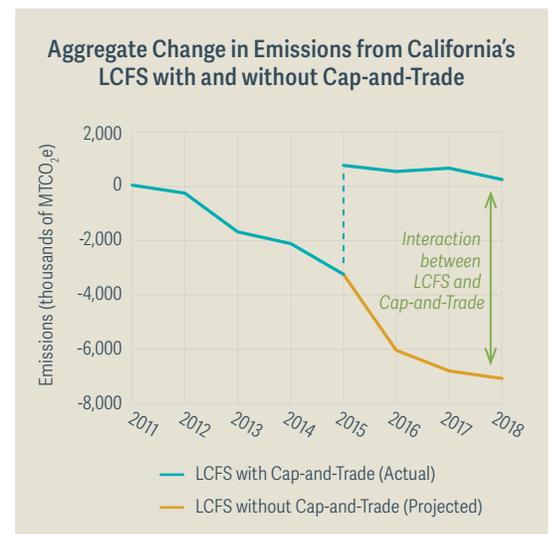
While widely recognized as a cost-effective way to reduce emissions, policies that place a price on emissions – like any policies that directly raise energy prices – face political challenges (think “yellow vests”). Given these political obstacles, well-intentioned governments often implement less-efficient measures individually targeting the many actions that generate GHG emissions.

In Oregon, for example, the legislature is debating whether to add an economy-wide cap-and-trade program to the state's existing suite of climate policies. To help inform decision making, Analysis Group prepared two reports evaluating the proposed cap-and-trade system, outlining implications for other climate policies Oregon had already adopted, and proposing options for efficient long-run climate policies.

One of the key points made is that economically efficient climate policy combines market-based policies with other measures to address under-investment in technology innovation and other market failures affecting energy use.

But not all complementary policies are part of an efficient suite of climate policies. The papers also show that interactions among overlapping climate policies can raise costs, without achieving any incremental environmental benefits. For example, we analyzed the interactions between

California's GHG cap-and-trade program and its Low Carbon Fuel Standard (LCFS), which separately targets vehicle emissions. We found that, if emissions outside of the state (which are not subject to California's policies) are factored in, total emissions actually increased over the first three years that the policies overlapped (2015–2017). (See figure.) We also found that by 2017, LCFS program credit prices were 11 times cap-and-trade allowance prices, making the cost of reducing GHG emissions much greater.



Source: Schatzki, T. and Robert N. Stavins, *GHG Cap-and-Trade: Implications for Effective and Efficient Climate Policy in Oregon*, The Harvard Project on Climate Agreements, Discussion Paper 18-92, November 2018.

In recognition of existing political barriers, the paper examines alternative pathways to gradually increase reliance on price-based instruments. This path forward could prove to be more effective – and even necessary – for achieving ambitious climate targets, given the large costs of achieving such goals. ■

## Symposium Examines Critical Economic Issues in Life Sciences Litigation

On May 6, 2019, Analysis Group hosted its annual Law & Economics Symposium at the MIT Sloan School of Management.

The event brought together academic experts, industry counsel, and Analysis Group consultants for thought-provoking discussions on litigation topics often encountered by pharmaceutical, biotechnology, and medical device companies today. A key goal was to facilitate the exchange of views on current law and economics questions in a forum that included a variety of stakeholders.

One major theme of the gathering was the potential tradeoffs between access to treatments already on the market (affordability), and access to future treatments that have yet to be developed (innovation). That was the issue underlying much of the keynote event that opened the Symposium – a fireside chat between two former commissioners of the Food and Drug Administration (FDA): Mark McClellan (now director of the Duke-Margolis Center for Health Policy at Duke University) and Scott Gottlieb (now resident fellow at the American Enterprise Institute). Moderated by Managing Principal Crystal Pike, the discussion between the two former regulators also addressed the role played by real-world evidence at the approval and post-approval stages; First Amendment issues in the context of

off-label promotion investigations; and the distinct challenges posed by private and public payers in ensuring market access to transformative therapies and improving health outcomes.

Many of the themes discussed during the fireside chat also arose during a plenary session on drug pricing moderated by Managing Principal Noam Kirson. Participants – including Jennifer Bryant of PhRMA, Rena Conti of Boston University, David Cutler of Harvard University, Craig Garthwaite of Northwestern University, and Dr. Gottlieb – discussed topics such as innovative pricing approaches, efforts to regulate and reduce drug prices, and competition issues. Additional panel sessions were organized around cutting-edge methods used in damages analyses in life sciences litigation; monopolization claims in pharmaceutical markets; the economics of biosimilars; the effect of big data on product liability and medical device litigation; and the future of False Claims Act and Anti-Kickback Statute cases.

The next Law & Economics Symposium on current topics in life sciences is scheduled for June 8, 2020. ■



Analysis Group Managing Principal Crystal Pike moderates a fireside chat between former FDA commissioners Mark McClellan and Scott Gottlieb.



Analysis Group Managing Principal Noam Kirson moderates a panel on drug pricing with Scott Gottlieb, Rena Conti, Craig Garthwaite, Jennifer Bryant, and David Cutler.

# Taxing Questions: Managing the Taxation Complexities of Smart Contracts

In their efforts to maintain competitiveness, multinational businesses are increasingly adopting innovative technologies and digitalized processes.

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ADAPTED FROM  
"SMART CONTRACTS  
& THEIR POTENTIAL  
TAX IMPLICATIONS"  
BY JIMMY ROYER AND  
ALAN G. WHITE, *LAWYER*  
MONTHLY, OCTOBER 2018.

The digital economy is raising new questions about tax oversight and compliance. Business managers and regulators alike are exploring how to reap the benefits of digitalization while minimizing potential transaction inefficiencies that may be associated with them. As part of the Organization for Economic Co-operation and Development's (OECD's) base erosion and profit shifting (BEPS) initiative, OECD member countries have been actively addressing the challenges of developing "actionable, global tax planning solutions" against the backdrop of the growing digitalization of the global economy. Earlier this year, a report issued by the OECD noted, "These challenges chiefly relate to the question of how taxing rights on income generated from cross-border activities in the digital age should be allocated among countries."<sup>1</sup>

The use of blockchain technology to enable smart contracts is one example of how digitalized processes introduce additional complexity into tax governance, even for non-digital businesses.

Understanding how smart contracts create value will be fundamental to ensuring that tax authorities avoid creating a mismatch between where value is created and where profits are taxed.

### What are smart contracts?

Smart contracts are decentralized, anonymized, blockchain-coded agreements that facilitate the automatic exchange of cryptocurrencies (e.g., Bitcoin) or tokens (e.g., Ether) for goods or services. When the preprogrammed terms and conditions of an agreement are met – for example, when placing an order – the smart contract executes automatically. If set up correctly, the system can verify valid transactions more securely and identify fraudulent transactions more easily. These advantages are critical, since a single smart contract can have thousands of anonymous transactions associated with it, all triggered by digital activity.

In one real-world application of a smart contract, international transportation logistics companies are exploring new applications for

## Getting from A to Z: How Smart Contracts Can Help Streamline Shipping and Logistics



An individual agrees to purchase an item online from a seller, initiating a blockchain-coded transaction



The digital purchase order triggers a request for the good to be packaged



Completion of packaging triggers pick-up of package by shipping company



blockchain-based systems. They are working to code virtual shipping agreements that digitally track the purchase of, payment for, transport of, and actual receipt of a good that is physically delivered to an end customer. These companies are looking to smart contracts to improve the security of the payment process and decrease the potential for fraud in online transactions and ultimate delivery of the good. These new types of agreements may change transaction processes as we know them – for instance, by unlocking payment only when the delivery is confirmed as received. (See figure.)

However, smart contracts also raise complex taxation and regulation issues. The underlying transaction in which the cryptocurrency is exchanged for goods or services may result in taxation at many different levels. It may not always be clear what type of tax is relevant, and in which tax jurisdiction any given tax must be paid – a particularly important question with borderless, global markets. This concern is heightened if tax authorities are not part of the blockchain network. The closed nature of the transaction processing, as well as the use of cryptocurrencies as the medium of exchange, can make it more difficult to ensure that the appropriate taxes and duties are being charged and collected on international shipments.

### Taxing the sale of products or services

For example, as shown in the figure, two parties could enter into a smart contract in which the buyer agrees to pay X Ether to the seller in exchange for Good Y. Once Good Y is delivered (and verified by the decentralized blockchain network, through the process of “mining”), X Ether are sent to the seller – all

automatically, via the digital platform. In this way, the smart contract ensures that the same secure, unalterable data string identifying that specific transaction is used by both the buyer and the seller to confirm ordering, packaging, shipping, delivery, and payment – without the need for paperwork or the intervention of financial intermediaries, such as banks or credit card companies.

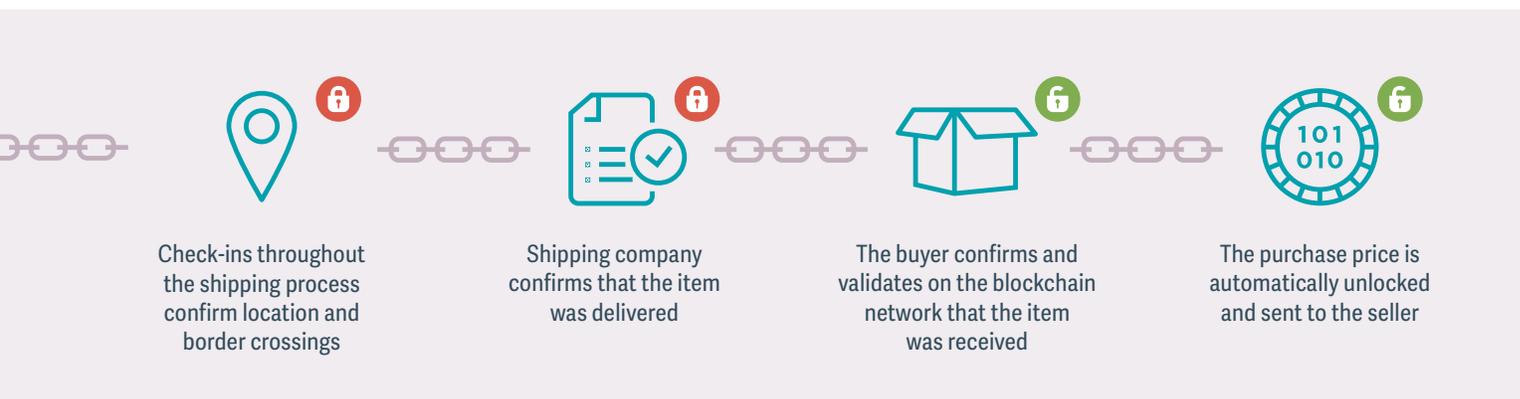
In these cases, because the blockchain exchange happens automatically and anonymously, tax authorities may have to rely solely on the seller to collect and report sales tax on all transactions. However, questions of where in the transaction chain value is actually created and captured can lead to debate about the appropriate tax jurisdiction. This can lead to uncertainty among platform users about their tax liabilities – including whether the activity is taxable at all – and potentially result in under-reporting or jurisdictional disputes.

### Regulating smart contracts: Weighing the costs and benefits

Understanding how smart contracts create value is fundamental to ensuring that tax authorities respond appropriately to these challenges. The question of economic nexus – determination of the jurisdiction where economic activity, or value creation, takes place – has significant implications for tax burden. It will benefit all parties involved if the costs of monitoring and auditing blockchain transactions for tax purposes are balanced with the convenience and low intermediary cost associated with them. ■

#### ENDNOTES

1. “ADDRESSING THE TAX CHALLENGES OF THE DIGITALISATION OF THE ECONOMY,” OECD PUBLIC CONSULTATION DOCUMENT, FEBRUARY 13–MARCH 6, 2019, AVAILABLE AT: [HTTPS://WWW.OECD.ORG/TAX/BEPS/PUBLIC-CONSULTATION-DOCUMENT-ADDRESSING-THE-TAX-CHALLENGES-OF-THE-DIGITALISATION-OF-THE-ECONOMY.PDF](https://www.oecd.org/tax/beps/public-consultation-document-addressing-the-tax-challenges-of-the-digitalisation-of-the-economy.pdf).



# “Similar” but Not the Same: Charting the Course of Biosimilar IP Litigation in the US

Significant differences in the manufacturing, regulation, and economics of generic drugs and biosimilars will mean differences in how IP litigation for biosimilars plays out.

**RICHARD MORTIMER**  
PRINCIPAL

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VICE PRESIDENT

ADAPTED FROM “THE RISE OF BIOSIMILARS AND THE FUTURE OF HEALTHCARE INTELLECTUAL PROPERTY” BY RICHARD MORTIMER AND BRIAN ELLMAN, *JAM*, NOVEMBER/DECEMBER 2018.

Biosimilars are close analogues to brand or reference biologic drugs; both biosimilars and biologics are produced through a complex process of culturing living cells, rather than through chemical formulation. Biosimilar competition in the US is still in its infancy. The first biosimilar drug was approved in March 2015, and as of April 2019, only 19 had been approved. Yet there are approximately 70 additional biosimilars in the Food and Drug Administration’s (FDA’s) Biosimilar Product Development Program, with additional applications under review.

Intellectual Property (IP) litigation surrounding biosimilars is also in its early stages. However, with biologic drugs now comprising the bulk of the highest-revenue drugs in the US, it is likely to continue to grow.

In trying to discern how litigation might unfold in the future, it is natural to look to the more familiar experience of the introduction of generic versions of small-molecule drugs, which are manufactured with chemical processes. Yet significant differences exist between small-molecule and biologic drugs, and these differences will affect how future IP conflicts are litigated.

In contrast to the straightforward method of chemical synthesis by which small-molecule drugs are produced, the greater complexity of both the manufacturing process and the resulting molecular structure of biologic drugs has three key consequences:

1. Biologics and small-molecule drugs are subject to different approval and regulatory structures.

2. A narrowly defined manufacturing process is required to maintain the safety and efficacy findings for the brand biologic from batch to batch.
3. The brand biologic manufacturing process tends to be protected by a wider array of patents and trade secrets.

This is why the two different kinds of drugs are governed by very different IP regimes. (See table.)

Significantly, the respective processes for identifying the patents relevant to potential IP litigation are wholly dissimilar. For generic drugs, the relevant patents are listed in the so-called Orange Book, which provides a straightforward process for identifying patents at-issue. Because of the more complex array of patents pertaining to biologic drugs, however, there is no corollary to the Orange Book. Instead, the relevant statute – the Biologics Price Competition and Innovation Act (BPCIA) – sets out a process by which the biologic and biosimilar manufacturers exchange information on their respective technologies to determine which patents may be at-issue in the first phase of litigation. This process is known as the “patent dance,” and even this process, the US Supreme Court held in 2017, is not mandated by the BPCIA.

The upshot is that the more complex technologies associated with biologic and biosimilar development give rise to a less transparent structure for identifying the IP relevant to the potential litigation.

In addition, the duration of exclusivity periods is different for small-molecule and biologic drugs.

## Key Distinctions Between Generic Drugs and Biosimilars

	Generics	Biosimilars
Governing Statute	Hatch-Waxman Act	BPCIA
Process for Identifying Relevant Patents	Orange Book listing	Patent dance
Brand Data Exclusivity Period <i>(earliest date the FDA can approve the generic/biosimilar, after brand approval)</i>	5 years	12 years
Automatic Stay of Generic/Biosimilar Approval	30 months <i>(upon initiation of IP litigation)</i>	None
Required Pre-Market Notice for Generic/Biosimilar Entry	No notice required	180 days <i>(prior to biosimilar launch)</i>
Generic/Biosimilar Exclusivity Period	180 days <i>(first-to-file application challenging brand patents)</i>	1 year <i>(first approved as interchangeable with the brand)</i>

Many brand small-molecule drugs receive a five-year data exclusivity period, while many brand biologics receive a 12-year period. However, biosimilar manufacturers are allowed to file their applications after only four years, potentially allowing for eight years to resolve IP disputes prior to expiry of the brand biologic data exclusivity period. Biosimilar manufacturers may have strong incentives to challenge IP for the brand biologic early in an attempt to resolve IP litigation and accelerate entry soon after the brand loses exclusivity.

Finally, the BPCIA requires the biosimilar manufacturer to provide a 180-day “pre-market notice” before selling the biosimilar product. If the pre-market notice is made while the IP litigation is ongoing, it may signal an intended at-risk launch for the biosimilar. At that time, the brand biologic manufacturer is free to assert additional patents that may not have been agreed to in the “patent dance,” and may file for an injunction against the launch of the biosimilar.

The economics of biosimilar entry also differ substantially from those of generic entry. While biosimilars may capture a smaller share of sales from the brand than do generics, the limited entry of competing biosimilars and correspondingly modest price discounts may allow for greater gross profits. This may also encourage biosimilar manufacturers to launch their products at-risk – that is, while IP litigation is still ongoing.

From a practical perspective, then, a biosimilar manufacturer may deem it necessary to challenge brand biologic patents in order to successfully enter the market. However, the complexity of the patent array also makes it challenging for a biosimilar manufacturer to assess the likelihood that it will prevail in the IP litigation, as well as difficult to assess the risk from exposure to damages, should the biosimilar lose.

Perhaps for these reasons, the course of biosimilar IP litigation to date has differed substantially across cases. Decisions have varied on whether or not to participate in the patent dance, launch at-risk, settle IP litigation, and pursue antitrust litigation. Even the same manufacturer has pursued different strategies for different biosimilars. In the case of Zarxio, Sandoz chose to forgo the patent dance and launch Zarxio at-risk, at the time leaving open the potential for follow-on litigation had Amgen’s patents on Neupogen been upheld and had Sandoz been found to have infringed on those patents. With Erelzi, on the other hand, Sandoz chose to engage in the patent dance, and also agreed to a consent preliminary injunction that enjoins it from launching Erelzi while patent litigation is ongoing.

While the future prospects for this area of IP litigation are thus unclear, a sure grasp of the similarities and distinctions between generics and biosimilars will be critical for attorneys and economists working in this space. ■

# Valuation in International Arbitration: A Growing Topic in Investor-State Disputes

When determining awards, some international arbitration tribunals have been taking a more detailed look at valuation concepts and ruling in favor of the method they perceive as the clearest and most rigorous.

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Globalization has led to an increasing number of cross-border disputes appearing before international arbitration tribunals, such as the World Bank Group’s International Centre for Settlement of Investment Disputes (ICSID). In these arbitrations, private investors may bring claims against a state for alleged violations of formal agreements between countries, such as bilateral investment treaties (BITs). Investor-state disputes can result from any of a number of government actions, including expropriation of assets and restructuring of sovereign debt.

With the number of arbitrations on the rise, understanding what arguments different tribunals have found persuasive can be an important part of arbitration strategies. To shed more light on tribunals’ decisions, an Analysis Group research team applied natural language processing (NLP) techniques to case documentation – including awards, expert reports, and arbitral motions – that has become available online from the ICSID and from other sources. Using NLP in this manner provides valuable insights from the publicly available documents.

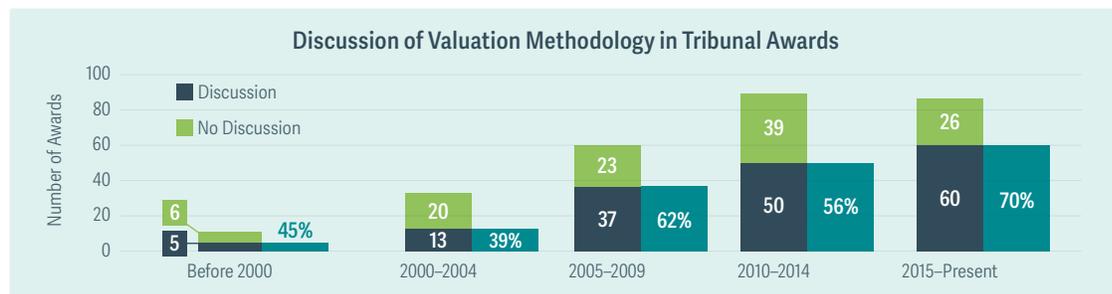
For example, we have been able to confirm a growing perception that valuation concepts are

becoming more frequent topics of discussion in awards. Our programmatic keyword searches reveal that only 39% of ICSID awards from 2000–2004 referenced terms commonly used in valuation (such as discount rate, WACC, cost of equity, country risk, valuation date, and other terms). That number has grown to 70% over the last four years. (See figure.)

Our review of decisions shows that many tribunals have been requiring damages experts to defend their calculations for specific inputs, such as any risk premium associated with a specific country. Not surprisingly, tribunals tend to favor rigorous and clearly explained methodologies.

Interestingly, our research to date also shows no apparent favoritism towards either claimants or respondents in tribunals’ acceptance of valuation inputs. Overall, tribunals appear to give serious consideration to the appropriateness of the methodology, and on occasion they have even decided to use a value in between the opposing experts’ proposals.

In addition, with several recent damages awards being challenged on the basis of alleged calculation errors, the importance of having a rigorous valuation method is only further underscored. ■



# Franchise No-Poach Agreements Face Antitrust Scrutiny

“No-poach” clauses in franchise agreements are common, but have drawn recent scrutiny from antitrust enforcers and plaintiffs.

Many franchise agreements contain clauses restricting franchisees from soliciting each other's employees.

These “no-poach” agreements have attracted increased scrutiny from government enforcers and private plaintiffs following the 2016 issuance of the Antitrust Guidance for Human Resource Professionals by the US Department of Justice (DOJ) and Federal Trade Commission (FTC).

That guidance makes clear that “naked” no-poach agreements between competing employers, which are not reasonably necessary to legitimate collaborations, are illegal. In the franchise context, however, there is an ongoing debate whether no-poach agreements should be subject to a more nuanced “rule of reason” analysis that balances the potential harms and benefits of such restrictions.

**58%** of franchisors with more than 500 franchise units in the US have **no-poach provisions** in the franchise agreements, according to a recent economic study.

Source: Theory and Evidence on Employer Collusion in the Franchise Sector, IZA Institute of Labor Economics (July 2018)

## DOJ favors rule of reason

In March 2019, the DOJ filed a statement of interest in three no-poach class actions against fast food franchises. Citing the vertical relationship between the franchisor and the franchisee and the potential for both procompetitive and anticompetitive effects, the DOJ argued that rule of reason analysis is appropriate for evaluating most franchise no-poach agreements.

## Two key antitrust issues

The main antitrust issues that must be considered in such an analysis are (1) whether franchisors and franchisees constitute a single economic entity, and (2) if not, whether there are potential procompetitive benefits from no-poach agreements in the franchise system.

The first issue requires evaluating both the business relationships within each franchise system and the alignment of economic interests between franchisor and franchisee. Important factors in this evaluation include the degree to which the franchisor exerts control over the franchisees in areas such as marketing, training, operations, and purchasing. Even given some alignment of economic interests, it is still necessary to assess whether the individual franchisees also have distinct hiring interests, and are therefore independent competitors in the labor market.

The second issue requires an analysis of whether no-poach agreements are reasonably necessary to the larger operations of the franchise system. No-poach agreements may incentivize employee training, increase retention, and decrease service disruptions – benefits which accrue to the franchise brand. However, this potential for increased inter-brand competition must be weighed against potential anticompetitive effects, including reduced wages.

In each case, rigorous economic analysis of the unique antitrust issues will be required to assess the balance of potential benefits and harms. ■

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# Evaluating the But-For World: Surveys, Experiments, and Market Data

Class actions alleging harm from defective automobiles have some unique characteristics. We talked with academic affiliate Olivier Toubia about different methodologies for dealing with the inherent complexities.



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A common damages claim in auto defect class actions is that putative class members would have paid less but for the alleged defect. However, damages calculations in these types of cases depend on many factors. Vehicles are highly complex products with scores of features, and different consumers will place different values on the same feature. In addition, because each transaction involves a negotiation between the buyer and the seller, the result (i.e., the agreed-upon price) is also transaction-specific.

In this Q&A, Vice Presidents Mark Gustafson and Kristina Shampianier spoke with Olivier Toubia, the Glaubinger Professor of Business and faculty director of The Eugene Lang Entrepreneurship Center at Columbia Business School, about the challenges of evaluating the “but-for” world.

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## *How is consumer harm typically evaluated in auto defect class actions?*

Some plaintiffs seek to determine the amount of money needed to correct the alleged defect, while others seek to quantify any increased costs allegedly incurred by vehicle owners. Another method plaintiffs commonly use to evaluate how much putative class members would have paid for the vehicle in dispute in the “but-for” world is conjoint analysis. Unfortunately, while conjoint analysis is a great marketing research tool, in my experience it is often misapplied in this type of litigation.

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## *How does conjoint analysis work?*

Conjoint analysis is a survey-based statistical technique in which each respondent is asked to make a series of choices. Their choices then reveal how they “trade off” different attributes of a product.

For example, if a respondent chooses a red car that is \$300 more expensive than an identical blue car, it means that the respondent is willing to pay at least \$300 more for the color of a car to be switched from blue to red. If, in another choice set, the same respondent chooses a blue car over an identical red car that costs \$400 more, we can conclude that the respondent’s maximum willingness to pay, or WTP, for red over blue is somewhere between \$300 and \$400.

Assuming that the choice sets are appropriately designed given marketplace conditions, analyzing a respondent’s choices allows you to estimate his or her maximum WTP for different features.

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## *You said that conjoint analysis is often misapplied in this type of litigation. How is it misapplied?*

One typical mistake in using conjoint in litigation is equating WTP with the market price. Market price is determined by the “invisible hand” from the demand side of the market (e.g., how much consumers are willing to pay) and the supply side of the market (e.g., costs of labor and parts). Conjoint analysis, like any survey of consumers, only collects information on the demand side.

Because of that, we can't assume that how much consumers are willing to pay is the same as how much they would have actually paid but for the alleged defect (i.e., the but-for market price). For some consumers, the market price is below their WTP and they pay the market price. For other consumers, the market price is above their WTP and they do not buy the product at all.

For example, assume a smartphone is offered at \$999 with a 5.8-inch screen size and at \$1,099 with a 6.5-inch screen size. That is, the market price of the extra 0.7 inches of screen size is

group, one option would be the at-issue vehicle with the alleged defect and the other two options are competing vehicles. For the control group, everything is the same, except that the at-issue vehicle is presented without the alleged defect.

If the choice set in the experiment sufficiently approximates the marketplace choice set under actual and/or but-for conditions, and the percentage of respondents choosing the at-issue vehicle is not statistically significantly different between the test and control groups, the researcher can conclude that the alleged defect is not material to consumer choice.



**One typical mistake in using conjoint in litigation is equating WTP with the market price. ... [W]e can't assume that how much consumers are willing to pay is the same as how much they would have actually paid but for the alleged defect (i.e., the but-for market price)."**

\$100. Someone who is willing to pay up to \$200 for the larger screen feature will still only pay \$100 more. And someone who is only willing to pay up to \$50 for the extra 0.7 inches of screen size will not purchase the larger phone. In this example, the average WTP for the feature of these two consumers is \$125 (based on one WTP of \$200 and one of \$50), while the market price is \$100.

Also, respondents have limited time and attention, so not all combinations of features can be tested. That means that the respondent may be presented with a handful of features, some "big," like price, make, and model in the case of autos, and some much "smaller," like the quality of the sunroof. In a conjoint analysis, placing a small feature alongside larger features may inflate the relative importance of the small feature, and bias WTP estimates upwards.

### *Is there a way to correct for this bias?*

One alternative to a full-blown conjoint could be a simple choice experiment, where respondents choose from several options just once, rather than making a series of choices in which they are aware of how features change from choice set to choice set.

A choice experiment is similar to an A/B test where respondents choose from, say, three vehicles. For the test

### *What are the advantages of a choice experiment?*

In a choice experiment, a respondent does not get exposed to the at-issue vehicle with and without the alleged defect. So the feature that is of interest to the researcher is not necessarily over-emphasized for the respondent alongside "big" features like make and model. Respondents make only a single choice, and the descriptions of the choice options can be as long and detailed as needed. With such a design, it is much less likely that a "small" feature that may be relevant to the litigation, but not as central to decision making, will get an artificial boost simply from being in the study.

### *If the difference between the test group and control group turns out to be statistically significant, are there any methods to properly estimate how an alleged defect affected the price of a vehicle?*

The appropriate procedure depends on the specifics of the case and the choices available in the actual world. In some instances, one can use marketplace data rather than conduct a survey or an experiment. For example, one could employ used-vehicle transaction data, such as from Kelley Blue Book. In that case, we could compare how the valuation of the at-issue cars differs from similar cars that were not included in the litigation. ■

# How Much Is Enough? Applying the “Rule of Reason” to Data Security

Business leaders need to ask: Will the benefits from making additional investments in cybersecurity outweigh the risks from not making them?

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ADAPTED FROM “HOW MUCH IS DATA SECURITY WORTH?” BY ALMUDENA ARCELUS, BRIAN ELLMAN, AND RANDAL S. MILCH, *THE SCITECH LAWYER*, SPRING 2019.

Economic theory suggests that a “rational” company will enhance data security only up to the point where:

$$\text{Cost of incremental security} \leq \text{probability of breach} \times \text{cost of breach}$$

In finding that tipping point, corporate decision makers may find it helpful to borrow a fact-based “rule of reason” approach from competition regulation. In antitrust litigation, the “rule of reason” approach acknowledges that, even if anticompetitive actions can be proven, they may also be offset by procompetitive effects.

Applied to data security, this means that decision makers first should take a hard look at the data their company maintains, what value those data provide, and how secure the company’s systems and processes are. (See table.)

They then will need to consider all three components of the data security equation:

1. Probability of a breach: “How likely are we to suffer a breach?” In general, a company’s risk may increase depending on how many records or accounts it maintains or to which it has access, how sensitive its data are (e.g.,

financial data, health care data, personally identifiable information), and how well it protects its points of vulnerability.

2. Cost of a breach: “What would the economic impact be on our business if we did suffer a breach?” The cost of a breach encompasses all direct and indirect costs that a business incurs to respond to and recover from a data breach after it occurs. This comes in two primary forms: lost business, and the costs associated with responding to the breach.
3. Cost of incremental security: “What additional measures could we take to guard against a breach or reduce its impact to our business, and at what cost?” By assessing the effectiveness of the organization’s existing data security measures relative to the risks it faces, a business can identify and evaluate its options, and the associated costs, for addressing existing or potential weaknesses.

With this “rule of reason” approach to data security, businesses can continuously reevaluate tradeoffs between the economic risk of a data breach and the costs of mitigating the risk. ■

Key Questions for Solving the Data Security Equation		
Does our industry, firm size, and/or business model leave us any more or less vulnerable to a breach and associated costs?	How necessary are the data for our business and for creating new sources of value for our customers? Can our exposure be reduced if we are more selective about the data we keep?	Which measures could be implemented to lower the probability of a high-cost breach and to reduce the effects of a breach on our business and customers?
What data do we currently collect and maintain, and how are the data stored and accessed?	Which technology assets are most vulnerable?	Do our data practices make us a more or less attractive target for illegal activity?

## Recent Case Highlights

Below are some examples of the complex matters in which Analysis Group has recently worked with top law firms, Fortune Global 500 companies, health care organizations, and government agencies worldwide.

### Damages Estimate Accepted in Patent Infringement Jury Trial

Analysis Group was retained by Bryan Cave Leighton Paisner LLP on behalf of its client Nestlé Purina PetCare Company in this patent infringement lawsuit filed in the US District Court for the Northern District of Illinois. Nestlé Purina also was represented by Morgan, Lewis & Bockius LLP. The plaintiff, Oil-Dri Corporation of America, had filed suit against Nestlé Purina for alleged infringement of a patent related to the composition of Nestlé Purina's Tidy Cats clumping cat litter product. Oil-Dri sought claimed royalty damages totaling \$73 million through the expiration of the patent.

An Analysis Group team, led by Managing Principal Keith R. Ugone, Manager Joshua Levine, and affiliate Thomas P. McGahee, conducted an independent evaluation of

Oil-Dri's claimed damages and prepared a rebuttal report. Dr. Ugone testified in deposition and at trial that Oil-Dri's claimed damages were significantly overstated in light of real-world considerations that would have been important at a hypothetical negotiation between Oil-Dri and Nestlé Purina for a license to the patent-in-suit. Dr. Ugone opined that a reasonable royalty for a license to Oil-Dri's patent would have been structured as a lump-sum payment no more than in the range of \$3 million to \$8 million.

At the conclusion of the trial, the jury found the patent-in-suit to be valid and infringed by Nestlé Purina. However, the jury awarded Oil-Dri \$3 million rather than the requested \$73 million.

### Antitrust Claims Analyzed in Chinese Oilfield Services Dispute

Analysis Group was retained by Panjing Dongxing Oil Well Measure Service Company Ltd. (Panjing), the plaintiff in a dispute alleging claims of monopolization, abuse of market power, and refusal to deal. Panjing, a privately owned oilfield steam injection services provider in Liaoning, China, entered into an agreement with the defendant, PetroChina Inc., a state-run oil and gas exploration and production company, to provide steam injection services with its two fixed boilers. Panjing alleged that PetroChina exercised its monopsony power in the market for oilfield steam injection services and abused its power through price discrimination and refusal to deal, harming competition and causing damages to the plaintiff.

A team comprising native Mandarin speakers from three Analysis Group offices in the US, as well as its Beijing office,

supported our affiliate Wei Tan, an antitrust and competition expert with a focus on China. The team – led by Vice President Na Dawson and including Associate Rongzhang Wang and Analysts Yuan Feng, Eric Li, and Sam Yu – researched the characteristics of the types of steam injection equipment used in oil fields in China and their historical prices and operating costs. The team also analyzed whether certain types of equipment were substitutable for others. Dr. Tan filed two reports in Chinese with the Beijing Intellectual Property Court. In them, he opined that the defendant had the power to dictate the prices and contract terms of fixed boiler steam injection services for the oil field under development, a conclusion further supported by a monopsony test.

## Canada Tax Court Cites Expert's Valuation

The Canada Revenue Agency (CRA) reassessed tax returns for a number of taxpayers, on the basis that their claimed tax benefits relied on allegedly inflated charitable donation values for certain generic pharmaceuticals. After several taxpayers appealed the reassessments, the Department of Justice Canada, counsel for CRA, retained Dr. Ernst Berndt, professor emeritus at the MIT Sloan School of Management, to undertake an independent fair market valuation of the generic pharmaceuticals in question. Professor Berndt was supported by an Analysis Group team led by Managing Principals Alan G. White and Laurits R. Christensen, and Manager Jeremy Smith.

Professor Berndt testified before the Honourable Justice John R. Owen. Judge Owen cited Professor Berndt's expert report, noting that the valuations presented on behalf of the appellants "substantially overstate[d]" the fair market value of the generic pharmaceuticals and that their valuation methodology was "inappropriate." In contrast, Professor Berndt's analysis relied on invoices for transactions of the underlying generic pharmaceuticals and market research data to calculate prices reflective of the fair market value. In his final judgement, Judge Owen dismissed all but one of the appeals heard of CRA's income tax reassessments.

## Republic of Cyprus Wins Dismissal in International Arbitration Case

Analysis Group was retained by Curtis, Mallet-Prevost, Colt & Mosle LLP on behalf of the Republic of Cyprus, respondent in an arbitration proceeding before the International Chamber of Commerce (ICC) International Court of Arbitration in Paris. The arbitration was filed by two individuals alleging losses of \$1.4 billion as a result of actions the Central Bank of Cyprus (CBC) took in response to the designation of FBME Bank Ltd. (FBME) as a financial institution of "primary money-laundering concern" by the US Treasury's Financial Crimes Enforcement Network (FinCEN). As a result of this designation and the impact it had on the bank, the CBC moved to protect

depositors in the bank's Cypriot branches by taking managerial control of the branches and then placing them in the resolution process in preparation for sale or liquidation.

An Analysis Group team led by Vice President Steven Saeger and including Vice President Kevin Gallagher and Manager Stacey Chan supported two experts: Jean-Pierre Landau, an Analysis Group affiliate, who opined on the reasonableness of the CBC's regulatory actions; and Pierre Mariani, who opined on issues related to quantum, including the value of FBME and the impact that FinCEN's designation had on its operations. The case was dismissed in its entirety.

## Academic Affiliate Opines on Use of Reverse Termination Fees

Following an earlier ruling in its favor, Rent-A-Center, Inc., informed the Delaware Chancery Court that it had reached a settlement agreement with Vintage Capital Management, LLC. The earlier ruling permitted Rent-A-Center to terminate an agreement to be acquired by Vintage, a private equity firm, upon reaching the "end date" specified in the merger agreement. This action triggered the \$126.5 million reverse termination fee included in the contract.

Analysis Group was retained by counsel to Rent-A-Center. Affiliate Edward Rock of the NYU School of Law opined on the use of reverse termination fees, which are fees paid by

buyers (rather than sellers) upon termination of an agreement under certain circumstances. Professor Rock opined that the fee in question was appropriate, given the risks involved in the merger. Professor Rock was supported by an Analysis Group team that included Managing Principal Gaurav Jetley, Vice President Lauren Hunt, and Manager Daniel Deisenroth.

The vice chancellor hearing the case ruled that the agreement had been rightfully terminated when Vintage missed an extension deadline, but reserved judgment on the disputed termination fee. Subsequently, Vintage agreed to pay Rent-A-Center a \$92.5 million settlement amount.

## Research on Employment and GDP Effects of Investment in 5G Wireless Networks Published

The Federal Communications Commission (FCC) is considering making additional spectrum available for next-generation 5G wireless networks. 5G will enable improvements in data speed, service quality, and network capacity because it is designed to exploit not only low-band spectrum, which historically has been used for mobile voice and data services, but also mid- and high-band spectrum. Consequently, to achieve the anticipated increases delivered by 5G, service providers will need to invest in building out new infrastructure for each band.

An Analysis Group team, including Principal David Sosa, Vice President Greg Rafert, and Analyst Ethan Brodeur, researched the economic impacts from making low-, mid-, and high-band spectrum available for 5G services. They grouped 5G infrastructure-related capital spending into four industry

categories (wireless communications equipment, construction, wireline communications equipment, and wire and cable), and modeled the impact on US GDP and jobs creation. Based on estimates of nearly \$220 billion in new capital expenditures, the team concluded that deploying infrastructure for all three bands of spectrum would add \$391 billion in GDP to the US economy and create 1.9 million job-years. Approximately 70% of the GDP and jobs impact is attributable to deployment of mid-band spectrum. Another 19% is traceable to deployment of high-band spectrum intended for dense metropolitan areas, with the remaining 11% coming from deployment of low-band spectrum required for nationwide rural coverage.

The research received financial support from CTIA, a trade association representing the US wireless communications industry.

## Investor and Trading Firm Prevail in Market Manipulation Lawsuit

In a long-running dispute concerning alleged market manipulation, a federal judge cited the testimony and expert report of Analysis Group affiliate Jeffrey Harris in his opinion clearing Donald R. Wilson and his trading firm, DRW Investments, of wrongdoing. In 2010 and 2011, Wilson purchased more than \$350 million notional value of interest rate swap futures, contracts that allow traders to bet on future movements in interest rates. When the contracts' settlement prices failed to rise to their fair values, Wilson on several occasions placed exchange bids on them during a 15-minute time period known as the settlement window. The US Commodity Futures Trading Commission (CFTC) brought suit against Wilson and DRW, claiming that the bids amounted to an illegal attempt to artificially inflate the settlement price of the underlying contracts, a technique known as "banging the close."

On behalf of Wilson and DRW, an Analysis Group team that included Senior Advisor Michael J. Quinn and Vice Presidents Michael Cliff, Anne Catherine Faye, and Samir Warty supported Professor Harris, who filed an expert report and testified at trial. He opined that the bids were part of a legitimate trading strategy, that the true value of the contracts was higher than the bids placed by Wilson, and that the bids contributed to price discovery (the determination of an asset's price by market operations) rather than price inflation. In ruling for Wilson and DRW, US District Judge Richard Sullivan of the Southern District of New York wrote in his opinion that "[d]efendants' economic expert, Jeffrey Harris, was particularly credible on these points, and ... was able to explain a methodology for ascertaining the fair market value for the Three-Month Contract even in a highly illiquid market." ■

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