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A SYMPOSIUM ON ANTI-TRUST ECONOMICS OF MULTI-SIDED PLATFORMS

Hélène Bourguignon, Renato Gomes, & Jean Tirole;
E. Glen Weyl & Alexander White; Dennis W. Carlton
& Ralph A. Winter; David S. Evans; Benjamin
Edelman & Julian Wright; and Robert J. Levinson &
Michael A. Salinger

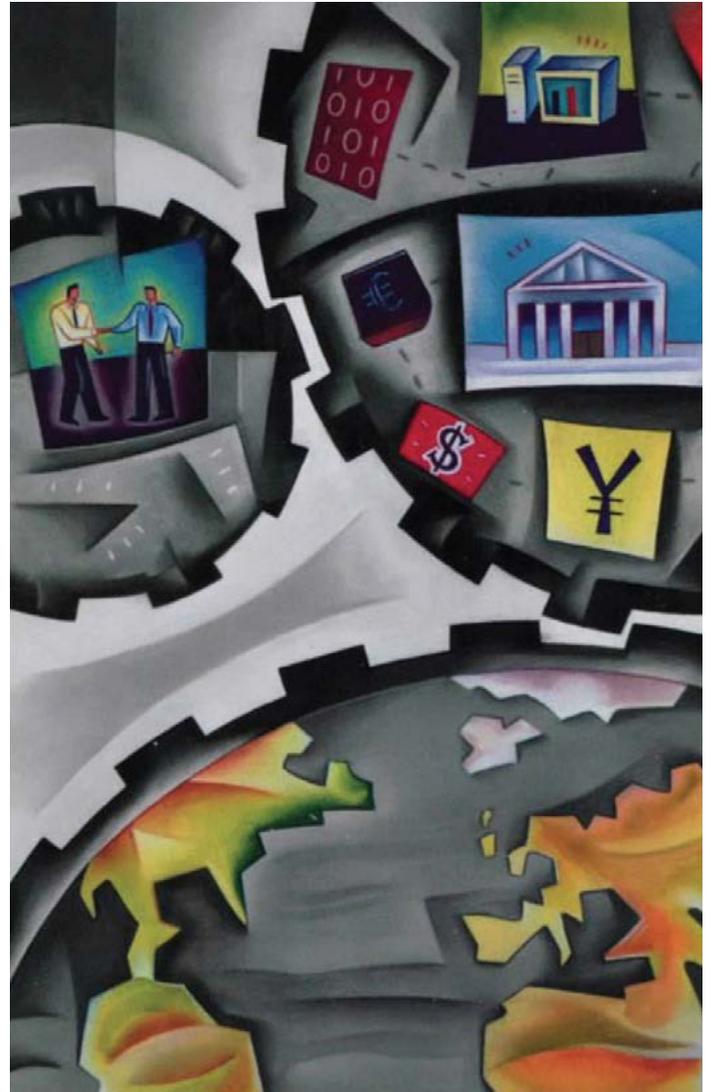
CURRENT CASES

Alan O. Sykes on *In Re Payment Card Interchange Fee and Merchant Discount Litigation*

Frédéric Pradelles & Andreas Scordamaglia-Tousis,
and **Renato Nazzini & Ali Nikpay** on *Cartes Bancaires*

THE CLASSICS

Jean-Charles Roches & Jean Tirole's *Platform Competition in Two-Sided Markets*, with an introduction by **Richard Schmalensee**



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*Letter from
the Editor*

This issue completes the tenth year of Competition Policy International. During this time the CPI Journal has published 303 articles and our companion publication, CPI's Antitrust Chronicle, has published another 1,138. Taken together, CPI's complete works demonstrate—perhaps more effectively than anywhere else—the vibrancy, diversity, and increasing importance that antitrust issues have assumed in global legal, political, scholarly, and cultural arenas.

We owe some of our success to our decision, when we started in 2004, to take a different approach than most journals at the time. We encouraged authors—economists and lawyers alike—to write in clear English and to avoid the footnote-per-sentence model of American law reviews. That has helped our authors win numerous awards given to American lawyers for legal writing, among them the Antitrust Writing Awards and the Burton Awards. What we've lost in density we hopefully have more than made up for in clarity.

We also decided to take a different tact on finding good articles. Rather than the typical model where editors and referees pore over submissions to find the gems among the dross we chose to commission authors we have confidence in to write about topics that readers would care about. We first select topics and then seek writers.

And of course, as our title suggests, our approach is global, reflecting how antitrust has flourished around the world over the last 10 years. More countries now have competition laws and competition policy has become more robust in those that do. And this is also reflected in our readership, which now takes place in more than 100 countries.

I would like to thank the members of our editorial board, those who have served as co-editors, and our many contributors for their extraordinary assistance for nurturing Competition Policy International during its first ten years.

Now on to our tenth anniversary issue, which is very special. Several months ago we decided to have this issue focus on multi-sided platforms—the area has burgeoned since the last time we focused on it (2007) and the economics of multi-sided platforms are being increasingly considered in ongoing cases before courts and competition authorities. Indeed, the influence of this new area of economics on antitrust is so profound that we also selected as the classic for this issue one of the youngest articles selected so far: Jean-Charles Rochet & Jean Tirole's seminal piece, published in 2003 but circulated in draft in 2000, on platforms and two-sided markets. Fortuitously, the Nobel Prize in Economics (technically the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel) was awarded on October 13, 2014 to Jean Tirole for his research on market power and regulation, including his work with Rochet on multi-sided platforms.

Jean Tirole, who has been a regular contributor to CPI over the years, both begins our issue, with an article on payment card regulation co-authored with Helene Bourguignon and Renato Gomes, and ends our issue with the classic. Richard Schmalensee, who taught Tirole when he getting his Ph.D. at MIT, provides an

overview of the importance of Rochet and Tirole's work on multi-sided platforms to industrial organization generally and antitrust specifically.

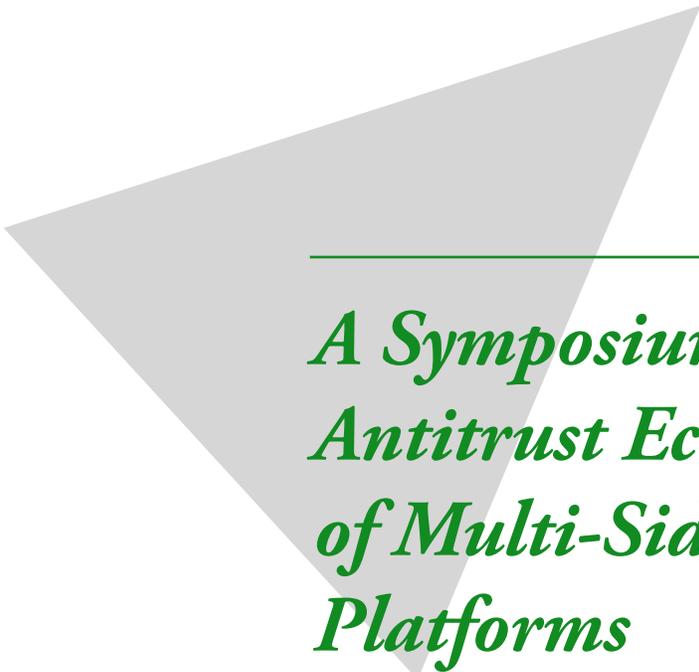
Between these bookends we present a diverse selection of articles on the law and economics of multi-sided platforms by key contributors in the area. We begin with a symposium on the antitrust economics, with papers that offer new conceptual frameworks as well as applications to ongoing controversies. Bourguignon, Gomes, & Tirole look at the interplay between payment card surcharges and interchange fees. Their focus is on the optimal regulation of merchant surcharges, which is the subject of legislation in Europe and antitrust cases in various stages of resolution in the United States. Glen Weyl & Alexander White use the new economics of multi-sided platforms to argue for a lighter regulatory hand during the early stages of dynamic competition for markets, perhaps to be followed by a heavier hand after the efficiency firm has revealed itself. Dennis Carlton & Ralph Winter suggest that we hit pause on the multi-sided platform show and go back and consider how traditional analysis sheds light on key platform issues. I then consider the pro-competitive and anticompetitive use of rules and standards for dealing with positive and negative externalities in software platforms such as Android for mobile phones and Windows for personal computers. Benjamin Edelman & Julian Winter examine how price restrictions in multi-sided platforms, such as the merchant steering rules we see in payment cards, affect competition. Finally, Robert Levinson & Michael Salinger examine the Federal Trade Commission's investigation of Google and discuss topics that are still under examination in the European Union and other parts of the world.

Our next section benefits from the fact that 2014 was a watershed year for court decisions on multi-sided platforms. The first article is by Alan Sykes, who was the court-appointed expert for the Visa/MasterCard class-action antitrust case in the United States. The controversy before the court was whether to accept a settlement that some merchant class members had agreed to but that others had objected vociferously against. The court, as part of its analysis on whether to accept the settlement, had to consider the likelihood that the class would prevail on the merits and be able to show damages. The antitrust economics of multi-sided platforms is at the heart of the reasoning the judge brought to bear. The next two articles primarily concern the European Court of Justice's judgment in *Cartes Bancaires*, which was issued on September 11, 2014. The ECJ reversed a judgment by the European General Court in part on the basis that the lower court had not properly considered the role of two-sided platforms in whether the practices at issue harmed competition. Frederic Pradelles & Andreas Scordamaglia-Tousis, who represented *Cartes Bancaires*, and Renato Nazzini & Ali Nikpay address this judgment and its implications for multi-sided platform cases going forward.

As always, we thank the contributors to this issue as well as our editorial team, in particular Lindsay McSweeney, the editor of the *CPI Antitrust Chronicles*, and Carolyn Vallejo, the editor of the *CPI Daily Newsletter*.

David S. Evans

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*A Symposium on
Antitrust Economics
of Multi-Sided
Platforms*

*Card Surcharges
and Cash Discounts:
Simple Economics
and Regulatory
Lessons*

*BY HÉLÈNE BOURGUIGNON, RENATO
GOMES, & JEAN TIROLE*

BY HÉLÈNE BOURGUIGNON, RENATO GOMES, & JEAN TIROLE¹

The role of payment cards in modern economies can hardly be underrated. In 2013, debit and credit card transactions represented roughly half of all consumer payment transactions in Western Europe, and accounted for more than 45% of all payment transactions in the United States.² The payment card industry has faced intense antitrust scrutiny on both sides of the Atlantic, partly in response to the merchants' recurrent complaints about high transaction fees. In the past, regulation has mainly targeted the fees imposed by payment card networks. For instance, the most commonly used regulatory instrument caps the "interchange fee," which is the payment made by the merchant's bank (called the acquirer) to the cardholder's bank (the issuer). This interchange fee in turn impacts the merchant fee, which has sparked the controversy in the first place. The last few years have witnessed a renewed interest in policies allowing merchants to differentiate price according to payment choice. Absent public regulation on the matter, payment systems (open systems such as Visa and MasterCard, but also closed systems such as Amex, PayPal, and Google Wallet) have prohibited merchants from levying surcharges on their own payment method (the so called "no surcharge rule"). Arguably, one natural alternative to traditional regulation of interchange fees is to let merchants price discriminate as a function of payment method, allowing them to pass through to consumers any excessive merchant fees. The primary object of this note is to shed light on this debate, and clarify how optimal regulation of cash discounts/card surcharges by merchants is related to traditional modes of regulation of merchant fees.

I. INTRODUCTION

Merchants often offer consumers a variety of payments means, such as cash, credit/debit cards, and, in the case of online shopping, internet-based payment instruments, such as PayPal, Google Wallet, and Bitcoin.

Different payment methods entail different costs and benefits for consumers and merchants. When merchant fees are high and consumer subsidies for card usage are generous (for instance, in the form of miles or cash-back programs), consumers and merchants tend to disagree on their preferred payment method. In this context, at the point of sale, consumers typically prefer paying by card, whereas merchants may prefer payments by cash.

Under "price coherence" or "uniform pricing" (that is, pricing that does not reflect the payment method), consumers typically do not take into account the effect of their choice of payment method on merchant costs. Arguably, one natural way to make consumers internalize this externality is to allow merchants to make prices contingent on the payment method chosen by consumers. By using monetary incentives that favor their most preferred payment method, merchants can steer consumers towards paying in the "right way."

Yet, for a long time and in most countries, the possibility of price discriminating according to payment method was not granted to merchants. Card schemes enforced a rule prohibiting merchants from surcharging

card transactions—the so-called no-surcharge rule (“NSR”). Remarkably, however, this rule does not prevent merchants from offering cash discounts.

This asymmetry is puzzling for economists: When consumers are perfectly informed about the merchant’s card policy, the difference between cash discounts and card surcharges is semantic. After all, the merchant can always redefine retail prices and interchangeably label the difference between cash and card payments as either a discount or a surcharge. This observation comes at odds with the fact that public authorities and business executives do not see discounts and surcharges as equivalent, as the recent and intense antitrust litigation on this matter attests.

THIS OBSERVATION COMES AT ODDS WITH THE FACT THAT PUBLIC AUTHORITIES AND BUSINESS EXECUTIVES DO NOT SEE DISCOUNTS AND SURCHARGES AS EQUIVALENT, AS THE RECENT AND INTENSE ANTITRUST LITIGATION ON THIS MATTER ATTESTS.

These issues are not limited to traditional payment card networks. A large variety of new payments instruments, such as PayPal, Amazon Payments and Google Wallet were recently developed to support internet and mobile-phone payment transactions. Merchants who accept these new payment methods are also contractually obliged to practice price coherence.³ As card payment platforms had done earlier, online payment platforms try to foster the use of their payment instrument by eliminating merchant resistance in the form of discriminatory pricing.

In this note, we report on a framework for the study of payment-method-based price discrimination. We deliver insights on the platform’s fee structure and the merchants’ behavior under various alternative policies regarding cash discounting and card surcharging. We also draw normative prescriptions, and discuss optimal regulation.

We start by reviewing how authorities in different countries regulate payment-method-based price discrimination. We will then discuss a framework for the study of cash discounts and card surcharges, and flesh out the main economic forces that should drive regulation on this matter. We conclude by describing a number of positive predictions and normative implications of our analysis.

II. SOME INSTITUTIONAL BACKGROUND

A. *United States*

Whereas cash discounting was always allowed, card surcharging was long forbidden in the United States by payment card platforms.

Changes in regulation regarding surcharging took place very recently. Following a class-action lawsuit filed by merchants and trade associations in 2005, the United States District Court for the Eastern District of New York approved in January 2013 a settlement proposed by Visa and MasterCard.⁴ Visa and MasterCard

agreed to alter their credit card surcharging rules, including the ability for merchants to surcharge certain credit card transactions. Surcharging is nonetheless still prohibited on any debit card or pre-paid card transactions.

NOTWITHSTANDING THE RECENT CLASS ACTION SETTLEMENT ON THE MATTER, THE LEGAL GROUNDS FOR SURCHARGING VISA AND MASTERCARD CREDIT CARD TRANSACTIONS REMAIN UNCLEAR FOR MERCHANTS.

Notwithstanding the recent class action settlement on the matter, the legal grounds for surcharging Visa and MasterCard credit card transactions remain unclear for merchants. This is so mostly because of 1) a variety of state laws that ban surcharging and 2) the often conflicting interaction between private contract obligations and

social regulation.

First, the new rules require merchants to (i) notify the card scheme of their intent to surcharge at least 30 days prior to implementing their surcharging policy; (ii) cap surcharges to the costs incurred to accept cards (and in any event, no greater than 4 percent per transaction); and (iii) disclose their surcharging practices to customers at the point of entry, the point of sale, and on the receipt.

Second, the class-action settlement does not override state law. Currently, there are laws limiting surcharging in California, Colorado, Connecticut, Florida, Kansas, Maine, Massachusetts, Oklahoma, Texas, and Utah. Thus, before surcharging, a merchant must verify that surcharging is permitted in the state in which the transaction is made.

Last, the contracts signed with other credit card companies may impact a merchant's ability to surcharge Visa and MasterCard transactions. For instance, in order to surcharge a Visa credit card transaction, the merchant is obliged to do likewise on any transaction with any other credit card charging an at-least-as-high merchant fee. In parallel, the contractual rules of American Express, until recently, required that, whenever practiced, card surcharges have to be the same on all types of cards. Because Visa explicitly prohibits surcharges on debit cards, in such a case the merchant cannot surcharge any card.

On February 2014, American Express accepted a settlement agreement in a separate class of lawsuits that specifically addressed the ability of merchants to surcharge consumers using an American Express card. According to this agreement, merchants will have the option to surcharge American Express credit card transactions, even if they do not surcharge prepaid and debit card transactions. As of the date of this writing, Court approval was still pending to ratify this agreement.

B. European Union

In the European Union, the Payment Services Directive 2007/64/EC explicitly states that merchants can surcharge and/or offer a discount for the use of a given payment instrument. However, Member States were authorized to prohibit or limit surcharging on their territory. Whereas discounts are allowed everywhere in the European Union, the Member States policies toward surcharging vary significantly: As of today, 12 Member

States allow surcharging,⁶ 14 prohibit it,⁷ and 1, Denmark, allows surcharging for credit card but not for debit card. Some of the States that ban surcharges justify this prohibition by arguing that the no-surcharge rule encourages consumers to switch away from cash-based transactions to more efficient payment instruments.

When authorized, surcharging is nonetheless restricted by the European Consumer Rights Directive 2011/83/UE (article 19), in effect since June 13, 2014, that states that above-cost surcharges will be prohibited for all payment methods.

In 2012, the European Commission conducted a survey of surcharging practices in some European countries (Belgium, Denmark, Finland, France,⁸ Germany, Ireland, Netherlands, Spain, and the United Kingdom). The survey results show that surcharging is an expanding practice, although not yet pervasive in all sectors. The countries with the highest share of surcharging merchants were Ireland (15 percent), the United Kingdom (14 percent), and the Netherlands (10 percent). The survey also found that surcharging practices in 2012 were more prevalent than in 2009 in almost all countries. For instance, in Denmark, 9 percent of merchants were surcharging in 2012, but only 5 percent did so in 2009. The travel/hotel sector was notably prone to surcharging: The average proportion of surcharging merchants added up to 26.9 percent in the United Kingdom and 34.8 percent in Ireland. Airlines, especially low-cost ones, are also particularly adept at “surprising” their customers with card surcharges at the point of sale.

More recently, in July 2013, a proposal for a new directive on payment services advocated that surcharging and discounting be *allowed* on payment instruments that are not subject to interchange fee regulation (these are closed systems, such as American Express), but *prohibited* on payment instruments that are subject to interchange fee regulation (such as Visa and MasterCard). Currently, this proposal is being discussed at the European parliament and the European Council of Ministers.

C. United Kingdom

The United Kingdom passed a law on February 28, 1991 that prohibited any payment card platforms from restricting the merchants’ ability to surcharge consumers for card transactions.

In the first years following this law, surcharging remained a rare practice. Only one big company, Ikea, charged customers with a 0.70£ fee for card payments, whereas most of the small retailers remained committed to uniform pricing. Over the years, however, many firms in the entertainment and travel/hotel industries have adopted surcharging practices. For example, as of 2010, most airlines companies levied credit card surcharges of up to £10.

The Office of Fair Trading (“OFT”) estimated that consumers spent around £300 million in card surcharges in 2010 in the airline sector alone. An OFT’s consumer survey conducted in 2010 found that 87 percent of consumers objected to extra charges for credit cards and 91 percent objected to extra charges for debit cards.

A super-complaint⁹ against excessive credit card surcharging was launched in 2011. It raised several issues: First, surcharges are often concealed from consumers before the point of sale. Second, surcharges do not appear to reflect the merchants' costs of card transactions. Third, many consumers do not have access to surcharge-free methods.

The OFT upheld the 2011 super-complaint, and promulgated a ban on excessive card charges that came into force on April 2013. Since then, merchants have been forbidden to charge customers more than what it costs them to process the payment. The attributable costs can include direct costs beyond the merchant service charge, such as (i) point of sale devices; (ii) risk management; (iii) charges for reversing or refunding a payment; or (iv) payments for services from intermediaries who provide equipment, fraud detection, and processing services for card payments.

IN SPITE OF THE NEW LEGISLATION,
THERE IS A SENSE THAT MOST
SURCHARGING COMPANIES ARE STILL
EXPLOITING THEIR CUSTOMERS WITH
INEFFICIENTLY HIGH CARD
TRANSACTION FEES.

In a parallel development, in July 2012, the OFT ruled that airline companies should eliminate debit card surcharges for airline tickets purchased online.

In spite of the new legislation, there is a sense that most surcharging companies are still exploiting their customers with inefficiently high card transaction fees. Consumer associations are nowadays trying to monitor the implementation of the OFT decisions to make sure that companies stick to the rules.

D. Australia

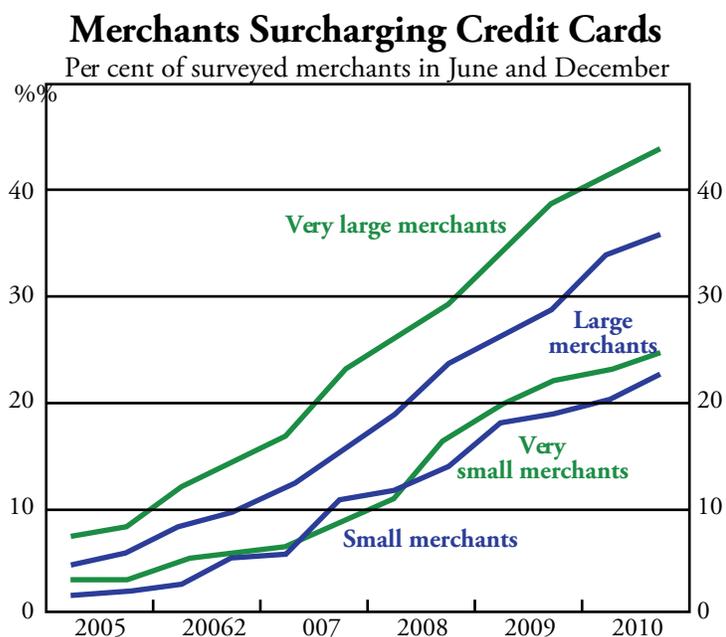
In the early 2000s, the Reserve Bank of Australia ("RBA") voiced concerns about the efficiency of its card payments system. Its main worry was that inefficiently high interchange fees were used to subsidize consumer reward programs, thus leading to overuse of card payment instruments.

In 2003, the RBA introduced reforms to the card payment market; it reduced interchange fees and prohibited the no-surcharge rule. This second measure came into force in 2003 for MasterCard and Visa credit cards, and in 2007 for debit cards. Figure 1 below illustrates the evolution of card surcharging in Australia since 2005.

HIS STUDY BROUGHT TO LIGHT
MANY INSTANCES WHERE SURCHARGES
WERE WELL ABOVE ACCEPTANCE
COSTS, OR WHERE A SINGLE "BLENDED"
SURCHARGE WAS APPLIED ACROSS
SEVERAL CARD SCHEMES

Following the first years after the reforms, the Board considered these policies to be successful in reducing merchant fees. However, in 2010, the RBA conducted a study on consumer payment behavior that led to a reconsideration of the above policies. This study brought to light many instances where surcharges were well above acceptance costs, or where a single "blended" surcharge was applied across several card schemes (even though merchants' acceptance costs were significantly different across cards).

Figure 1: The Evolution of Card Surcharging in Australia.¹⁰



In June 2012, the RBA conceded the necessity of reviewing its surcharging policies: “In recent years... some surcharging practices that potentially distort price signals—such as surcharging in excess of card acceptance costs—have become more widespread.”

The RBA then issued new rules, that took effect on March 18, 2013, allowing credit card companies to limit merchant’s surcharges to “the reasonable cost of acceptance,” which includes—but is not limited to—the merchant service fee. According to RBA data, this reasonable cost of acceptance should be, on average, less than one percent for merchants processing transactions through Visa and MasterCard, and about two percent for American Express and Diners Club.

Some enforceability problems were noted recently. First, the costs incurred by merchants are not observable by the card platforms. Second, and most importantly, card platforms are often reluctant to impose penalties on merchants, who may then switch to competing card platforms that are more lenient in enforcing the surcharging cap regulation.

One year after the introduction of these new rules, Choice, a prominent advocate of consumer rights in Australia, commissioned a new survey. The data revealed that Australians pay an estimated \$800 million in credit card surcharges annually (an average of \$100 per Australian household), mostly to airlines. Indeed many companies (in particular airlines) continue to use card fees as a way of raising additional revenue from consumers. The survey also found that close to half of Australians who reported paying a credit card surcharge claim were not being offered (or made aware of) an alternative, surcharge-free, payment method. Choice concluded that “the serial offenders won’t stop slapping on extra charges until effective monitoring and enforcement is in place.”

E. *Canada*

Prompted by intensive lobbying by merchant associations, Canadian authorities are currently considering lifting the no-surcharge rule. On the opposing side, the Consumers Association of Canada released in 2010 the results of a survey that found that 84 percent of Canadians do not approve of card surcharging. Notwithstanding strong consumer opposition, the Competition Bureau brought to the Competition Tribunal a complaint sponsored by major Canadian retailers against the no-surcharge rule. The Tribunal dismissed this complaint in July 2013 and suggested that the government act through regulation. No further action has been undertaken since then, and surcharging remains forbidden. It can, however, be noted that under the Code of Conduct for the Credit and Debit Card Industry in Canada, merchants may offer cash discounts.

III. MISSED SALES, CASH DISCOUNTS, AND CARD SURCHARGES: AN ANALYTICAL FRAMEWORK

The abundance of consumer complaints about exploitive card surcharging is common to all international experiences with surcharging authorization. Typically, card surcharges are only announced at the point of sale, after consumers incurred significant shopping costs.¹¹

We take this observation as the key building block of our analysis of payment-method-based price discrimination.¹² Accordingly, we assume that consumers observe listed prices, but do not know the merchant's policy toward surcharging or discounting payment instruments, when they decide whether to visit the store (or browse the website, in the case of online merchants). This assumption is natural in industries characterized by one-time (or infrequent) shopping—such as travel (e.g., airlines and gas stations), tourism, and various retail/service sectors (e.g., durable goods). More broadly, this assumption is likely to hold whenever consumers have bounded memory or are rationally inattentive regarding past purchasing experiences.

Importantly, under this assumption, the payment platform cannot charge the merchant for the increased attractiveness stemming from card acceptance, which is the foundation for the traditional "must-take-card" argument that has been the centerpiece for many antitrust lawsuits on the interchange fee.¹³ As we shall demonstrate, the assumption of imperfect information is key to understanding why consumers and merchants do not view cash discounts and card surcharges as equivalent.

THE ASSUMPTION OF IMPERFECT INFORMATION IS KEY TO UNDERSTANDING WHY CONSUMERS AND MERCHANTS DO NOT VIEW CASH DISCOUNTS AND CARD SURCHARGES AS EQUIVALENT.

An important benchmark for the regulation of merchant fees is the so-called "tourist test."¹⁴ This test is said to be satisfied whenever the merchant fee does not exceed the merchant's convenience benefit of a card

payment, also called the avoided cost. That is—conditional on the customer being at the point of sale and willing to pay regardless of the payment method—the merchant is happy to have the customer pay by card.

The reference to a tourist captures the idea that there is no repeat purchase, and so accepting the card does not bring about any benefit from the customer being more willing to return to the store because he now knows that cards are accepted. A must-take card is then a card that merchants are willing to accept even when the merchant fee exceeds the convenience benefit of card transactions (i.e., the tourist test is violated). Holding constant the platform's profit margin per transaction, social welfare is maximized if, and only if, the tourist test is satisfied with equality. This test was recently adopted by the European Commission as the benchmark for setting interchange fees.

A. *Missed Sales*

A missed sale occurs when the customer is in the shop and eager to buy, has a high inconvenience cost of paying by cash, and is discouraged by either a high card surcharge or an outright rejection of the card.

Importantly, absent card surcharges or cash discounts, missed-sales concerns generate must-take cards. That is, merchants will accept the card even when the merchant fee exceeds their convenience benefit of card payments. The reason is that, when merchant markups are high, if consumers expect the merchant to accept cards, the volume of missed sales that would result from card refusal is high enough to induce the merchant to indeed accept card transactions.

The importance of missed sales is underscored by the empirical work of Wilko Bolt, Nicole Jonker, & Corry van Renselaar.¹⁵ Using survey data from the Netherlands, they document that five percent of consumers reported leaving a merchant's store without purchasing when faced with card refusal or steep card surcharges. Given the relative magnitude of markups and merchant fees, such a fraction is likely to raise a significant concern for merchants.

B. *Cash Discounts and Card Surcharges*

When consumers imperfectly observe the merchant's discount/surcharge policy, cash discounts are a giveaway to consumers who already are in the shop and have cash. By contrast, card surcharges hold up the consumer, who has made the specific investment to come to the store and inspect wares.

WHEN CONSUMERS IMPERFECTLY OBSERVE THE MERCHANT'S DISCOUNT/SURCHARGE POLICY, CASH DISCOUNTS ARE A GIVEAWAY TO CONSUMERS WHO ALREADY ARE IN THE SHOP AND HAVE CASH.

The merchant's optimal cash discount (card surcharge) balances the marginal revenue from steering customers to pay by cash and the marginal costs (gains) directly generated by the discount (surcharge). Cash discounts/card surcharges are optimal for the merchant if, and only if, the merchant fee, denoted by m ,

exceeds a price discrimination threshold. The price discrimination threshold is lower for a card surcharge, which brings in additional revenue to the seller, than for a cash discount, which benefits customers. As a result, card surcharges occur even when the tourist test is met, while cash discounts only occur if the merchant fee is sufficiently above the tourist test level.

In Figure 2, which illustrates this point, b_s denotes the merchant’s convenience benefit, i.e. the net benefit for the merchant of a payment by card relative to a payment by cash. The merchant fee levels m_1 and m_2 denote the price discrimination thresholds associated with card surcharging and cash discounting, respectively. Merchants levy card surcharges provided the merchant fee m is higher than the threshold m_1 , which is lower than the tourist test level b_s . In turn, merchants offer cash discounts when the merchant fee m is higher than the threshold m_2 , which is higher than the tourist test level b_s . The difference between m_1 and m_2 reflects the fact that, relative to card surcharges, cash discounts are a costly way of steering consumers to pay by cash. As a result, the merchant always prefers a card surcharge to a cash discount when given the choice between the two.

Figure 2: Discount and Surcharge Behavior by Merchants.

	Tourist test satisfied	Tourist test violated
Merchant discount m	m_1	b_s m_2
Cash discount?	No	Yes
Card surcharge?	No	Yes

Price discrimination then leads us to define *effective* merchant and cardholder fees, which are the

BECAUSE MERCHANTS USE CARD SURCHARGES AS A PRICE DISCRIMINATION DEVICE (SCREENING CONSUMERS WITH DIFFERENT COSTS OF CASH PAYMENTS), THE MERCHANT ALWAYS “OVERSHOOTS” IN THE SURCHARGE, LEADING TO AN EFFECTIVE MERCHANT FEE THAT STRICTLY SATISFIES THE TOURIST TEST.

fees that merchants and consumers effectively pay once the merchants’ corrective discounts or surcharges are factored in; under a surcharge the effective merchant fee can be positive or negative even when the original merchant fee is positive. Because merchants use card surcharges as a price discrimination device (screening consumers with different costs of cash payments), the merchant always “overshoots” in the surcharge, leading to an effective merchant fee that strictly satisfies the tourist test. In contrast, because cash

discounts are a costly gift to consumers, the merchant always “undershoots” in the discount, leading to an effective merchant fee that strictly violates the tourist test.

These predictions are broadly consistent with available evidence. Using consumer and retailer survey data from the Netherlands (where both cash discounts and card surcharges are legal), Wilko Bolt, Nicole Jonker, & Corry van Renselaar show that about 22 percent of Dutch retailers practice card surcharges, while no retailers in their sample practice cash discounts.¹⁶ They also provide empirical support for abusive surcharges by reporting an average debit card surcharge of 2.3 percent among merchants who surcharge. As merchant fees are around one percent for debit cards, the effective merchant fee faced by these merchants is, on average, negative.

Card surcharges are, for instance, commonplace for low-cost online bookings, in which customers sink a substantial time cost only to find out in the last (payment) step that a surcharge is levied. Moreover, the industries where credit card surcharges are most often experienced are air travel, holiday travel, restaurants, taxis, and gas stations. These industries exhibit one-time or infrequent shopping, and appear to fit well the assumption that consumers have imperfect information regarding the merchant's cash/card policy. By contrast, cash discounts are rarely observed in these industries.

C. Platform Fees When Cash Discounts/Card Surcharges are Allowed

How does the platform optimally adjust its fee structure in response to laws allowing merchants to practice cash discounts/card surcharges?

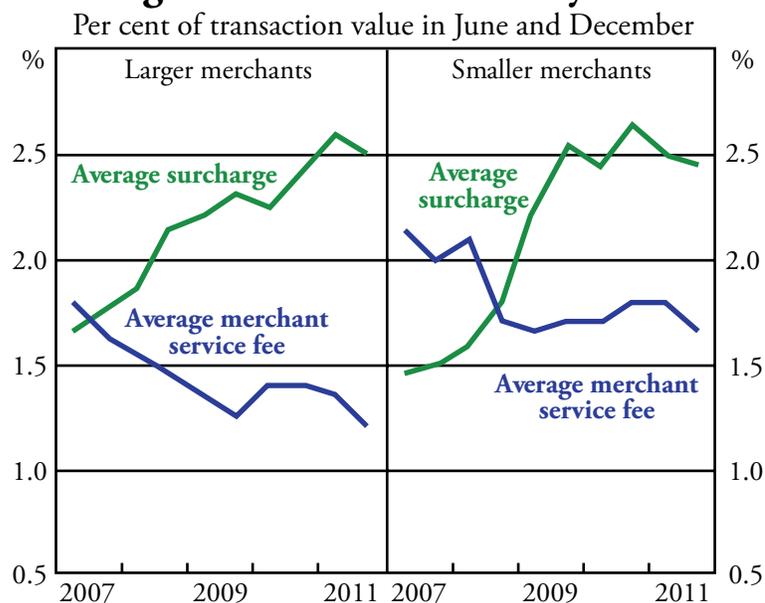
Consider first the case of card surcharges. Because of the merchant's surcharging behavior, permitting card surcharges has the same effect as that of an upper bound on the effective merchant fee that the platform can implement. The reason is that the merchant, by surcharging card transactions, has full control over his effective merchant fee. As the merchant "overshoots" in surcharges relative to efficiency (in order to extract more rents from consumers), the platform is unable to implement an effective merchant fee at or above the tourist test level. As a consequence, permitting card surcharges leads to an inefficiently low volume of card transactions.

HOW DOES THE PLATFORM OPTIMALLY ADJUST ITS FEE STRUCTURE IN RESPONSE TO LAWS ALLOWING MERCHANTS TO PRACTICE CASH DISCOUNTS/CARD SURCHARGES?

Relatedly, interchange fee regulation and permitting surcharging are substitute instruments. Take the 2003 reduction in the interchange fee mandated by the RBA. For credit cards, the three bank associations, which had set the interchange fee at around 0.95 percent of the transaction value, were forced to reduce their interchange fee to around 0.55 percent. This reduction was concomitant with a regulation authorizing surcharging. Our analysis predicts that, with some caveats, a partial decrease in the interchange fee might have occurred anyway in reaction to the introduction of surcharging.¹⁷ Figure 3 illustrates this point.

Figure 3: Surcharges and Merchant Fees¹⁸

Surcharges and Merchant Fees by Merchant



In terms of welfare, lifting the no-surcharge rule substitutes one inefficiency (underuse of cards due to inefficiently high card surcharges) for another (overuse of cards due to low merchant resistance under uniform pricing). Therefore, welfare can either decrease or increase, depending on the level of merchant fees under uniform pricing. If this level is high, lifting the no-surcharge rule increases social welfare, but decreases it otherwise.

By contrast, allowing cash discounts is unambiguously welfare enhancing. As in the case of card surcharges, allowing cash discounts has the same effect as that of an upper bound on the effective merchant

BY CONTRAST, ALLOWING CASH DISCOUNTS IS UNAMBIGUOUSLY WELFARE ENHANCING.

fees that the platform can implement. Because merchants “undershoot” in discounts relative to efficiency, this upper bound is strictly above the tourist test level. As a result, cash discounts reduce, but do not eliminate, an inefficiently high

volume of card transactions. Welfare strictly increases with cash discounts if the upper bound is binding for the platform’s problem in a world of uniform pricing. If this upper bound is slack, allowing for cash discounts affects neither the platform nor the behavior of the merchant (who does not find it profitable to practice cash discounts).

D. Are Regulatory Surcharging Caps Adequate?

Traditionally, policy discussions on the no-surcharge rule have focused on the discrete choice between *laissez-faire* (i.e., no restrictions on surcharging) and outright prohibition, with the payment systems typically enacting rules prohibiting surcharges and authorities occasionally striking down these rules. Lately, though, the European Union, the United Kingdom, and Australia all have proposed variations on the idea that surcharges

should be limited to some variant of the notion of "cost of acceptance," which includes the merchant fee plus possible various other costs.

As it turns out, any surcharge cap equal to or exceeding the merchant fee level is too lenient for the merchant. The optimal surcharging cap should equal the difference between the nominal merchant fee and the convenience benefit of card payments faced by the merchant ($m - b_s$ in the notation of Figure 2). By capping surcharging this way, merchants can pass through to consumers any excessive merchant fee, but are prevented from exploiting consumers at the point of sale. In particular, the cost-based surcharging cap currently under consideration by regulators is optimal only in the unlikely event that the merchant's convenience benefit from card acceptance is zero.

AS IT TURNS OUT, ANY SURCHARGE CAP EQUAL TO OR EXCEEDING THE MERCHANT FEE LEVEL IS TOO LENIENT FOR THE MERCHANT.

There is an obvious caveat to the applicability of surcharging caps. Setting the "right" surcharge cap requires that the regulator knows the merchant's convenience cost of cash benefits. This knowledge is not easily available to regulators, and its measurement is subject to debate—as the recent experience of interchange fee regulation according to the tourist test attests.

Antitrust authorities are contemplating an alternative antidote to excessive surcharges, "mandated transparency," in which the merchant would be obliged to post the level of surcharge together with the price.

Transparency regulation in principle has the potential of forcing the merchant to commit to a card surcharge, therefore eliminating hold-ups for attentive consumers. However, this regulation faces its own difficulties. First, there are considerable menu costs for the merchant, who needs to post the surcharges for the different types of cards he accepts (debit/credit, various card associations and proprietary systems) next to the price or, more realistically, as a general policy displayed prominently in the store. Furthermore, inattentive consumers may overlook the card surcharging announcement, or be overloaded by its information. For instance, consumers may enter the shop thinking of a purchase for which they have enough cash and then discover that they want to buy a more expensive or an additional item.

Another issue is that price publicity may not come from the merchant. For example, the product manufacturer may run a national advertising campaign, where it is infeasible to disclose the policies of all retailers carrying the product. A similar issue arises when the consumer learns the retailer's price through a price-comparison engine; as is well-known such comparisons are multidimensional as they depend on the type of purchase/consumer. So, if websites pick the price for the bare-bones product (including a payment by cash) as they often do, there is still an element of hold-up in the retailer's choice of

IN THE END, NEITHER SURCHARGE CAPPING NOR MANDATORY TRANSPARENCY IS A PERFECT REGULATORY RESPONSE TO THE INEFFICIENCIES ATTACHED TO SURCHARGING, AND WE THEREFORE CAN THINK OF THE TWO REGULATIONS AS COMPLEMENTS.

surcharge. In the end, neither surcharge capping nor mandatory transparency is a perfect regulatory response to the inefficiencies attached to surcharging, and we therefore can think of the two regulations as complements.

IV. CONCLUSIONS

Let us summarize our main insights. The main positive implications of our analysis are:

1. Missed-sales concerns generate must-take cards. That is, merchants will accept the card even when the merchant fee exceeds their convenience benefit of card payments.
2. Surcharging always generates too few card transactions, both from the point of view of the payment platform—which therefore prefers to prohibit surcharging—and from the point of view of the social planner.
3. In response to laws allowing card surcharging, effective merchant fees decrease and effective cardholder fees increase. Moreover, if surcharges involve any extra convenience cost for merchants, the payment platform should optimally choose merchant and cardholder fees in a way that surcharges do not occur. Consequently, public regulations authorizing card surcharging do not generate much actual surcharging.

In turn, the main normative implications of our analysis are:

1. Surcharges should be banned when the merchant fee is regulated optimally.
2. Allowing card surcharging increases social welfare if, and only if, the merchant fee under uniform pricing much exceeds the tourist test level.
3. If the no-surcharge rule is lifted, interchange fee (or merchant fee) regulation is detrimental to welfare. Regulation should focus on merchants' behavior, rather than on the platform's behavior.
4. If surcharging is to be allowed, the optimal cap is equal to the merchant fee minus the merchant's convenience benefit from card payments. Recent cost-based regulations allow merchants to charge too much.
5. Mandated transparency regulation eliminates hold-ups for attentive consumers; however, it (i) may not be feasible (as when the consumer learns a price through a national advertising campaign or a price comparison engine), (ii) may involve transaction costs for the merchant, (iii) does not address the existence of inattentive consumers, and (iv) does not prevent inefficient surcharging if the consumer's willingness to pay is correlated with his desire to use the card (as we argue is likely to be the case). Thus transparency is not a perfect regulatory response to the inefficiencies attached to surcharging, and the two regulations may well be complementary. ▲

¹ Jean Tirole is Chairman of the Board of the Jean-Jacques Laffont Foundation at the Toulouse School of Economics, scientific director of the Industrial Economics Institute (IDEI) in Toulouse, and the winner of the 2014 Nobel Memorial Prize in Economic Sciences. Renato Gomes is Assistant Professor at Toulouse School of Economics. His current research focus on Industrial and Public Economics, in particular non-linear pricing, two-sided markets and taxation. H elene Bourguignon is Managing Consultant at MAPP, a consultancy based in Paris and Brussels.

² Source: MasterCard Advisors analysis, 2013.

³ Regarding Paypal, its *User Agreement for PayPal Services* states that merchants “shall not impose a surcharge or any other fee for accepting PayPal as a payment method”. Merchants “may charge a handling fee in connection with the sale of goods or services as long as the handling fee does not operate as a surcharge and is not higher than the handling fee you charge for non-PayPal transactions”. In turn, the *User Agreement Policies* of Amazon Payments states that “Except as permitted by Network Rules or applicable law, you will not (a) establish limits below which you will not accept a Card, (b) assess a surcharge for the use of a Card in connection with any transaction” (see <https://payments.amazon.com/help/Personal-Accounts/User-Agreement-Policies/User-Agreement>). Finally, the *Terms of Service - Seller of Google Wallet* states that in its paragraph 2.4 item (c) that “Unless expressly permitted in writing by GPC, Seller may not add any Service use surcharge to a Payment Transaction” (see <https://wallet.google.com/legaldocument?family=0.sellertos>).

⁴ This settlement would allow merchants in the United States to impose surcharges on card transactions. The agreement passed on January 27, 2013 (Payment card interchange fee and merchant discount antitrust litigation, No. 05-MD-1720 (JG) (JO), United States District Court & Eastern District Court of New York). The final approval by the U.S. District Court for the Eastern District of New York took place on December 13, 2013.

⁵ Article 52-3: “The payment service provider shall not prevent the payee from requesting from the payer a charge or from offering him a reduction for the use of a given payment instrument. However, Member States may forbid or limit the right to request charges taking into account the need to encourage competition and promote the use of efficient payment instruments.”

⁶ Belgium, Estonia, Finland, Germany, Ireland, Malta, Netherlands, Poland, Slovakia, Slovenia, Spain, United Kingdom.

⁷ Austria, Bulgaria, Cyprus, Czech Republic, France, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Portugal, Romania, Sweden.

⁸ France is a special case. While surcharging is officially prohibited, some merchants were nevertheless applying surcharges. So the objective of the survey was to find out how extensive this practice was.

⁹ A super-complaint is a complaint made in the UK by a state-approved ‘super-complainant’/watchdog organization on behalf of consumers, which was fast-tracked to a higher authority such as the Office of Fair Trading (prior to its dissolution on 1 April 2014). The official body now in charge of general consumer protection super complaints is the Competition and Markets Authority.

¹⁰ Source: Reserve Bank of Australia and East & Partners, Australian Merchant Acquiring and Cards Markets: Special Question Placement Report prepared for the Reserve Bank of Australia.

¹¹ In the case of a brick-and-mortar merchant, shopping costs includes finding and going to the shop, inspecting or trying the good, thinking about potential usage, size and model, loss aversion, etc. In the case

of online merchants, shopping costs stem from the nuisance of completing the usually numerous steps before card surcharges are revealed. In economic parlance, we say that consumers are “held up” at the point of sale by merchants.

¹² For a formal treatment of these issues, see H el ene Bourguignon, Renato Gomes, & Jean Tirole, *Shrouded Transaction Costs*, TSE & IDEI mimeo.

¹³ On this point, see Jean-Charles Rochet & Jean Tirole, *Cooperation among Competitors: Some Economics of Payment Card Associations*, 33(4) *Rand J. Econ.* 549-570 (2002); John Vickers, *Public Policy and the Invisible Price: Competition Law, Regulation and Interchange Fee*, Proceedings—Payments System Research Conferences, available at <http://www.kansascityfed.com/publicat/pscp/2005/Vickers.pdf>; and Julian Wright, *Why Payment Cards Fees Are Biased Against Retailers?*, 43(4) *RAND J. Econ.* 761-780 (2012).

¹⁴ See Jean-Charles Rochet & Jean Tirole, *Must-Take Cards: Merchant Discounts and Avoided Costs*, 9(3) *J. Eur. Econ. Ass'n.* 462-495 (2011).

¹⁵ Wilko Bolt, Nicole Jonker, & Corry van Renselaar, *Incentives at the counter: An empirical analysis of surcharging card payments and payment behaviour in the Netherlands*, DNB Working Paper No. 196, (2008).

¹⁶ *Id.*

¹⁷ We are cautious in this statement for two reasons. First, the 0.95 percent rate probably was lower than the associations’ desired interchange fee as they may have (unsuccessfully) tried to avoid regulation. Second, merchants in Australia often demand a “blended surcharge.” As Amex and Diners Club charge substantially higher merchant fees, the level of the interchange fee has less impact on the surcharge than is predicted by our theory. Overall, only five percent of transactions in Australia involve a surcharge. Also consistent with the theory is the fact that reward cards have become less attractive in Australia.

¹⁸ Source: Reserve Bank of Australia and East & Partners, *Australian Merchant Acquiring and Cards Markets: Special Question Placement Report* prepared for the Reserve Bank of Australia.

Let the Right “One” Win: Policy Lessons from the New Economics of Platforms

BY E. GLEN WEYL & ALEXANDER WHITE¹

Many of the leading controversies in competition policy in the last two decades, especially those surrounding the Microsoft case, reflect the challenges posed by platform industries. Unfortunately, too often economists and policymakers have drawn the wrong lessons when thinking about such industries. Central to our analysis is a more realistic view of the process of consumer coordination. Platforms often use “usage revenue later” strategies to ensure that consumers coordinate on their platform. This greatly mitigates the possibility of inefficient lock-in or excessive dominance by a leading platform, but it makes inefficient fragmentation a greater danger. Thus regulation, rather than competition policy, may be more appropriate in addressing potential market failures arising in platform industries.

I. INTRODUCTION

Karl Marx argued that technology shapes economic institutions.² Perhaps on a less grand scale than Marx had in mind, the growth of the platform business model over the last two decades in response to the spread of the internet seems a classic case in point. Yet, as Marx also argued, not only economic institutions, but also political and social institutions must adapt to these new technological conditions. Many of the leading controversies in competition policy in the last two decades, especially those surrounding the Microsoft case, have concerned policy-makers’ attempts to come to terms with the challenges posed by platform industries. Unfortunately, as we will argue in this article, too often economists and policymakers have drawn the wrong lessons when thinking about platform industries. The crucial ingredient of our analysis that takes us down a different path is the more realistic view recently developed in the economics literature of the way in which platforms’ pricing strategies can be adaptive by design.

The crux of the problem is that platform markets typically exhibit externalities between consumers, some of whom fall into different groups or “sides.” Video gamers, for instance, benefit from more games being available on their preferred platform. Conversely, game developers benefit from the presence of more gamers. If consumers mis-coordinate, say by expecting an inferior incumbent technology to persist, this may slow technological progress and undermine competition. Yet, we will argue, entrant firms need not sit passively and hope that consumers get their act together. Ambitious platform start-ups can, and often do, offer highly subsidized services until they have built up a sustainable user base; Amazon and Uber are two prominent recent examples. Such strategies largely undermine the traditional focus on consumer coordination in these markets and move the focus to the incentives facing firms. These, in turn, raise a host of very different policy concerns that are orthogonal or, in some cases, contrary to those one would expect when focusing on decentralized consumer coordination.

THE CRUX OF THE PROBLEM IS THAT PLATFORM MARKETS TYPICALLY EXHIBIT EXTERNALITIES BETWEEN CONSUMERS, SOME OF WHOM FALL INTO DIFFERENT GROUPS OR “SIDES.”

available on their preferred platform. Conversely, game developers benefit from the presence of more gamers. If consumers mis-coordinate, say by expecting an inferior incumbent technology to persist, this may slow technological progress and undermine competition. Yet, we will argue,

In particular, we will argue in Section II that the conventional wisdom—that network effects can cause a dominant firm to become inefficiently entrenched—is misleading if firms adopt realistically sophisticated strategies. However, platforms’ use of such strategies also undermines the commonly presumed benefit of network effects in stimulating competition for this dominant position. Yet, as we argue in Section III, it is precisely the ability of firms to overcome coordination problems that creates more familiar distortions from industries with economies of scale. Firms chasing the natural profits of a monopoly may overly fragment the market on the one hand, while, if firms are unable to appropriate the value they deliver to consumers, this may inhibit innovation and the adaptation of products to consumer preferences.

In Section IV, we argue that the policy implications of this perspective are quite different from, and in many ways opposite to, those traditionally prescribed. They involve aiding, rather than slowing, the winner-take-all process, thereby ensuring that dominant firms can appropriate reasonable rewards for innovation and limiting the profits that can be achieved through fragmenting the market. Yet this emphasis on letting and even helping the “One” firm that Peter Thiel celebrates in his recent best seller, *Zero to One*, also calls for corresponding regulation to ensure such dominant firms serve the public interest.³

We conclude in Section V with a discussion of what we consider some of the most interesting open research questions that could help inform competition policy towards platform industries.

Some of the “contrarian” views we express here have become increasingly prominent in the folk discussion in economics in recent years,⁴ which, itself, has likely been stimulated by the success that entrants have had in disrupting dominant firms in internet markets. Nevertheless, we believe that our focus on more adaptive platform strategies, which is inspired by our ongoing formal work⁵ discussed below, gives rise to a substantially different logic from any that we have seen argued in the policy literature. Thus we hope that this piece may offer a small contribution to the formation of a systematic and coherent understanding of platform industries.

WE BELIEVE THAT OUR FOCUS ON MORE ADAPTIVE PLATFORM STRATEGIES, WHICH IS INSPIRED BY OUR ONGOING FORMAL WORK DISCUSSED BELOW, GIVES RISE TO A SUBSTANTIALLY DIFFERENT LOGIC FROM ANY THAT WE HAVE SEEN ARGUED IN THE POLICY LITERATURE

We emphasize at the outset that our analysis is based on the current state of the literature on platforms, and our aim is to communicate the lessons of this literature. This literature leaves out many important considerations, some of which we return to in our conclusion. However, to the extent that existing policy intuitions derive from existing literature, rather than these yet unstudied considerations, we believe our analysis is a useful corrective to conclusions that are not actually consistent with the literature.

II. FOUR MISLEADING INTUITIONS

We begin by discussing several intuitions about network industries that we believe to be misleading, in view of both classic results and recent theoretical developments. Before turning to these, we briefly summarize these

developments, which underlie the conclusions we draw below.

Paul David famously argued that the QWERTY keyboard was significantly less efficient than competing designs.⁶ Yet, the story goes, due to network effects, generations of typewriter and computer users have found themselves “locked in” to this technology. In a widely cited article, Brian Arthur⁷ provides a model of this phenomenon, building on the work of Jeffrey Rohlfs⁸ and others, some of whose work we mention below.

A crucial feature of Arthur’s model is that the firms controlling the standards are not strategic. While these firms may set some price for their product upfront, this is done in an arbitrary manner that does not anticipate the potential coordination of consumers. While this assumption is reasonable in some contexts, it turns out to be far from innocuous.

The key point is that firms have an incentive not to simply allow consumer coordination (or mis-coordination) to run its course any which way. As the film *The Social Network* dramatizes more vividly than any economics paper could, as a way to promote its later viral spread Facebook’s founders exclusively sought out Harvard, and then other Ivy League students, as initial users—offering them an advertising-free service familiar from printed college “facebook” that showed pictures of classmates.⁹ Similarly, Amazon’s strategy of maintaining unprofitably low prices in order to build a strong network has become a pop business culture archetype. In China, Alibaba and Tencent have each recently built up the popularity of their taxi-hailing apps by offering subsidies to both drivers and passengers who use them.

THE KEY POINT IS THAT FIRMS HAVE AN INCENTIVE NOT TO SIMPLY ALLOW CONSUMER COORDINATION (OR MIS-COORDINATION) TO RUN ITS COURSE ANY WHICH WAY.

Any thorough analysis of possible lock-in must therefore take into account firms’ capacity to overcome this potential trap using temporary subsidization strategies. To our knowledge, the first work proposing such strategies is by Philip Dybvig & Chester Spatt,¹⁰ which, in the context of public good provision, shows that if consumers all place the same value on network effects, a simple strategy suffices to avoid coordination failures. In particular, given that the size of the effect is known, the authority can, at any given time, charge each consumer who joins the public good program a tax proportional to the size of the network effects currently in place.

This taxation strategy internalizes the network externalities, guaranteeing each consumer a fixed payoff from joining the program. If only a few other consumers join, the quality of the program is low, but so is the price. If many other consumers join, both quality and price are high. Either way, consumers are *insulated* against mis-coordination. Consequently, consumers have no reason to worry that the program will fail to live up to its intended level of popularity. In turn, this means that, by using such strategies, the authority can achieve whatever participation level it desires, without the concern of multiple (i.e., other, unintended) equilibria, in some of which consumers mis-coordinate.

There are limits, however, to how broadly such an approach can be used. Consumers may be heterogeneous—some valuing (in dollar terms) the network effects more than others—and thus there may be no single relevant tax rate for all consumers.

Nonetheless, in some cases, particularly in those of multisided platforms that charge different prices to different groups of consumers (e.g., as a gaming platform does to gamers and developers), these limits do not pose too great an obstacle to solving problems of consumer coordination. This is because simpler strategies can also work. One such kind of strategy, referred to as “divide and conquer,” involves charging consumers on one side of the market a sufficiently low price to entice them to join in large numbers and then recouping these losses by charging a high price on the other side. Another technique can be to jumpstart coordination by developing original content and exclusives that draw in users.¹²

In a recent paper,¹³ we show that a version of the sort of insulating strategies proposed by Dybvig & Spatt, can, in fact, be deployed by platforms in a very broad set of circumstances, including in the presence of heterogeneous consumers and when competing with other platforms. A key point to understanding why this is true is the following: when consumers value network effects with differing intensities from one another, it is impossible to fully and perfectly protect them all at the same time from fluctuations in their strength, because the appropriate compensation for one would be too little or too much for others. However, it is always possible to protect average marginal consumers. Doing this is enough insulate a firm’s total network effects from erosion through mis-coordination.

This approach to studying platform competition, which we call “Insulated Equilibrium” (“IE”), also turns out to be particularly analytically tractable. This is mainly due to the fact that it allows the analyst to set aside questions of consumer coordination and instead focus on firms’ incentives. In what follows, we are thus, to an important degree, informed by the analysis we have conducted ourselves using this approach. We try, however, to put things in a broad perspective, drawing as many connections as possible to the rich literature on network industries and multisided platforms.

THIS APPROACH TO STUDYING PLATFORM COMPETITION, WHICH WE CALL “INSULATED EQUILIBRIUM” (“IE”), ALSO TURNS OUT TO BE PARTICULARLY ANALYTICALLY TRACTABLE.

A. Network Effects Cause Inefficient Lock-In

Arthur’s and David’s primary concerns were with the possibility of a market becoming inefficiently locked-in by network effects to an inferior technology. These concerns played an important role in the Microsoft antitrust case. Microsoft’s critics argued that, “because of network effects and the applications barrier to entry, Microsoft did possess significant market power,”¹⁴ and even Microsoft’s defenders accepted the premise that network effects could be a source of market power that could exclude rivals but that “the very significant network effects and economies of scale in the platform market are largely absent in the browser market.”¹⁵

The last two decades have seen the rapid decline and replacement of apparently entrenched but likely

inefficient incumbents, such as AltaVista, AOL, Blockbuster, MySpace, and, to a lesser but still significant extent, Microsoft. The aforementioned lock-in argument thus seems shaky and is often perceived as such by academic observers. For example, Jonathan Levin writes, “the combination of low switching costs and low costs to creating new platforms might mitigate traditional concerns about lock-in and dynamic inefficiency.”¹⁶ Nevertheless, these views appear to have an enduring influence on policy. For example, in 2013, the European Commission cited, as one of its primary reasons for investigating Google, that, “In high-tech markets, in particular, network effects may lead to entrenched market positions.”¹⁷

Yet the basis of such claims in economic theory is unclear at best. Under IE, while, traditional sources of market power, such as horizontal product differentiation, can create such lock-in, in the models we have studied, network effects can never do this on their own, no matter how strong they are. A more-efficient but otherwise similar entrant may always use an insulating strategy to undercut the incumbent firm.

Moreover, this finding is consistent with the broader message of the literature. Michael Katz & Carl Shapiro¹⁸ sum things up by stating, “The claim that excess inertia [i.e., lock-in] is the theoretical exception rather than the rule now appears in several of the papers on technology adoption and network externalities.” Indeed, in some of the models to which these authors refer,¹⁹ the opposite form of market failure can arise, whereby a new technology is adopted too quickly. More recently, a host of papers²⁰ develop models that appear to further confirm this view.

There are, however, two important preconditions that must be satisfied before one can have confidence in this ability of a new, better technology to overcome what David Evans & Richard Schmalensee refer to as “failure to launch.”²¹ The owner of an efficient new technology must have both the ability and the incentive to enter the market and replace the incumbent.

REGARDING ABILITY, A CRITICAL QUESTION IS WHETHER, IN THE PARTICULAR INSTANCE IN QUESTION, A POTENTIAL ENTRANT HAS AT ITS DISPOSAL STRATEGIES THAT ARE SOPHISTICATED ENOUGH TO MANAGE CONSUMERS’ COORDINATION.

Regarding ability, a critical question is whether, in the particular instance in question, a potential entrant has at its disposal strategies that are sophisticated enough to manage consumers’ coordination. In some cases, particularly in multisided industries, relatively passive divide and conquer strategies may be sufficient in order to orchestrate this. In others, more responsive strategies resembling insulation could be necessary. If insulation is needed, the platform must be sufficiently well capitalized in order to finance subsidies to consumers early on that will be recouped only later after reaching critical mass.

Regarding the second issue of an entrant’s incentive, this point is nicely illustrated by Katz & Shapiro,²² who show that lock-in tends to occur when technologies are “unsponsored” but not when they are proprietary. Nevertheless, its importance appears to us to be underappreciated in policy discussions. These, therefore, are issues that we believe to be important and will discuss more below, but which are qualitatively different from the hard barrier of lock-in suggested by Arthur and David.

B. Markets Tip Too Often for the Social Good

Another view that is often heard in policy discussions is that platform markets are dangerously susceptible to “tipping” into a state where they are served by only one or a few dominant firms, when it would be more efficient for the market to be less concentrated.

The European Commission has expressed this concern in the context of the Google case.²³ In the United States, in a recent speech, Deputy Assistant Attorney General Renata B. Hesse alluded to the view that “In some markets, particularly platform markets, tipping can occur, resulting in a ‘winner take all,’ or ‘winner take most’ outcome,”²⁴ as a basis for applauding the decision in *United States v. Bazaarvoice*, in which a judge ruled that the online ratings platform had acted illegally in acquiring its competitor, PowerReviews.

Such a position strikes us as particularly strange, because research on the subject appears to point clearly towards the conclusion that, compared to industries without network effects, platform markets are more likely to be inefficiently fragmented. While in traditional industries with fixed costs there is a well-known tradeoff between increasing product variety and eliminating duplicative investments,²⁵ with (positive) network effects, there is the additional force that consumers benefit from joining the same platform as one another.

SUCH A POSITION STRIKES US AS PARTICULARLY STRANGE, BECAUSE RESEARCH ON THE SUBJECT APPEARS TO POINT CLEARLY TOWARDS THE CONCLUSION THAT, COMPARED TO INDUSTRIES WITHOUT NETWORK EFFECTS, PLATFORM MARKETS ARE MORE LIKELY TO BE INEFFICIENTLY FRAGMENTED.

Theoretical work on this issue, incorporating network effects, by Joseph Farrell & Garth Saloner²⁶ and more recently, in the context of multisided platforms, by Volker Nocke, Martin Peitz, & Konrad Stahl²⁷ reflects this view. Indeed the latter authors summarize one of their main results as, “monopoly platform ownership is socially preferable to fragmented ownership if platform effects are strong and possibly even if they are weak.”²⁸ Steven Berry & Joel Waldfogel²⁹ find empirical support for such claims in the context of media platforms, while Marc Rysman³⁰ finds a fragmented market for Yellow Page directories gives rise to higher welfare than would a monopoly because network effects in that industry “are not sufficiently strong.”

Our work and related work by Robin S. Lee³¹ show that such inefficient fragmentation is of particular concern when platforms can use insulating strategies. This is because such strategies tend to soften competition (as we discuss in Subsection II.D below) and thereby allow higher prices that attract even more excessive entry.

C. Solving These Problems Requires Efficient Consumer Coordination

Not everyone in the literature has adopted the pessimistic views outlined in the two previous subsections. However, even those that are more optimistic about equilibrium with network effects typically argue that efficient outcomes depend on disparate consumers’ ability to coordinate among themselves. This is formalized explicitly by Attila Ambrus & Rossella Argenziano³² and is the basis of Daniel Spulber’s claim that “consumer

coordination mitigates or eliminates technology lock-in.” Farrell & Paul Klemperer summarize the debate by saying that “Optimists expect that adopters can find ways to coordinate on shifting to any better offer that might be available...Pessimists see coordination as more likely to fail, or to succeed only by tracking cues other than adopter surplus such as history.”³⁴

While efficient consumer coordination could certainly help address some of the issues discussed above, we believe, along with the pessimists, that this is a risky bet. However, we further believe that platforms recognize this risk and “leave nothing to chance” by taking the onus of ensuring coordination into their centralized hands, rather than leaving in to a diffuse process among consumers. To the extent they can achieve this with strategies like insulation, “lucky” consumer coordination is unnecessary in order for efficient outcomes to arise. Careful firm strategies can lead entirely myopic consumers to be endogenously coordinated onto upstart platforms.

D. Prices are More Efficient Because Firms Compete for the Market

While lock-in and excessive tipping are usually viewed as the leading negative features of platform industries,

WHILE LOCK-IN AND EXCESSIVE TIPPING ARE USUALLY VIEWED AS THE LEADING NEGATIVE FEATURES OF PLATFORM INDUSTRIES, THE CONVENTIONAL WISDOM FROM WHICH WE DISSENT HERE ALSO SEES THESE FEATURES AS HAVING A CORRESPONDING BENEFIT.

the conventional wisdom from which we dissent here also sees these features as having a corresponding benefit. As Farrell & Klemperer write, “(F)irms are competing for the market, which blunts horizontal differentiation. Thus, strong proprietary network effects can sharpen price competition when expectations are up for grabs and will track surplus.”³⁵

Similarly Mark Armstrong argues network effects will make prices especially competitive because, “When a duopoly platform sets a high price that induces an agent from, say, group 1 to leave, that agent does not disappear but instead joins the rival platform, and this makes it harder to attract group-2 agents.”³⁶

Such pro-competitive tendencies of network effects do not arise, however, if firms insulate their consumers. Consider a corresponding version of Armstrong’s example that is the same as above except that it assumes firms to be using insulating strategies. For concreteness, consider a duopolist videogame platform that raises the price slightly for its console and loses a group 1 gamer. While this loss has hurts—both through lost revenue directly from the gamer and through lower attractiveness to game developers—it does not, indirectly, further weaken the firm’s competitive position, even when that gamer switches to the rival platform. This is because both of the platforms internalize network effects via their insulating strategies. The platform that lost the gamer will charge developers a little bit less, and the rival platform that attracted her will charge developers slightly more.

Taking into account all of these changes, on average, game developers will not have an incentive to switch platforms. Consequently, no negative feedback loop will be initiated for the platform that lost the initial consumer. In other words, under IE, the duopolist will directly mourn the loss of network effects via lost

revenue, but will not indirectly fear increased competitive pressure. Thus, given pricing strategies that seem realistically sophisticated, network effects may not increase competitive pressure as much as has been asserted in the literature.

IN OTHER WORDS, UNDER IE, THE DUOPOLIST WILL DIRECTLY MOURN THE LOSS OF NETWORK EFFECTS VIA LOST REVENUE, BUT WILL NOT INDIRECTLY FEAR INCREASED COMPETITIVE PRESSURE.

Conversely, in many settings with realistic user heterogeneity, prices are likely to be distorted upward, relative to socially optimal levels, by more than they would be if users were more homogeneous. While platforms internalize the preferences for network effects of marginal consumers, as long as they are unable to effectively price discriminate they will not account for the preferences of inframarginal consumers.³⁷ This effect, which we refer to as the “Spence distortion” after one of its discoverers (A. Michael Spence), has been analyzed in the context of monopoly platforms³⁸ but has, to the best of our knowledge, prior to our recent joint work, not previously been studied under competition.

To see its impact, consider the example of a video game platform. It may internalize the benefit of additional games to those users that are just indifferent to buying the gaming system, but cannot profit from the much larger benefits derived from hard-core gamers who plan to buy the system regardless. To the extent that network effects are positive and inframarginal users benefit more than marginal users, as seems likely in most software and transaction platforms at least, platforms prices will systematically be more distorted upwards than they are in an industry where such effects are absent.

Thus, because of the Spence distortion, equilibrium prices may not be much lower in the presence, compared to the absence, of network effects, even though network effects lead socially optimal prices to be significantly lower. Thus the social need to reduce prices will often be higher in platform markets than in standard markets. This might seem to call for greater competition to reduce prices, thereby, apparently, refuting our argument above in Subsection II.B. However, note that the only reason that lower prices are so desirable in the current context is as a means to increase the size of network effects, which is precisely what would be undermined were the market to be fragmented. Therefore, increased competition between incompatible platforms is unlikely to provide the appropriate counter-weight to distorted pricing incentives and, instead, would likely exacerbate the problem further.

III. THE REAL PROBLEMS

Our rebuttal of some conventional views about the distortions to competition created by network effects might appear to put us in the *laissez-faire* camp, represented notably by S. J. Liebowitz & Stephen E. Margolis.³⁹ However, just because we believe that the standard distortions are greatly exaggerated does not mean we believe no distortions are present. In fact, the market failures we perceive in platform industries appear to be comparably severe to those contemplated under the conventional view, but in many ways different or even opposite in kind.

IN FACT, THE MARKET FAILURES WE PERCEIVE IN PLATFORM INDUSTRIES APPEAR TO BE COMPARABLY SEVERE TO THOSE CONTEMPLATED UNDER THE CONVENTIONAL VIEW, BUT IN MANY WAYS DIFFERENT OR EVEN OPPOSITE IN KIND.

A. *Entry is Excessive and Thus Markets are Too Fragmented*

As discussed above in Subsection II.B., the literature strongly suggests that platform markets are particularly prone to excess fragmentation. While, in conventional industries such an effect must be driven by supply side economies of scale, in network industries economies of scale arise inherently from the demand. Thus, even in the absence of fixed costs, the situation can effectively be that of a natural monopoly, where the efficient arrangement is for the monopoly to be subsidized to charge prices at marginal cost.

If, however, the platform is unregulated, it will make substantial profits and these may be large enough to attract an entrant, even if, after entry, both firms will be less efficient and potentially charge higher prices and serve fewer consumers than prior to entry. Such entry is unambiguously inefficient. Moreover, unlike in N. Gregory Mankiw & Michael Whinston's⁴⁰ model, entry in a network setting may even harm consumers, as it raises marginal costs as well as average costs, though it necessarily brings prices close to marginal cost as well.

When platforms insulate consumers, they internalize network effects and, thus, there is a strong analogy between an industry with economies of scale and a platform industry, especially when users are homogeneous in their valuations for network effects. The possibility of excessive fragmentation in platform markets is thus just an extension of the corresponding logic from an industry with economies of scale.

In many canonical platform models, these effects can be extremely strong. For example, in the simplest version of Armstrong's model of competition in two-sided markets, network effects must be three to four times as strong to induce market consolidation as they must be for such consolidation to be optimal. The set of cases where the market inefficiently fragments is also four times larger (in the space of network effects) than the case where it efficiently fragments.

IN FACT, EVEN IN THE ABSENCE OF INSULATION, FRAGMENTATION IS THE ONLY EQUILIBRIUM WHEN NETWORK EFFECTS ARE LESS THAN TWICE AS STRONG AS IS NECESSARY TO MAKE CONSOLIDATION SOCIAL OPTIMAL.

This suggests that many of the fragmented platforms markets we observe may be inefficiently so. In fact, even in the absence of insulation, fragmentation is the only equilibrium when network effects are less than twice as strong as is necessary to make consolidation social optimal. Furthermore, when an industry is consolidated, the mere threat of entry can

sometimes keep prices low.⁴¹ In such circumstances, users may bear most of the costs of fragmentation, because potential value that could have been created through network effects instead goes unrealized.

While these conclusions are based on extremely stylized models—with symmetric firms, users that are homogeneous except for some simple Hotelling horizontal differentiation, etc.—it seems unlikely that they will become less stark with realistic heterogeneity. For example, Spence distortions as discussed in Subsection II.D above might well make the cost to users of fragmentation even higher. It thus seems likely that excess fragmentation is a major distortion in many platform markets.

B. *The Gains From More Efficient Technology Cannot be Appropriated Privately*

While we have argued that the evidence is cloudy at best that inferior, proprietary technologies have been or could be locked-in because of network effects, there do seem to be some clear cases of superior technologies in the public domain that have been frozen out. A marquee victim of this phenomenon is Esperanto, a language invented in the late 19th century to maximize the ease with which it could be acquired and used from any language. While it is based primarily on Indo-European languages, studies have found it is consistently easier for speakers of almost all languages to acquire than any other language, even ones within the same non-Indo-European families.⁴² Despite these advantages over English, a notoriously difficult language even for many Indo-European speakers, English is the modern *lingua franca*. Why?

While Esperanto lacked network effects, the same could surely be said of English in the 19th century, when French was far more popular. The obvious answer is that no actor has a concentrated interest in the spread of Esperanto, while British and later American superpowers had a strong interest in spreading the use of English through a variety of forms of cultural and educational outreach. Something similar appears to be happening with Mandarin; the Chinese government has been funding Confucius Institutes around the world to subsidize its adoption.

A particularly notable example of linguistic adaption driven by appropriability is Turkey's rapid switch from Arabic script to the Latin alphabet in 1928, which was a key part of Mustafa Kemal Atatürk's strategy to push a modernist political and cultural agenda. If someone could appropriate the benefits of Esperanto usage (e.g. if there was an Esperanto empire), similar institutions spreading it might exist and Esperanto might well become a dominant international language.⁴³ Absent this, however, even the small costs of acquiring Esperanto are not worth paying given that it has at most 10 million speakers spread nearly evenly across the world.

As these examples suggest, the dynamic subsidization strategies that we argue platforms use to overcome coordination failures apply only in cases where overcoming such failures can generate eventual profits that can justify the initial capital outlay necessary to provide the subsidies. They likely also require sufficient evidence to persuade investors that such a large eventual payoff will be forthcoming if the initial chicken-and-egg problem may be overcome.

THE DYNAMIC SUBSIDIZATION STRATEGIES THAT WE ARGUE PLATFORMS USE TO OVERCOME COORDINATION FAILURES APPLY ONLY IN CASES WHERE OVERCOMING SUCH FAILURES CAN GENERATE EVENTUAL PROFITS THAT CAN JUSTIFY THE INITIAL CAPITAL OUTLAY NECESSARY TO PROVIDE THE SUBSIDIES.

Thus, in our view, the real potential causes of inefficient lock-in are a lack of appropriability on the part of some centralized entity and a lack of symmetric information between this entity and external financiers, unless the entity itself has sufficient capital to subsidize adoption. In the presence of weak appropriability or serious financial constraints, a platform may indeed be forced to rely on users' ability to coordinate. About this, we believe there is reason to be pessimistic, given results in game theory indicating that equilibria in coordination games can easily result in inefficient outcomes unless there is a strong, clear, and publicly

understood sense of the superiority of one technology over the other.⁴⁴

Private appropriability and capital markets can dramatically reduce the number of individuals in the population who need to receive clear signals about the superiority of a new technology in order for it to be adopted, as these individuals can subsidize others and then appropriate the benefits that follow. The lack of such features is therefore, in our view, a primary—if not the primary—source of lock-in.

C. Provision of Network Effects is Distorted and Competition May Not Help (Much)

As we discussed above, in Subsection II.D, the Spence distortion may cause the provision of network effects (and prices) to be distorted even beyond the usual effect of market power. Moreover, competition is often of little help in addressing this problem because the loss of network effects caused by fragmentation dwarfs the losses arising from the Spence distortion (viz. the absence of price discrimination). Thus, in these cases, fragmentation-inducing competition is no solution.

However, even in the more limited set of cases when fragmentation is socially optimal and thus competition may be beneficial in lowering prices, it is much less clear that it will be effective in overcoming the additional Spence distortion. Recall that the Spence distortion arises from the divergence between the preferences of marginal users, whose value for network effects the platform internalizes, and that of the average users that society would like the platform to serve. When platforms compete, each platform faces two classes of marginal users, the “switchers,” who are indifferent between the two platforms (but who certainly will join one), and the “exiters,” who are indifferent between joining one platform and staying out of the market (but who clearly prefer one platform if they do participate in the market). A natural way to conceptualize an increase in competition is increasing the number of users willing to switch between the platforms.

WHETHER COMPETITION MITIGATES THE SPENCE DISTORTION WILL THEN DEPEND ON WHETHER SWITCHERS OR EXITERS ARE MORE SIMILAR TO AVERAGE USERS.

Such an increase in competition would clearly incentivize platforms to lower prices and compete more intensively for users. It would also, however, change the sort of marginal users that the firm caters to in providing network effects, leading them to pay more attention to the switchers. Whether competition mitigates the Spence distortion will then depend on whether switchers or exiters are more similar to average users.

One can imagine cases that go in either direction, and we illustrate these formally in our paper. To see why, consider two stylized examples. On the one hand, hard-core gamers, willing to consider buying either an Xbox or a PlayStation, are probably more similar to average gamers than are those who are on the exiting margin between buying one system or nothing. On the other hand, if one thinks back to the 1990s when Apple was a niche operating system used mostly by artists, designers, and publishers, things are different. Such typical Apple users likely placed a high value on features related to the Macintosh interface but a low value on access to a large ecosystem of apps. This attitude may not be that different from that of the artists and designers considering moving from pencil-and-paper methods to computer-aided design who were indifferent between

adopting Apple’s system and staying out of the market altogether. On the other hand, it may diverge greatly from the attitudes of users who were indifferent between using Mac or Windows. Thus exiting users may actually be closer to average users in this case than to potential switchers.

This is not to deny, of course, that competition will typically benefit the provision of network effects in such contexts mechanically by bringing down prices. And it may even be that competition typically improves the Spence distortion. However, the forces at work in the Spence distortion are sufficiently richly related to user heterogeneity that our confidence is quite a bit lower that they can be eliminated or even substantially mitigated by competitive pressure. Together with the genuinely harmful effects competition may have in creating fragmentation, this substantially lessens the extent to which a traditional activist competition policy can address the market failures that are most important in platform markets.

IV. DIRECTIONS FOR POLICY

Almost no work we are aware of has seriously confronted the problem of policy design in platform industries. There is therefore very little basis for any positive speculation about the appropriate policy agenda given the perspective on platforms we lay out above. However, we do believe that our analysis gives some general principles and that these, in turn, suggest some potential directions for policy inquiry. We outline these below, in the hope of provoking discussion and inspiring more detailed future research in these directions.

We view over-fragmentation as a leading problem in platform industries. The most basic implication of this view is that public policies should seek to aid eventual efficient winners of platform competition in consolidating their dominant position as quickly as possible, subject only to the constraint of allowing sufficient “market deliberation” to sort out which platform is in fact best. Achieving this goal requires either directly intervening in the structure of the market or trying to influence the relative profitability of firms in transitional, fragmented states while increasing the winner’s profitability in consolidated states. We begin by discussing more direct interventions and then turn to subtler incentives in Subsections B and C. Finally, in Subsection D we consider appropriate forms of regulation of dominant platforms.

WE VIEW OVER-FRAGMENTATION AS A LEADING PROBLEM IN PLATFORM INDUSTRIES.

A. *Structuring a Winner-Take-All Market*

A primary concern that any potential government policies aimed at encouraging market consolidation raise is the danger that they could easily, if unintentionally, “pick winners” in fights for dominance and then defend these “champions” against future, more-efficient entrants who could be portrayed as “fragmenters.” The danger of such a pitfall is particularly great given that a firm that establishes a dominant position is also likely to acquire political power that will allow it to capture the regulatory process.

The recent debates over the regulation of peer-to-peer (“P2P”) “sharing” services, such as Airbnb and

Uber, illustrate the difficult informational problems facing even the best-intentioned regulators. Incumbent city-run regulatory bodies overseeing hotels and taxis have attacked these new platforms' services, accusing them of being "unregulated" and of fragmenting the existing markets. We will return to the issue of regulation in Subsection D below; here, let us first consider the claim that these new platforms should be viewed as inefficient fragmenters.

In the case of Uber, such claims have some truth in the short-run but strike us as very hollow in the longer-term. It seems quite likely that Uber will draw away many passengers from the traditional taxi market, leading to a transitional period during which neither Uber nor traditional taxis have as thick of a market as would be feasible under consolidation. Thus, during this interim period, the availability of easy transport on both of these quite distinct platforms will likely suffer, compared to each one's potential in isolation. However, it appears quite clear that Uber plans to profit primarily after having taken over from traditional taxis as the dominant service. Thus, the current transitional period seems unlikely, in any given city, to be excessively prolonged.

By contrast, matters are more ambiguous in the case of Airbnb. This service has taken a substantial portion of non-business demand for lodging away from the traditional hotel market, which is regulated by city governments. Because hotels have such high fixed costs and deliver their primary value during peak business times, this fragmentation could potentially undermine the standard hotel business model. Moreover, it seems unlikely that business travelers would ever become comfortable trading hotel rooms for Airbnb accommodation. Thus, it's more plausible that Airbnb's presence could prove harmful to welfare.

On the other hand, hotels are able to price discriminate by substantially raising prices at high business travel times, and it is even possible that this ability to price discriminate will be enhanced by Airbnb's removal of low-value customers from the market. It is also possible that a reduction in the hotel market will eventually lead higher-income individuals to rent out their properties and hire short-term managers, leading to greater utilization of space that is, currently, often left unused.

A MAJOR CHALLENGE IN PLATFORM MARKETS, THEREFORE, IS FINDING INSTRUMENTS THAT ALLOW THE GOVERNMENT TO SIMULTANEOUSLY MAINTAIN A LEVEL PLAYING FIELD TO AVOID PICKING WINNERS, AND, AT THE SAME TIME, TO STRUCTURE THE MARKET IN A WAY THAT ACCELERATES THE CONSOLIDATION PROCESS.

structure the market in a way that accelerates the consolidation process.

In short, there is a lot of learning the market still needs to do about the welfare-maximizing structure in this market. It would be a mistake to take our concerns about fragmentation as justifying interventions to prevent this learning from taking place.⁴⁵ A major challenge in platform markets, therefore, is finding instruments that allow the government to simultaneously maintain a level playing field to avoid picking winners, and, at the same time, to

The most natural class of such policies involves ways in which the government makes choices that impact the natural structure of markets through procurement and licensing. Examples are the design of

packages breadth in spectrum auctions⁴⁶ and the determination and pricing of standard-essential patents;⁴⁷ both are institutions whose aim is to identify a limited set of (perhaps marginally) superior players and to confer to them an exclusive position but not excessive rents.

Another natural area is government procurement practices, which tend to favor existing incumbent platforms rather than tracking closely the patterns of market shares: how many government workers use Uber for transportation services or Android (rather than Blackberry) as a mobile operating system? Switching procurement practices away from historical inertia towards explicit metrics to track current market leaders would encourage consolidation given the significant weight of the government sector in the market, and it would simultaneously reduce favoritism towards existing incumbents. Policies to impartially favor efficient market structures through procurement are familiar and have proven quite effective. One such example is the ChileCompra program, which has fostered entrepreneurship in Chile through government procurement practices.

B. Tilting Prosecutorial Discretion Towards Consolidation

Our emphasis on consolidation sits somewhat uneasily with the traditional emphasis of competition policy on maximizing the number of firms in the market. This emphasis, however, is driven by the different mechanics of platform markets, as compared to traditional ones, not by some different underlying philosophy. Crucially, platform industries with dominant firms are, in an important sense, highly competitive. Even if, at most points in time, they are consolidated around a single firm, there is a constantly looming threat of displacement by a new dominant firm. This more inter-temporal form of competition calls for a significantly different emphasis in enforcement, compared to a market whose competitive pressure should optimally be maintained through fragmentation.

THIS MORE INTER-TEMPORAL FORM OF COMPETITION CALLS FOR A SIGNIFICANTLY DIFFERENT EMPHASIS IN ENFORCEMENT

What makes such different enforcement patterns possible is that many practices commonly considered anticompetitive have the possibility of either working towards consolidation or towards fragmentation, depending on the market context in which they are deployed. A now-famous example, studied by Robin S. Lee,⁴⁸ is the sixth generation of the U.S. video game industry. According to Lee's account, entrant Microsoft used exclusive contracts with game producers to fragment a market that continued to be dominated by Sony's Playstation system, reducing consumer welfare significantly.

Of course, in other cases exclusive dealing and vertical integration could be used by a dominant firm to maintain its dominant position. In many markets, the use of exclusive dealing by an entrant might be viewed as benign, while its use by a dominant incumbent would be thought to call for intervention. If, as we have argued, over-fragmentation is a greater concern than a lack of competition in platform markets, the opposite pattern of discretion may be desirable.

Similarly, in analyzing mergers, the sets of benefits and costs regulators should consider might be quite different from, and even opposite to, the typical criteria of evaluation. While the reduction in product offerings

SIMILARLY, IN ANALYZING MERGERS, THE SETS OF BENEFITS AND COSTS REGULATORS SHOULD CONSIDER MIGHT BE QUITE DIFFERENT FROM, AND EVEN OPPOSITE TO, THE TYPICAL CRITERIA OF EVALUATION.

and increased market concentration created by a merger are usually viewed as its primary costs, in platform industries these may be the principal benefits, to both the merger authority and the dominant firm.

However, such mergers may encourage future entry.⁴⁹ For example, it is well understood that if a family's daughter has been taken hostage, a prohibition on negotiating with the hostage takers is unwelcome to the family, but that such policies minimize the number of families who, in equilibrium, face this predicament. Analogously, aggressive merger policy that discourages entry for buyout may be desirable.⁵⁰ Thus the tendency of a merger to encourage entry, usually viewed as an offsetting benefit, may, in these settings, be a leading source of harm. A recent, worrisome example of this is Facebook's recent acquisition of WhatsApp, which received limited antitrust scrutiny, despite the seemingly high degree of redundancy of the latter.

In other cases, the alignment of certain types of conduct with the objectives of reducing excess fragmentation seems clearer, though, obviously, other costs and benefits must be accounted for. Collusion is likely to be particularly pernicious in platform industries as it maintains a stable, fragmented structure that simultaneously keeps prices high and discourages user participation, and it may even encourage further fragmenting entry. While, in other settings, this tendency may benignly maintain product diversity,⁵¹ in platform contexts, it is likely to be an important threat to the performance of markets for consumers. Thus, platform industries seem to call for particularly stringent attention to collusion.

On the other hand, predatory behavior implies a largely opposite set of incentives. It ensures that the profits of both the predator and the preyed firms are very low in fragmented states of the market, while back-loading larger profits into consolidated settings. At a superficial level, this is precisely what a policy maker should aim to achieve in a platform industry. This suggests that policymakers should give extra scrutiny to predation claims in platform contexts and be hesitant to enforce them unless other factors suggest they are exceptionally likely to cause harm beyond the standard reduction in the number of firms operating in the market. This reinforces the now-familiar arguments for caution about predation claims in platform industries because of the multi-sided subsidy structure that makes the price-cost test misleading.⁵²

C. *Subsidizing Participation*

PERHAPS THE CLEAREST POLICY PRESCRIPTION, THE ONE ACHIEVING THE MOST DESIRED GOALS WITH THE LEAST CONFLICT, IS ALSO THE ONE LEAST FREQUENTLY APPLIED: DIRECT GOVERNMENT SUBSIDIES FOR THE DEVELOPMENT AND, ESPECIALLY, THE USE OF THE SERVICES OF PLATFORMS.

Perhaps the clearest policy prescription, the one achieving the most desired goals with the least conflict, is also the one least frequently applied: direct government subsidies for the development and, especially, the use of the services of platforms. While development subsidies may help to some extent with raising capital and are generally useful in

addressing problems with appropriability, direct subsidies on adoption are likely to achieve more socially desirable ends at once. They can help alleviate market power and often also Spence distortions without risking the fragmentation that competition can cause, and they increase appropriability.

Another benefit of such subsidies is that they may be used to further tilt the competitive landscape towards consolidated states. This might also ease practical concerns about identifying firms that qualify for subsidies. If every start-up in a new platform market or every entrant could qualify for subsidies this could easily degenerate into chaos or government favoritism. On the other hand, if only sufficiently clear dominant firms could qualify for such subsidies, and only if they maintain a sufficiently consolidated market, identifying firms to qualify for subsidies should be relatively straightforward. Consequently, the aim of increasing the incentives for consolidation, and reducing the relative profitability of fragmentation, would be directly promoted.

Furthermore, so long as such subsidies are not too large, and so long as they complement, rather than replace, market-pricing mechanisms, they do not excessively undermine the information supplied by the market about which platforms are best to adopt.⁵³ Another form such subsidies might take is differential enforcement of intellectual property protections aimed at aiding appropriability, though these would not come without important adoption costs.

Of course such subsidies may be open to political capture and thus must be approached with caution, as anywhere. Nonetheless, and especially in view of the numerous problems they address, they should probably be considered more seriously in platform industries than they typically are. We hope future research will seriously consider the optimal design of such subsidy schemes in the dynamic, incomplete information environments in which platforms operate.

D. Regulating Platforms, not Competition or Transactions

If the above recommendations strike readers as strikingly pro-monopoly, that's because, in an important sense, they are. Even more than in traditional industries with economies of scale, markets in which incompatible platforms compete are naturally monopolistic. As such, they naturally call for a bouquet of regulation. As with traditional natural monopoly regulation, this bouquet should be designed to make firms internalize the external costs of their actions. However, given the importance of ensuring the appropriability of benefits from acquiring such a monopoly position, it is important that such regulation do this in ways that are minimally costly to firm in question.

THIS MORE INTER-TEMPORAL FORM OF COMPETITION CALLS FOR A SIGNIFICANTLY DIFFERENT EMPHASIS IN ENFORCEMENT

Some areas where the interests of platforms and the public may diverge, and where regulation can secure public interests at relatively low cost to platform profits, may be openness and non-discrimination across content.⁵⁴ In particular, many platforms, such as YouTube, Instagram, Twitter, and Facebook increasingly play a

dominant role in political organizing and the setting of cultural norms.⁵⁵ Given that such organizing and norm-setting are functions with substantial spillovers to social spheres outside of the platform's purview and that they have important public good characteristics, there is, at best, no reason to expect platforms to efficiently manage them. Very likely, firms will have an incentive to use their dominant position to increase their political influence.

Others areas where regulation may reasonably play a significant role include transparency about various aspects of platform design, including, especially, the ways in which private data are used.⁵⁶ The value that

OTHERS AREAS WHERE REGULATION MAY REASONABLY PLAY A SIGNIFICANT ROLE INCLUDE TRANSPARENCY ABOUT VARIOUS ASPECTS OF PLATFORM DESIGN, INCLUDING, ESPECIALLY, THE WAYS IN WHICH PRIVATE DATA ARE USED.

individuals place on revealing their private data may be greatest among individuals who have the most to hide and thus individuals' unwillingness to join a platform that fails to respect data may itself reveal the information that privacy regulations aim to protect. Platforms may have an incentive to encourage precisely this dynamic, despite the social

inefficiencies it creates by forcing individuals to constantly and wastefully monitor their behavior because they know it is being observed. These problems are closely related to the distortions to labor markets from signaling that Spence observed and have been an important source of discussion about the erosion of privacy and propriety norms on platforms like Facebook, LinkedIn, and Instagram.⁵⁷

One area of extensive recent policy discussion about platforms has been the provision of quality-regulation services such as ensuring safety for Uber customers. While there are far more issues involved in such regulatory disputes than we can address here, there are some aspects of these debates that we believe to be particularly mistaken, in light of the analysis presented here. The most important one is that these debates often mix up the appropriate regulation of individual service providers, which, as Rochet & Tirole point out,⁵⁸ is a crucial function of platforms, and the regulation of the platforms that themselves regulate their providers. Many local governments and taxi regulatory authorities, for example, have argued that Uber taxis are "unregulated" and illegal, and should be excluded from the market.

This strikes us as confused: Uber, itself, provides an extremely strict regulatory environment (based on user feedback that is often much more up-to-date than the usual taxi evaluation metrics that are applied by local governments). Based on anecdotal evidence as well as our own experience, this leads to a better average level of service in Uber vehicles than in conventional taxis. Nevertheless, regardless of what one thinks of the product itself, the regulation that should be applied to Uber would need to be qualitatively different than that applied to a single cab or a small number of cabs since a customer has no chance to learn their reputations, given the nearly zero chance of repeat interaction. Uber does not compete with other taxi drivers; it competes with the local governments in charge of regulating taxis. These local governments are alternative platforms, competing in the platform market with Uber.

UBER DOES NOT COMPETE WITH OTHER TAXI DRIVERS; IT COMPETES WITH THE LOCAL GOVERNMENTS IN CHARGE OF REGULATING TAXIS.

As such, it makes little more sense to us to have local governments regulating Uber than it would to have, say, Microsoft regulating Google. Regulation from a higher level (likely national or, in the European case, international) charged with ensuring that the *platform* competition and conduct maximizes social welfare seems more appropriate. Furthermore, such regulation of quality should not be based on the types of concerns that the platform itself already has a strong incentive to incorporate, such as ensuring safe transportation or stays at residences.

Instead, regulation should focus on areas where there is likely to be a systematic divergence between the incentives of the platforms and those of a social planner, such as when product design may be (Spence) distorted to extract greater surplus from inframarginal users. These distortions will tend to be subtler than those typically discussed and often have trade-offs similar to those arising when firms engage in price discrimination.⁵⁹ In order to identify particular policy recommendations in these dimensions, it is necessary to specify the market in question and to take into account many of its specific details.

Typically, even in the case of a particular market, these issues are quite complex. For instance, a feature of search engines, that we have not discussed above but which can significantly impact their analysis, is their inability to charge users directly for performing searches. An implication of this is that search engines have a stronger incentive to create conditions in which advertisers have market power in their interactions with users than would be the case if the search engine could charge users directly. Sensible regulation of search engines must, therefore, be mindful of whether attempts to limit the Spence distortion are likely to dampen or amplify this incentive to provide market power. As work by White shows,⁶⁰ this interaction depends crucially on the degree to which algorithmic (i.e., ordinary, unpaid) search results compete with paid search advertisement. More broadly speaking, we believe that the concerns raised by the Spence distortion are different from, and sometimes even opposite to, the standard intuitions one might have about quality regulation.

The design of a new regulatory infrastructure for platforms is therefore clearly beyond the scope of our discussion here and involves a host of trade-offs that require much more research. However, we believe that thinking about platforms using the framework of natural monopoly, rather than using only one of standard competition policy, is likely to be a particularly fruitful path going forward. Designing such regulations will doubtless have its limitations and inefficiencies. For a treatment of regulation design in a more traditional context as well as some thoughts on the regulation of networks, see the work of Jean-Jacques Laffont & Jean Tirole,⁶¹ which was recognized by the Nobel Committee a few months ago.

HOWEVER, WE BELIEVE THAT THINKING ABOUT PLATFORMS USING THE FRAMEWORK OF NATURAL MONOPOLY, RATHER THAN USING ONLY ONE OF STANDARD COMPETITION POLICY, IS LIKELY TO BE A PARTICULARLY FRUITFUL PATH GOING FORWARD.

However, we do not see any reason to believe that fragmented competition will offer solutions to the flaws of regulation in a platform context, no matter how severe these turn out to be. The reasons are, first, that the primary distortions from monopoly—low provision of network effects because of excessive pricing—are likely to only be more severe under competition, and, second, that there is little reason to believe the

Spence distortion will systematically be corrected by competition. Nor are most of the concerns about speech or privacy regulation likely to be corrected by competition, except to the extent that they limit platforms' incentives to exploit their political power. Many platforms are thus likely to be cases where the best choices are between regulated and unregulated monopolies rather than between regulation and competition.

V. CONCLUSION

In this article, we have tried to challenge much of the conventional competition policy perspective on platforms. We have argued that, at least as far as existing literature goes, inefficient lock-in is a much less significant threat than is commonly assumed, while inefficient fragmentation is a much larger one. This suggests that regulation, rather than competition, policy may be more important in addressing the problems with the performance of platforms. While these arguments are based on very limited empirical evidence and thus are highly preliminary, most of the existing conventional wisdom is based on similar, but in our view much less theoretically sophisticated and realistic, conjecture. But for this reason our analysis is much more the beginning of a line of inquiry than a final conclusion.

In particular, our analysis relied on one crucial assumption: that platforms are mutually incompatible alternatives. In many cases this seems a reasonable feasibility constraint. It is not clear, for example, how much of the value of a social network like Facebook or a tightly integrated operating system like Apple's could be retained while allowing easy interoperability with other social networks and operating systems. In other platforms, however, competition policy may directly, through conduct remedies, or indirectly, through incentives to overcome fragmentation, affect the incentives of firms to allow interoperation and compatibility. Such possibilities might substantially change our conclusions above, though they might also undermine the risk of inefficient lock-in directly.

In any case, the relationship of insulation to interconnection and resultant policy implications is a rich and exciting area for research. In cases where endogenous compatibility seems important, our conclusions should be taken with a large grain of salt, and attention should be paid to the substantial literature on this subject, which we have not yet satisfactorily internalized into our view.

Even within a model of mutually incompatible platforms, many of the richest and most interesting issues posed by platforms remain to be explored. For example, all of our conclusions about inefficient tipping and inefficient fragmentation are based on the simplest possible models with mostly symmetric firms and mostly homogeneous users. We only considered user heterogeneity and platform asymmetry to the extent they impact local distortions in the provision of network effects.

Yet the most interesting questions, in our view, concern precisely the broad structure of asymmetric platforms with substantial user heterogeneity. For example, a "minority" platform may be intensely valued by

its adherents and only sustainable if it substantially fragments the market by attracting marginal users who do not intensely value it, while no one may care much about the precise size of a “majority” platform. In such a case, the sort of dynamics underlying the Spence distortion might lead to precisely the sort of excessive tipping that cannot arise in the simple, symmetric models we focused on. Or, if inframarginal adopters place an exceptionally high value on network effects, insufficient tipping may be particularly severe. As both Dixit⁶² and Grewal⁶³ point out, such issues are not just crucial to competition policy towards high technology industries, but also towards issues as diverse as policies towards ethno-linguistic minorities and international trade standards. ▲

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*Competition Policy
and Regulation in
Credit Card
Markets: Insights
from Single-sided
Market Analysis*

*BY DENNIS W. CARLTON & RALPH A.
WINTER*

BY DENNIS W. CARLTON & RALPH A. WINTER¹

This paper reexamines the economics of two common features of credit card networks: the interchange fee paid by merchant banks, or acquirers, to cardholder banks, or issuers; and the restraint commonly placed on merchants against surcharging for credit card transactions. We show that the parallels with the economics of conventional one-sided markets offer insights that have been overlooked in the credit card economics literature, which stresses the two-sided nature of the market. The characterization of the optimal interchange fee is equivalent to the Dorfman-Steiner theorem from conventional price theory. The principle that the interchange fee maximizes output when an optimum exists and the possibility of interchange fee neutrality also have precise parallels in one-sided markets with promotion. Our analysis shows that the no-surcharge rule is equivalent to a retail MFN constraint. The no-surcharge rule raises prices to merchants due to a competition-suppression effect as well as a cost-externalization effect. The market condition underlying interchange neutrality (when surcharging is allowed) eliminates the impact of the no-surcharge rule in the case of a credit-card duopoly. Yet the same condition magnifies the impact in the presence of cash customers.

I. INTRODUCTION

Regulation and competition law impose a wide range of restrictions on credit card markets around the world. Those restrictions deal primarily with interchange fees and the ability of merchants to surcharge buyers who purchase with credit cards. Regulatory ceilings are imposed on interchange fees in some jurisdictions but not in others. Regulation in some jurisdictions not only allows surcharging but prohibits credit card companies from imposing “no-surcharge rules” on merchants. Yet in other jurisdictions regulation intervenes with exactly the opposite policy, directly prohibiting surcharges.²

Antitrust scholars have expressed an equally wide range of views on interchange fees and regulation. On interchange fees, Frankel & Shampine³ among others argue that positive interchange fees are unnecessary and anticompetitive. Rochet & Wright⁴ and Wright⁵ offer models of credit card networks in which the interchange fee, while not inherently anticompetitive, always exceeds the level that maximizes consumer surplus.

Most of the literature on the economics of credit cards, on the other hand, argues that the interchange fee is set at the level that maximizes the volume of a credit card network by balancing the impact of price changes on both sides of the credit card market (e.g., Klein, Lerner, Murphy, & Plache;⁶ Emch & Thompson (2006);⁷ and Evans & Schmalensee).⁸ Klein et al., as well as Emch & Thompson, derive expressions for the profit-maximizing interchange fee and that fee turns out to maximize output, all else equal.⁹ As a price that is set to maximize output, it would seem odd to describe the interchange fee as anticompetitive.

A third strand of credit card literature develops conditions under which the interchange fee is completely irrelevant to equilibrium in a credit card network (Carlton & Frankel and Gans & King¹⁰). This literature shows that in the absence of a no-surcharge rule, interchange fees have no real effects in a world without transaction costs, apart from the transaction fees set within the credit card network. The interchange fee is irrelevant in the sense that the equilibrium payoff to any party in the network is unaffected by a change in the fee.

It is hard to imagine a wider range of views on the role of prices in any market. Depending on which scholars policymakers listen to, the interchange fee is inherently anticompetitive, output maximizing, or completely irrelevant.

DEPENDING ON WHICH SCHOLARS POLICYMAKERS LISTEN TO, THE INTERCHANGE FEE IS INHERENTLY ANTICOMPETITIVE, OUTPUT MAXIMIZING, OR COMPLETELY IRRELEVANT.

On the no-surcharge rule, again, the literature contains at least three views. Some argue that the rule has a role in preventing excessive merchant surcharging (Wright).¹¹ Others, notably Boik & Corts,¹² conclude that the restraint suppresses competition in a way that is parallel to a retail most-favored nation (“MFN”) restraint, in which retailers are constrained against charging more for a manufacturer’s product than for rivals’ products.¹³ And one of the most prominent contributions analyzing the no-surcharge rule concludes that the welfare impact of the no-surcharge rule is ambiguous (Rochet & Tirole).¹⁴

With the wide range of views on interchange fees and surcharges, academic scholars nonetheless agree on one proposition: The two-sided nature of credit card markets is fundamental to any analysis of regulation of either the interchange fee or restrictions on the freedom to contract for no-surcharge rules. A credit card network must attract both cardholders and merchants to survive in the market. Neither side will join the network without the other.¹⁵

This paper offers a different perspective. Credit card networks are undoubtedly two-sided, but economic analysis of such markets should keep a tighter link to what we know about conventional, one-sided markets than scholars have done to this point. Failure to do so will likely lead to faulty policy analysis.

CREDIT CARD NETWORKS ARE UNDOUBTEDLY TWO-SIDED, BUT ECONOMIC ANALYSIS OF SUCH MARKETS SHOULD KEEP A TIGHTER LINK TO WHAT WE KNOW ABOUT CONVENTIONAL, ONE-SIDED MARKETS THAN SCHOLARS HAVE DONE TO THIS POINT.

We start with the interchange fee. Assuming the fee matters (i.e., is not neutral), the profit-maximizing interchange fee unambiguously maximizes the total volume of transactions, holding constant other network fees. The fee balances the marginal contributions to volume of the two sides of the market. Yet the economic fundamentals that generate this result do not depend on the two-sided nature of the market, despite suggestions that it is the two-sidedness that is responsible for this result.

The expression for the profit-maximizing interchange fee developed in the literature¹⁶ is just a re-expression of the classic Dorfman-Steiner theorem¹⁷ on a firm’s optimal (i.e., profit maximizing) advertising,

quality, or promotion. And this has to be the case, given the structure of four-party credit card networks. The inescapable interpretation of the cash flows in a credit card network is that the credit card company (e.g., Visa) sells the right to use its card and network to the merchant (along with the right to offer the same service to consumers) for a price equal to the sum of the interchange fee and the acquirer processing service fee; the interchange fee net of the issuer network fee is used for (i.e., creates incentives for) promotion (advertising and consumer rewards) as well as other issuer services.

The Dorfman-Steiner theorem, which provides an expression for the optimal portion of revenue to allocate to promotion in a conventional market, applies directly to the interchange fee. Even the characterization of the profit-maximizing interchange fee as volume maximizing has an exact parallel to single-sided markets: the Dorfman-Steiner theorem can be interpreted quite naturally as following from a volume-maximization principle. Issuer promotion of the card is undertaken in a decentralized way by issuers in a four-party credit card network rather than entirely by the credit card company. But decentralized promotion is not unusual in the economy at large and does not affect the application of the Dorfman-Steiner principle.

Turning to the normative or policy side of interchange fees, the Dorfman-Steiner parallel to interchange fees leads immediately to the insight that—in the context of profit-maximizing credit card companies—regulating the interchange fee is exactly like regulating promotion decisions of conventional, one-sided firms. Just as we tend not to want to regulate promotional activities of a single firm in our usual one-sided market, so too should we be skeptical of the advantages of regulating a credit card company's interchange fees, when those fees have effects only on the users of that credit card company, all else equal.

We next apply our perspective on the structure of credit card markets to the issue of whether surcharges should be allowed (i.e., whether the no-surcharge rule should be prohibited) or—the opposite policy—whether surcharges should be prohibited.

A no-surcharge rule is parallel to a retail MFN vertical restraint, which requires in a conventional market that a retailer not charge more for one manufacturer's product than for its rival's product. Exploiting **EXPLOITING THIS PARALLEL, WE SHOW THAT NO-SURCHARGE RULES RAISE THE RELEVANT FEES THROUGH TWO EFFECTS** this parallel, we show that no-surcharge rules raise the relevant fees (e.g., the total cost to merchants who then pass along this increased cost to consumers) through two effects: by suppressing competition between credit card companies; and by adding to the incentive for credit card companies to raise credit card fees to merchants by effectively requiring that the cost to final customers of using a credit card in a transaction be spread across consumers using all transactions methods, including cash or other non-credit payment cards such as debit cards.

From a two-sided perspective, increased fees resulting from no-surcharge rules transfer wealth from particular consumers (non-charge card consumers) to the other side of the market for credit card networks. Our perspective is that the rules raise prices to both cash and debit customers and should therefore be prohibited, notwithstanding the positive impact on profits to credit card companies and on promotion and issuer-provided consumer rewards to credit card users.

In competition law in conventional markets, agreements among competitors to set a monopoly price—or to adopt practices that elicit monopoly prices—cannot typically be successfully defended on the basis that higher prices elicit greater promotion or non-price competition.¹⁸ The

notion that the competitive market produces the wrong quality or promotion cannot typically be used to justify collective price setting among competitors.

THE NOTION THAT THE COMPETITIVE MARKET PRODUCES THE WRONG QUALITY OR PROMOTION CANNOT TYPICALLY BE USED TO JUSTIFY COLLECTIVE PRICE SETTING AMONG COMPETITORS.

This insight from one-sided markets should carry over to two-sided markets as well. Otherwise, a simple conversion to a two-sided market structure could be adopted as a strategy to avoid liability for collective price setting. It follows that a practice such as no-surcharge rules can usually be assessed on the basis of its impact on prices rather than promotion if the rule is reached by collective agreement among competitors. For example, if competing banks form a joint venture to issue a credit card (e.g., the creation of Visa) and they adopt a no-surcharge rule (“NSR”), that rule could easily raise antitrust concerns. In the case of a single credit card company (e.g., as Visa is now configured) with market power rather than a joint venture (e.g., as Visa used to be configured), the use of a NSR could be challenged under Section 2 of the Sherman Act since the unilateral decision to adopt NSR could be characterized as a way to extend the market power in credit cards to non-credit card customers.¹⁹

II. REVIEW OF BASIC CASH FLOWS IN A FOUR-PARTY CREDIT CARD NETWORK

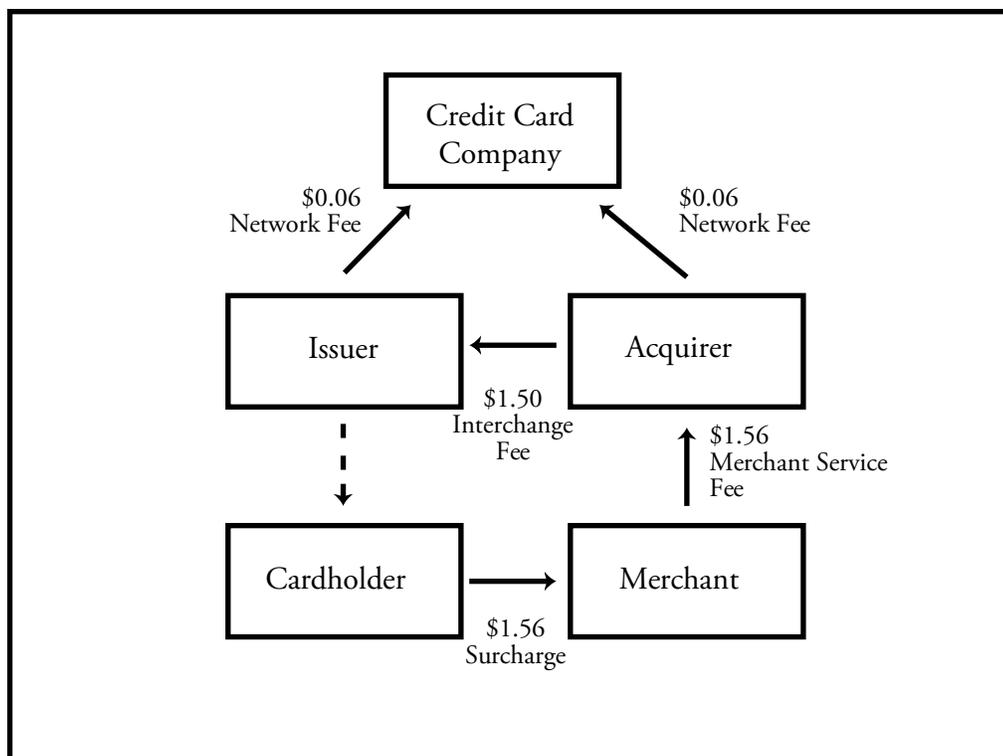
We focus on four-party networks in this paper in order to offer a new, or at least different, perspective on the interchange fee that sets the stage for competitive analysis of practices in this market. But the analysis of the competitive effects of no-surcharge rules apply to three-party networks as well. Four-party credit card networks actually involve five parties: the credit cardholder; the bank that issues the credit card (the “issuer”); the merchant; the merchant’s bank, which acquires the merchant’s accounts receivable (the “acquirer”); and the credit card company. Consider a credit card transaction for \$100. After the transaction (setting aside fees for the moment) the acquirer pays the merchant \$100 and then collects this amount from the issuer, who then collects payment at the end of the month from the cardholder.

The transactions fees are the central issue in the economics of credit card networks. This is one context in which we cannot simply set aside transactions costs. We

illustrate in Figure 1 representative values for the fees associated with a \$100 transaction in a market in which merchants are free to surcharge consumers/cardholders. As illustrated in the figure, the acquirer pays a network fee of \$0.06 to the credit card company as well as an interchange fee of \$1.50 to the issuer. The acquirer’s total cost of \$1.56 is passed on to the merchant (we assume that the market for acquisition services is competitive and for simplicity that the acquirer has no additional costs). The merchant then passes on the \$1.56 to the consumer to some extent via some combination of a surcharge and perhaps a change in the retail price of its product.

THE TRANSACTIONS FEES ARE THE CENTRAL ISSUE IN THE ECONOMICS OF CREDIT CARD NETWORKS.

Table 1: The Flow of Funds in a Credit Card Transaction with a Surcharge Fee



In our example, the merchant passes on the full amount of the \$1.56 as a surcharge, although in reality the merchant may surcharge more or less than its cost depending on the relative demand elasticities of those who buy with the card and those who use other transactions methods such as cash, holding all else equal., The issuer receives the interchange fee, pays the issuer network fee, uses some of the funds to cover the costs of its issuing services, uses some to cover the costs of promotion and consumer rewards, and retains the balance as profits.

III. THE INTERCHANGE FEE

A. Profit-Maximizing Interchange Fee: The Two-Sided Market Perspective

The credit card network is a two-sided market in the sense that both cardholders/consumers and merchants

THE INTERCHANGE FEE CHOSEN TO MAXIMIZE PROFITS BALANCES THE TWO SIDES OF THE MARKET SO THAT THE MARGINAL IMPACTS OF A CHANGE IN THE INTERCHANGE FEE ARE OFFSETTING ON EITHER SIDE.

must be attracted to the network. Neither side will join without sufficient numbers of agents on the other side of the market. The interchange fee is not itself a source of revenue to the credit card company in Figure 1 but rather represents a transfer from one side of the market to the other—from the acquirer/merchant side of the market

to the issuer/cardholder side. The interchange fee chosen to maximize profits balances the two sides of the market so that the marginal impacts of a change in the interchange fee are offsetting on either side.²² This ensures that transaction volume is maximized—all else equal—and volume maximization is the same as profit

maximization because profits equal the product of transaction volume and the sum of network fees.

To be more specific, the price that acquirers pay per dollar of transactions completed on the network is the acquirer network fee plus the interchange fee. We denote this price by $\mathbf{p}_a = \mathbf{f}_a + \mathbf{I}$. The price that issuers pay (receive, if negative) is $\mathbf{p}_i = \mathbf{f}_i - \mathbf{I}$.²³ The total dollar volume or quantity of transactions, \mathbf{Q} , flowing through the network depends on prices on each side of the market, \mathbf{p} . An increase in the price on the merchants' side of the market will deter merchants from accepting the cards; this will have a feedback effect on the other side of the market through deterrence of cardholders from taking out the card. There is a similar feedback effect for an increase in the price on the cardholder side of the market.

If we denote the elasticities of transactions volume with respect to the prices on the two sides of the market as ϵ_a and ϵ_i , then straightforward profit maximization by the network shows that the profit-maximizing interchange fee (i.e., the volume-maximizing fee) is characterized by the following expression.

$$\frac{\epsilon_a}{p_a} = \frac{\epsilon_i}{p_i} \tag{1}$$

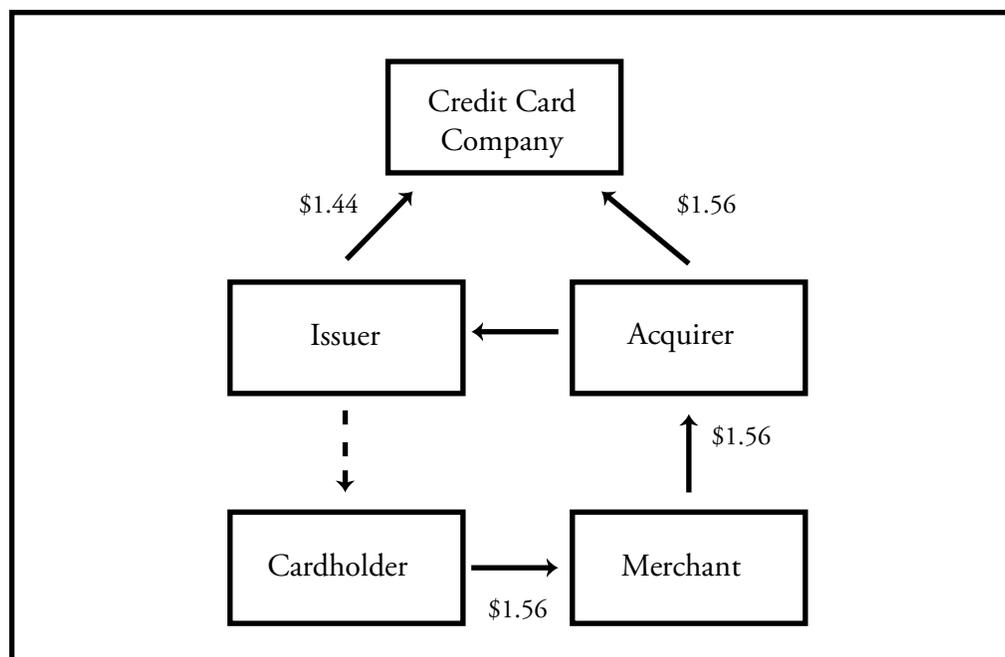
Only when (1) is satisfied are the marginal impacts of a change in the interchange fee on the two sides of the market offsetting and only then can volume, and profit, be maximized.²⁴

B. Profit-Maximizing Interchange: The One-Sided Market Perspective

Suppose that the interchange fee, instead of flowing directly from the acquirer to the issuer, spent one millisecond in the accounts of the credit card company. Then the cash flows to and from the credit card company would look quite conventional. The credit card company would be collecting a price from the merchant, \mathbf{p}_a , via the competitive acquirer intermediary, and it would be spending some of the price on issuing activities such as promotion via the net payment \mathbf{p}_i to the issuer. The remaining funds would cover the credit card company's operating costs, costs of direct advertising, and profits. Like any firm, the credit card company would simply collect revenue and spend some portion of the revenue on promotion. These cash flows are illustrated in Figure 2.

SUPPOSE THAT THE INTERCHANGE FEE, INSTEAD OF FLOWING DIRECTLY FROM THE ACQUIRER TO THE ISSUER, SPENT ONE MILLISECOND IN THE ACCOUNTS OF THE CREDIT CARD COMPANY.

Figure 2: Equivalent Flow of Funds in a Credit Card Transaction with a Surcharge Fee



The one somewhat unusual aspect of these cash flows is that the credit card company decentralizes promotion, relying on competition among issuers to elicit promotional activities including consumer rewards.²⁵ This decentralization of promotion is an elegant aspect of credit card network economics, but does not change the basic characterization of cash flows under our “one millisecond” hypothesis: Revenue is collected from the acquirer and some portion of this revenue is allocated to promotional and quality enhancing activities (“promotion”).

Figure 2 depicts our interpretation of interchange activities as promotion in a credit card network in that the credit card company receives \$1.56 per \$100 transaction and spends \$1.44 of this on issuer activities, which increase demand. Like any firm, the credit card company receives revenue from sales of its product or service and allocates a portion of these revenues to promotion (defined as any demand-enhancing activity). The credit card company collects from acquirers revenue per unit—that is, a price—given by $p_a = I + f_a$, and then allocates a portion, $p_i = I - f_i$, of this revenue to promotion. The company sets a price $I + f_a$, and spends a total amount $A = (I - f_i)Q$ on promotion to sell a given volume Q of transactions on its network.

1. The Optimal Interchange Fee and the Dorfman-Steiner Theorem

The conventional theory of optimal advertising or promotion in a one-sided market applies. The Dorfman-Steiner theorem provides the profit-maximizing allocation of funds to advertising.²⁶ Let p and Q be the price set and quantity sold by a firm and A be the firm’s dollar expenditure on advertising; let $q(p,A)$ be the firm’s demand and let the elasticities of demand with respect to price and

THE CONVENTIONAL THEORY OF OPTIMAL ADVERTISING OR PROMOTION IN A ONE-SIDED MARKET APPLIES.

advertising be ϵ_a and ϵ_p , respectively. Dorfman-Steiner showed that the following expression is necessary for profit maximization:

$$\frac{A}{pQ} = \frac{\epsilon_a}{\epsilon_p} \quad (2)^{27}$$

The Dorfman-Steiner theorem necessarily applies to our hypothetical credit card company that is allocating some portion of revenues to promotion like any other company.

It is straightforward to show that (1) and (2) are equivalent if we interpret A in (2) as the net amount of funds allocated to issuers, p as the fee paid by the acquirer per dollar transacted on the network, and Q as the total volume transacted on the network.²⁸

The equivalence of profit-maximizing promotion and profit-maximizing interchange fees must follow as a matter of simple economics, not just algebra. The funds directed towards issuers are the funds allocated to promotion and issuer quality enhancement (or at least to the issuer-controlled dimensions of these variables). Our hypothesis that funds spend a millisecond in the accounts of the credit card company cannot possibly matter, since the credit card company controls the value of the interchange fee with or without this hypothesis. A credit card company devotes π dollars to issuer activities per dollar transacted, of the total of $p_a Q$ raised from acquirers. The Dorfman-Steiner theorem and the profit-maximizing interchange fee describe the identical optimization problem, so the solutions must be equivalent.

2. The Output Maximization Principle

The output-maximization property of the profit-maximizing interchange fee also does not depend on the two-sided market nature of the credit card market. Consider a firm in a conventional market making a decision on the following variables: advertising expenditure per unit, e ; allocation per unit to the sum of operating expenses per unit and profit per unit, which allocation we denote as \mathbf{x} ($\mathbf{x} = \mathbf{c} + \boldsymbol{\pi}$, where these are per-unit variables); and price, \mathbf{p} . We have $\mathbf{p} = \mathbf{e} + \mathbf{x}$ as an accounting identity. The demand can be expressed as $\mathbf{q}(\mathbf{p}, \mathbf{e})$. The firm's profit-maximizing decision can be expressed as the choice of any two elements in $\{\mathbf{e}, \mathbf{x}, \mathbf{p}\}$, for example \mathbf{x} and \mathbf{e} . Conditional upon \mathbf{x} , the profit-maximizing choice of \mathbf{e} will maximize volume since profit = $(\mathbf{x} - \mathbf{c}) \mathbf{q}(\mathbf{x} + \mathbf{e}, \mathbf{e})$. (At a given \mathbf{x} , \mathbf{p} , and \mathbf{a} move together one-for-one so the choice of either \mathbf{p} or \mathbf{a} maximizes volume. Solving this output maximization problem yields again the Dorfman-Steiner theorem.)

THE OUTPUT-MAXIMIZATION PROPERTY OF THE PROFIT-MAXIMIZING INTERCHANGE FEE ALSO DOES NOT DEPEND ON THE TWO-SIDED MARKET NATURE OF THE CREDIT CARD MARKET.

Moving to the credit card context we find a special case of this general output-maximizing principle. In the credit card context we have $p = I + f_a$, $e = I - f_i$ and $\mathbf{x} = f_a + f_i$. The general principle that maximizing profit with respect to e , given \mathbf{x} , also maximizes output implies directly that the profit-maximizing interchange fee maximizes output, at given network fees. This result has nothing to do with the two-sided nature of markets

and instead is a straightforward result of the Dorfman–Steiner model applied to conventional markets.

Note that we cannot draw any inferences in the credit card setting about market power or pricing efficiency from the output-maximizing property of the interchange fee. Any firm with any degree of market power chooses price to maximize output, holding x constant.

DRAWING THE CONNECTIONS BETWEEN ISSUER ACTIVITIES IN A CREDIT CARD NETWORK AND PROMOTION BY A FIRM IN A SINGLE-SIDED MARKET SETS THE STAGE FOR THE ANALYSIS BELOW OF THE COMPETITIVE IMPACT OF THE NO-SURCHARGE RULE.

Drawing the connections between issuer activities in a credit card network and promotion by a firm in a single-sided market sets the stage for the analysis below of the competitive impact of the no-surcharge rule.

First, however, we must complete our characterization of the profit-maximizing interchange fee by discussing the theoretical conditions under which changes in the interchange fee are neutral or not. If the interchange fee were irrelevant, then the discussion above would be irrelevant because there would be no profit-maximizing interchange fee.

C. The Neutrality—or Not—of the Interchange Fee

Issuers promote their cards and provide consumer rewards in a number of dimensions. They advertise, set interest rates, set terms of payment, provide reward points, and in some cases offer consumers a percentage refund on their monthly payments.

We consider here the consequences of a simple set of assumptions, which we label the assumption of a “perfect credit card network.” A perfect credit card network is one with rational agents, and is free of any transactions costs other than the explicit fees that we have specified. In particular, merchants in such a market can set precise issuer-specific surcharges; and issuers can offer precise rebates to consumers who use the issuer’s credit card, with consumers making credit card transaction decisions on the basis of surcharges net of rebates. (The label “perfect credit card network” parallels economists’ use of the term “perfect markets”.) Suppose that merchants can set a surcharge fee precisely (down to a single basis point) and that consumers make credit card purchase decisions based on the opportunity cost represented by the surcharge net of any rebates offered on purchases by the issuer.

Under these assumptions, the level of the interchange fee is completely irrelevant. Any change in the interchange fee, holding constant the other network fees, is offset by prices along the network that leave all agents with the same payoff and taking the same actions.

To prove this result in a simple way, we make liberal use of a basic proposition in the economics of public finance: The side of a market on which the tax is imposed is irrelevant to the distribution of the tax burdens. Price will adjust in the market so that the incidence on buyers and sellers is the same regardless of which set of economic agents pays the tax.²⁹

Consider a perfect credit card network “in equilibrium”: That is, the issuer is choosing the profit-maximizing level of promotion and consumer rewards in each dimension, competing for cardholders. Merchants are setting prices to maximize profits. And cardholders are purchasing quantities given the merchants’ prices and the issuer’s promotion and rebates on credit card payments.

Suppose that the credit card company raises the interchange fee by one percentage point. The increased “tax” of one percent imposed on the acquirer could equivalently be imposed on the merchant, since it is a tax on each dollar transacted between the acquirer and the merchant. But a tax on the merchant per dollar unit of transactions is equivalent to a tax on the consumer/cardholder on the same transaction. And a tax on the cardholder is equivalent to a tax on the issuer because the cardholder and the issuer are engaged in a contract that involves a payment to the consumer per dollar transacted, the rebate to the consumer. To shift the tax incidence from the consumer to the issuer when the consumer pays the tax instead of the issuer, a one-percent additional rebate is offered.

In short, the basic tax-incident-irrelevance theorem tells us that a one-percent increase in the interchange fee is equivalent to the sum of the one-percent additional benefit on each dollar transacted that the issuer receives directly from the acquirer plus a one-percent cost on each dollar transacted that is effectively transferred—with offsetting price adjustments—around the circle of the network. The price adjustments are the one-percent higher merchant fee, the one-percent higher surcharge, and the one-percent higher rebate on credit card payments. At these new prices, and with the new interchange fee, the consumer purchase decisions will obviously remain unchanged and the issuer’s marginal costs of promoting in each dimension also remain unchanged. The change in the interchange fee is irrelevant.³⁰

How did we get a theory and formula for the profit-maximizing interchange fee in the previous discussion, when we have irrelevance of the interchange fee in a perfect credit card network? The answer is in the mathematical assumption in the previous discussion that a profit-maximizing interchange fee existed. Specifically, our characterization of the profit-maximizing interchange fee followed from the first-order conditions for the volume-maximizing interchange fee. Using the first-order conditions to characterize the profit-maximizing interchange fee involves an assumption that the volume of transactions is a strictly concave function of the interchange fee, whereas under the assumption of a perfect credit card network this assumption fails.

HOW DID WE GET A THEORY AND FORMULA FOR THE PROFIT-MAXIMIZING INTERCHANGE FEE IN THE PREVIOUS DISCUSSION, WHEN WE HAVE IRRELEVANCE OF THE INTERCHANGE FEE IN A PERFECT CREDIT CARD NETWORK?

The interchange fee in reality seems not to be irrelevant. Regulatory constraints on interchange are contentious and have some bite, which they would not if interchange fees were irrelevant. Departures from the world of a perfect credit card network can explain this. Consumers may react differently to a discount than to a surcharge. Importantly, surcharges are often prohibited by the credit card companies (the no-surcharge rule), or constrained by regulation. Moreover, there can be costs in transacting with a different surcharge on each payment—and differential surcharges and rebates are necessary for interchange irrelevance in the face of

interchange fees that differ across various credit cards.

IV. COMPETITIVE IMPACT ANALYSIS OF NO-SURCHARGE RULES

A. *No-Surcharge Rules as Retail MFNs*

We now assess the competitive impact of NSRs by examining their effect on equilibrium prices to acquirers

THE NO-SURCHARGE RULE IS AN EXAMPLE OF A RETAIL MFN RESTRICTION, WHICH IS A RESTRAINT IMPOSED BY A MANUFACTURER THAT A RETAILER NOT CHARGE MORE FOR THAT MANUFACTURER'S PRODUCT OR SERVICE THAN FOR THE PRODUCTS OR SERVICES OF ITS RIVAL PRODUCERS

and merchants. We set aside any incentives for increased promotion via a change in interchange fees, but return to this issue below. The no-surcharge rule is an example of a retail MFN restriction, which is a restraint imposed by a manufacturer that a retailer not charge more for that manufacturer's product or service than for the products or services of its rival producers.³¹ In our context, the service

being provided by the upstream credit card company is the right to transact with its credit card. The price charged to the acquirer/merchant for this service is the acquirer service fee plus the interchange fee.

To illustrate the effect of the NSR on the equilibrium involving credit cards, we consider first a duopoly (which sheds light on the impact of NSRs on competition between credit card companies)³² and then a monopoly credit card firm facing competition from the consumers' alternative to transact in cash.

1. Duopoly

In a duopoly, in which two symmetric firms sell through the same retailers downstream, a retail MFN raises prices through two effects. The first we can label the "competition-suppression effect." This effect operates by removing the incentive to cut prices. Suppose for simplicity that the demands for the manufacturers' products are symmetric and that retailers downstream are competitive. Consider the incentive for either manufacturer to cut its wholesale price to the retailer if both manufacturers are currently setting the joint profit-maximizing prices. This incentive is zero. If one manufacturer cut its wholesale price and that leads a retailer to cut its retail price, the manufacturer knows that its rival's retail price will follow its own retail price cut, dollar for dollar. The retail MFN eliminates the sales gain of stealing sales from a rival by undercutting the rival's price, which is the essential competitive mechanism. Once both manufacturers adopt the retail MFN, there is no incentive at all to price below the collective monopoly price(s).

But the anticompetitive impact of the restraint does not end here. The second effect of a MFN is to create an incentive to raise prices above the jointly profit-maximizing prices. We label this effect the "cost externalization effect." Suppose, starting again from the position of both firms setting the joint profit-maximizing prices, that one firm considers raising its wholesale price by one dollar. If its own customers at the retail outlet bore the full brunt of this price increase via a one-dollar increase in the retail price, then the increase beyond the joint monopoly prices would not be profitable.

Its own retail consumers, however, bear only *half* the consequence of the price increase: The competing retailers downstream charge a common retail price based on the average wholesale price and therefore raise the price of each product, in response to the one dollar wholesale price increase in one product, by about 50 cents. The joint monopoly price is not sustainable as a Nash equilibrium because each upstream manufacturer has the incentive to increase the wholesale price, due to the negative externality imposed on the rival manufacturer. The combination of the two effects of the MFN mean that the equilibrium price after the duopolists have adopted a MFN is, in the simplest theoretical model, greater than the monopoly price. Effectively the restraint changes the two substitute products into complements, since an increase in the price of one lowers the demand for the other once the restraint is adopted. For complements, the non-cooperative price always exceeds the joint profit-maximizing price.

The application of these effects of a MFN to the use of a NSR in credit cards is direct. Think of two competing credit card companies and, for simplicity, ignore cash and ignore promotion including rebates to credit card customers. In the absence of the NSR, merchants would

THE APPLICATION OF THESE EFFECTS OF A MFN TO THE USE OF A NSR IN CREDIT CARDS IS DIRECT.

compete with each other by differentially surcharging retail transactions on each card depending on the particular card's fees to the merchant. But with a NSR, that is not possible and the consequence is that competition between the two card companies gets distorted in the same way as the competition between manufacturers gets distorted in our previous example. Both the competition-suppression effect and the cost externalization effect are at work. The Canadian Competition Tribunal, in the 2010 Canadian case involving Visa and MasterCard, discussed both effects extensively in its assessment of the overall competitive impact of the NSR.³⁴

This analysis of the impact of the no-surcharge rule by analogy to the MFN in a conventional market treats only one side of the credit card market: the price to acquirers. What is the consequence of the suppression of competition for the issuer side? An answer to this question again draws on price theory of conventional markets. Stigler³⁵ pointed out that when firms maintained monopoly prices, non-price competition between the firms is magnified, which eats into firm profits. (Stigler's analysis was for the case of cartel pricing, but the same principle holds for price competition suppressed through the adoption by individual firms of practices that suppress price competition.) High prices lead to greater promotion but, unless promotion is a perfect substitute for prices, rents will not be completely dissipated through the increased intensity of the non-price competition. Here, interchange fees will rise, with greater promotion by issuers, but not enough to offset the higher prices—unless cash rebates as a component of promotion perfectly offset surcharges.

2. NSR and the Competition From Cash

The effect of a NSR is evident even when there are no competing card companies and the only alternative means of payment is cash. To focus on the cash alternative, suppose that there is only one card company. The imposition of a NSR here is assumed to mean that transactions through

THE EFFECT OF A NSR IS EVIDENT EVEN WHEN THERE ARE NO COMPETING CARD COMPANIES AND THE ONLY ALTERNATIVE MEANS OF PAYMENT IS CASH.

the credit card and through cash must be at the same price—and therefore any increase in price charged by the credit card service provider is spread over all transactions. The extraction of this transfer from cash customers creates an incentive for even a monopoly credit card company to raise its fees above the fee that would otherwise be profit maximizing.

THIS SITUATION CREATES THE INTERESTING POSSIBILITY THAT CASH CUSTOMERS COULD SUE THE CREDIT CARD COMPANY FOR IMPOSING THE NSR SINCE THE NSR ALLOWS THE MONOPOLY CREDIT CARD COMPANY TO EXTEND ITS MONOPOLY FROM THE CREDIT CARD MARKET TO THE PREVIOUSLY COMPETITIVE MARKET FOR THE USE OF CASH TO TRANSACT.

However, in this case—unlike the pure duopoly case—the monopoly credit card firm is better off raising its price (e.g., the f_a fee it charges acquirers)³⁷ above the monopoly level because of the cost externalization effect. One way to think of this is that the NSR enables the credit card company to exercise market power over cash customers and collect a “tax” on them equal to the elevation in the retail price that occurs as a result of the NSR. This situation creates the interesting possibility that cash customers could sue the credit card

company for imposing the NSR since the NSR allows the monopoly credit card company to extend its monopoly from the credit card market to the previously competitive market for the use of cash to transact.³⁸

In both the duopoly credit card model and the monopoly credit card/cash model, for simplicity we have set aside a detailed analysis of decisions on promotion (whether through rebates or other means) or interchange fees. But there is one condition under which it is essential to incorporate interchange decisions in analyzing the impact of the NSR. Consider the “perfect credit card network” condition in our earlier analysis, in which changes in the final retail price to consumers could be offset perfectly by opposite changes in rebates on credit card bills. In the case of a credit card duopoly with no cash customers, if the perfect credit card market condition holds then the NSR has no impact at all; the competition between the two credit card companies will be reflected in higher rebates on credit card bills, which offset perfectly the suppressed competition from the NSR.³⁹

In contrast, in the case of a monopoly credit card firm and cash customers, the presence of neutrality (in the absence of the NSR) does not undercut the effect of the NSR that cash customers are harmed. In the duopoly case all retail customers (i.e., the customers of both credit card firms) can receive rebates from their firms that undo the impact of the restraints. In the case with cash customers, the availability of cash rebates actually magnifies the incentive to raise the price of credit card services; the price increase for the credit card company’s own customers can be offset with the rebates allowing a complete externalization of the impact of price increase on cash customers.

We have outlined some of the effects of the NSR in a credit card market, making some simplifying assumptions to highlight our points. A more precise analysis requires a full model of competing networks in which the decisions of cardholders, issuers, credit card firms, and merchants are explicit; in which the concept of a competitive retail sector is spelled out; and in which the impact of the NSR is set out. We offer the fuller analysis in our companion paper.

V. CONCLUSION

Two-sided markets, and especially credit card markets, have received much attention with an emphasis on understanding the special features that two-sidedness creates. Although we agree that two-sidedness presents the necessary framework to understand credit card markets and other markets, we have offered a perspective that the essential economic forces at work in the basic credit card network, and in the impact of no-surcharge rules, have little to do with two-sidedness. Failure to understand that insights from one-sided markets also apply to two-sided markets obscures rather than clarifies the analysis of how to reach sound policy decisions in credit card markets. ▲

WE HAVE OFFERED A PERSPECTIVE THAT THE ESSENTIAL ECONOMIC FORCES AT WORK IN THE BASIC CREDIT CARD NETWORK, AND IN THE IMPACT OF NO-SURCHARGE RULES, HAVE LITTLE TO DO WITH TWO-SIDEDNESS.

¹ Dennis Carlton is David McDaniel Keller Professor of Economics at Booth School of Business, University of Chicago and NBER; Ralph Winter is Professor, Strategy and Economics Division, Sauder School of Business, UBC. We thank David Evans, Alan Frankel, Gregory Pelnar, Allan Shampine, Craig Wildfang, and Yulai Zhao for helpful comments. Both authors have been involved in litigation adverse to Visa, MasterCard, and other credit card companies. In addition, Carlton has worked for Discover Card. This paper outlines themes developed more formally in a companion paper: Dennis W. Carlton & Ralph A. Winter, *Vertical Restraints in Two-Sided Markets: Credit Card Merchant Rules*, in preparation.

² Hayashi & Maniff offer an overview of government regulation in payment card markets, Fumiko Hayashi & Jess Leigh Maniff, *Public Authority Involvement in Payment Card Markets: Various Countries: August 2014 Update*, FEDERAL RESERVE BANK OF KANSAS CITY (2014).

³ Alan S. Frankel & Allan L. Shampine, *The Economic Effects of Interchange Fees* 73 ANTITRUST L. J. 627 (2006).

⁴ Jean-Charles Rochet & Julian Wright. *Credit Card Interchange Fees*, 34 J. BANKING & FINANCE 1788 (August 2010). See also Jean-Charles Rochet, *The Theory of Interchange Fees: A Synthesis of Recent Contributions*, 2 REV. NETWORK ECONOMICS 1 (June 2003); Jean-Charles Rochet & Jean Tirole, *An Economic Analysis of the Determination of Interchange Fees in Payment Card Systems*, 2 REV. NETWORK ECON. 1 (June 2003).

⁵ Julian Wright, *Why Payment Card Fees Are Biased Against Retailers*, 43 RAND J. ECON. 761 (December 2012).

⁶ Benjamin Klein, Andres V. Lerner, Kevin M. Murphy, & Lacey L. Plache, *Competition in Two-Sided Markets: The Antitrust Economics of Payment Card Interchange Fees*, 73 ANTITRUST L.J. 571 (2006).

⁷ Eric Emch & T. Scott Thompson, *Market Definition and Market Power in Payment Card Networks*, 5 REV. NETWORK ECON. 45 (2006).

⁸ David S. Evans & Richard Schmalensee, *The Economics of Interchange Fees and Their Regulation*, COMPETITION POL'Y INT'L 1-33 (2007).

⁹ Weyl develops a model in which heterogeneity of parties on each side of a two-sided model is essential; E. Glen Weyl, *A Price Theory of Multi-sided Platforms*, 100 AMER. ECON. REV. 1642 (2010).

¹⁰ Dennis W. Carlton & Alan S. Frankel, *The Antitrust Economics of Credit Card Networks*, 63 ANTITRUST L.J. 643 (1995); Joshua Gans & S.P. King, *The Neutrality of Interchange Fees in Payment Systems*, 3(1) TOPICS

IN ECON. ANALYSIS & POL'Y, 3 (2003).

¹¹ Julian Wright, *Optimal Card Payment Systems*, 47 EUR. ECON. REV. 587 (2003).

¹² Andrew Boik & Kenneth S. Cortis, *The Effects of Platform MFNs on Competition and Entry*, Working Paper, University of Toronto (June 2013).

¹³ Winter analyzed the no-surcharge rule as equivalent to a retail MFN in his testimony in *The Commissioner of Competition v. Visa Canada Corporation and MasterCard International Incorporated et al*, CT-2010-010.

¹⁴ Jean-Charles Rochet & Jean Tirole, *Cooperation Among Competitors: Some Economics of Payment Card Associations*, 33 RAND J. ECON. 549 (Winter 2002). See also Hélène Bourguignon, Renato Gomes, & Jean Tirole, *Card Surcharges and Cash Discounts: Simple Economics and Regulatory Lessons*, 10(2) COMPETITION POL'Y INT'L (Fall, 2014). The latter paper focuses on the lack of consumer information about surcharging. In this paper, when we discuss surcharging, we assume consumers are fully informed about all fees.

¹⁵ See Rochet & Tirole (2003), *supra* note 4; Jean-Charles Rochet & Jean Tirole, *Two-sided Markets: A Progress Report*, 37 RAND J. ECON. 645 (2006); Jean-Charles Rochet & Jean Tirole, *Competition Policy in Two-sided Markets, with a Special Emphasis on Payment Cards*, *Handbook of Antitrust Economics*, 543-582 (Paulo Buccirossi, ed. 2008).

¹⁶ E.g., Emch & Thompson, *supra* note 7; Klein, Lerner, Murphy, & Plache, *supra* note 6.

¹⁷ Robert Dorfman & Peter O. Steiner, *Optimal Advertising and Optimal Quality*, 44 AMER. ECON. REV. 826 (1954).

¹⁸ We are not suggesting that cooperation on pricing or restrictions on competitive pricing are always per se illegal. Firms in a joint venture can defend a restriction on the basis that without the restriction on competition some product could not be provided and therefore the rule of reason should apply. This is called the problem of “characterization” in the legal literature. The line between a “new” product and a product with different promotional characteristics is a thin one for an economist to draw, but we note that courts have been relatively clear that “new” products are the exception, not the rule, in determining the legality of collaboration among competitors who collectively have market power.

¹⁹ We are not aware of any successful case brought on this theory, indicating that there might be legal hurdles to overcome. Notice that the harm is occurring in the non-credit card market, not the credit card market.

²⁰ The dashed arrow in Figure 1 indicates that an issuer may or may not provide cash rebates (on the monthly cardholder bill) for purchases with the credit card.

²¹ Some regulations that allow surcharging also constrain the amount of the surcharge.

²² This assumes that a profit-maximizing interchange fee exists (i.e., that changes in the fee are not neutral). We explore the conditions for this below.

²³ With three variables and only two prices, there is a normalization required. For simplicity, set $\mathbf{f}_1=0$.

²⁴ Emch & Thompson, *supra* note 7.

²⁵ Such decentralization occurs in industries other than credit cards. For example, in many industries firms rely on independent salesmen who receive a commission for each sale.

²⁶ We use the term “promotion” to include all issuer activities related to promotion such as advertising, quality improvement, or consumer rebates. To keep the terminology here the same as Dorfman-Steiner, we

refer only to advertising.

²⁷ The Dorfman-Steiner theorem follows from the first-order conditions in the maximization of profit, $(\mathbf{p} - \mathbf{c})\mathbf{q}(\mathbf{p}, \mathbf{A}) - \mathbf{A}$, with respect to \mathbf{p} and \mathbf{A} . We take the convention of expressing the price elasticity as a positive number.

²⁸ The elasticities in (2) refer to the elasticities of the demand function $\mathbf{q}(\mathbf{p}, \mathbf{A})$ with respect to \mathbf{p} and \mathbf{A} ; and the elasticities in (1) are of the demand function $\tilde{\mathbf{q}}(\mathbf{p}_a, \mathbf{p}_i)$. We remind the reader that \mathbf{A} is total advertising while $\mathbf{p}_a = (\mathbf{I} + \mathbf{f}_a)$ is price to the acquirer and $\mathbf{p}_i = \mathbf{I} - \mathbf{f}_i$. We have $Q = \mathbf{q}(\mathbf{p}, \mathbf{A})$; $Q = \tilde{\mathbf{q}}(\mathbf{p}_a, \mathbf{p}_i)$; $A = \mathbf{p}_i Q$; $P = P_a$ and $\mathbf{p}_i = \mathbf{I} - \mathbf{f}_i$. It follows directly that

$$\tilde{\mathbf{q}}(\mathbf{p}_a, \mathbf{p}_i) = \mathbf{q}(\mathbf{p}_a, \mathbf{p}_i \tilde{\mathbf{q}}(\mathbf{p}_a, \mathbf{p}_i)) \quad (3)$$

Totally differentiating (3) (in logs) with respect to $\mathbf{p}_a, \mathbf{p}_i$ yields

$$\frac{\varepsilon_i}{\varepsilon_a} = \frac{\varepsilon_A}{\varepsilon_p} \quad (4)$$

Rewrite (1) as

$$\frac{p_i}{p_a} = \frac{\varepsilon_i}{\varepsilon_a} \quad (5)$$

Multiplying the denominator and the numerator of the LHS of (5) by Q and substituting (4) yields (2). Thus the expressions (1) and (2) are equivalent.

²⁹ This proposition holds regardless of whether the market is competitive or one in which firms have market power.

³⁰ The concept of interchange fee irrelevance is not to be confused with another form of irrelevance. In the triplet of fees in the credit card network $(\mathbf{I}, \mathbf{f}_i, \mathbf{f}_a)$ consisting of the interchange fee and the two network fees, there are only two degrees of freedom. If the interchange fee is raised by one basis point simultaneously with a one basis point increase in the issuer network fee and a one basis point decrease in the acquirer network fee, the net cash flows to each party in the network are unchanged. This is an accounting identity, not economic neutrality that depends on equilibrium price adjustments. The economic neutrality discussed in the text is about the irrelevance of the interchange fee holding network fees constant, unlike the accounting identity.

³¹ We analyze the impact on pricing of the adoption of MFN's by both firms in a duopoly (i.e., the "pricing subgame" following adoption of MFN's by both parties). In our companion paper we discuss the full game in which the adoption of MFN by each firm is endogenous. We also ignore here the extensive margin on which the retailers can drop a product.

³² We recognize that MFNs can sometimes serve pro-competitive functions such as when they prevent free riding. We abstract from those effects here.

³³ Note that for these effects only one manufacturer need have a MFN that requires that all retail prices be equal (assuming symmetry of the duopolists) regardless of the method of transacting as long as both manufactures sell through the same retailers.

³⁴ *The Commissioner of Competition v. Visa Canada Corporation and MasterCard International Incorporated et al*, CT-2010-010.

³⁵ George J. Stigler, *Price and Non-Price Competition*, 76 J. POLITICAL ECON. 149 (1968).

³⁶ The economics literature on these types of practices typically focuses on the impact on prices, and

ignores the impact of the practices on non-price competition.

³⁷ Recall that the credit card company charges issuers f_i and acquirers f_a .

³⁸ Although cash may be an alternative to credit cards for some to transact, we assume—as many courts have found—that there is a sufficient convenience to using credit cards so that cash is not in the same antitrust market as credit cards. As a result of the NSR, the cost of transacting in cash rises from 0. It is possible that if there were several credit card firms competing with each other that the effect of the NSR would be to leave profits of credit card companies unchanged at the competitive level but credit card customers could benefit from increased rewards funded by the “tax” on cash customers.

³⁹ This is analogous to the impossibility of sustaining monopoly profits in a conventional duopoly through a cartel agreement or retail MFN when there is a dimension of promotion that substitutes perfectly for lower prices.

*The Antitrust
Analysis of Rules
and Standards for
Software Platforms*

BY David S. Evans

The Antitrust Analysis of Rules and Standards for Software Platforms

BY DAVID S. EVANS¹

Software platforms anchor vast global communities of users, application developers, device manufacturers, content providers, advertisers, and others. They drive innovation by enabling entrepreneurs, often anywhere in the world, to develop “applications” and to reach all the users of the platform, often anywhere in the world. These applications are sometimes the foundation of substantial businesses. The value of these software platforms, and their ability to support large communities, depend on the ability of the platform to promote positive externalities and reduce negative externalities. Software platforms usually impose rules and standards and often exclude participants that harm others in the community, and reward participants that benefit others in the community. Competition policy should presume that these governance systems, and the restrictions they place on platform participants—including their possible expulsion from the platform—are efficient and pro-competitive. Software platforms could, however, employ governance systems to foreclose competition. These restrictions, therefore, should not be lawful *per se*. Rather, courts and competition authorities should employ screens to protect pro-competitive restrictions and isolate anticompetitive ones. The application of these screens should be neutral to the licensing model chosen by the software platform creator. There is, in particular, no basis for imposing limitations that are, in effect, tougher on software platforms that use an open-source license model than on software platforms that use a proprietary license.

I. INTRODUCTION

Many people use software platforms and the applications that run them during much of the day for work and leisure. They run our mobile phones, computers, and videogame consoles and are behind our social networks. New ones are behind innovations in payments, transportation, health and fitness, connected homes, and connected shopping— all of which are transforming how we live.

Software platforms create value by providing an environment in which many different types of economic agents can benefit.² These economic agents typically include end users, application developers, and hardware makers. They may also include advertisers, content providers, and other economic agents depending on the platform and the business model the platform has adopted.

SOFTWARE PLATFORMS CREATE VALUE BY PROVIDING AN ENVIRONMENT IN WHICH MANY DIFFERENT TYPES OF ECONOMIC AGENTS CAN BENEFIT.

There are positive externalities between these different groups. More demand from any one group of economic agents usually increases the value of the platform to the other groups of economic agents. As with

other multi-sided platforms there are positive indirect network effects: more applications leads to more end users, which leads to more interest from application developers and hardware makers, and so forth.

Software platforms also have conflicts between participants that create negative externalities, or limit positive ones, and thereby reduce the private and social value of the platform. Participants, for example, may make decisions that fragment the platform and thereby reduce the number of participants that can interact with each other. Software platforms often adopt standards, rules, and enforcement mechanisms to deal with externalities among platform participants. Such governance systems can increase the value of the platform to participants, and to the platform owner, by curtailing negative externalities and promoting positive ones. It is possible, however, that platforms could adopt rules that harm third parties without countervailing increases in the value of the platform through reduced externalities.

This article examines how externalities can affect the social and private value of software platforms, the role of governance systems in dealing with these externalities, principles for assessing whether rules and standards are pro-competitive attempts to deal with these externalities or efforts to harm competition, and the use of screens to minimize error costs on the part of competition authorities and courts.

II. SOFTWARE PLATFORM BUSINESS MODELS AND GOVERNANCE

The crown jewel of a software platforms business is its code. Most widely used software platforms have intellectual property rights over that code based on copyright, patent, and trade secret laws. Some software platform providers enforce their claimed property rights vigorously. Others have chosen to cede certain aspects of their intellectual property rights. Their creators have decided to license the code under an open-source license that allows software “to be freely used, modified, and shared.”

Governance of positive and negative externalities has proved important for software platforms regardless of the intellectual property rights and software development approaches these platforms have followed. Available governance tools differ. Fully proprietary platforms can control externalities through contracts, enforcement of intellectual property rights, and platform design. Open-source platforms are limited by their overall governance structure. That structure can range from informal to hierarchical⁴ Open-source projects, for example, can be managed loosely by a small group of volunteer programmers, a “benevolent dictator” who many choose to follow, or a for-profit company that influences the direction through funding and other decisions.

GOVERNANCE OF POSITIVE AND NEGATIVE EXTERNALITIES HAS PROVED IMPORTANT FOR SOFTWARE PLATFORMS REGARDLESS OF THE INTELLECTUAL PROPERTY RIGHTS AND SOFTWARE DEVELOPMENT APPROACHES THESE PLATFORMS HAVE FOLLOWED.

Some software platforms have adopted a hybrid of proprietary and open-source software. The for-profit company invests in the development of the software platform but provides an open-source license to the software platform. It thereby loses some control over the intellectual property rights to its platform but derives benefits from the open-source process for debugging and improving the platform. It also loses some of its ability to govern externalities on the platform.

A. Positive Externalities for Software Platforms

The primary source of value for a software platform comes from its use as a standard by end users, software developers, hardware makers, and other economic agents who can benefit from interacting with potential counterparties. Different versions of a software platform can, however, evolve in ways that reduce the ability of economic agents that use one version of the software platform to interact with economic agents that use another version of the platform. This “fragmentation” works just the opposite to standardization. It deters, rather than promotes, positive externalities.

A soft form of fragmentation can result from the interrelated decisions by the software-platform owner to release new versions of the software and the decisions by users, hardware manufacturers, and wireless carriers not to upgrade to that version. Even if the platform owner makes the platform backward compatible, applications and hardware written for the most recent version may not work with older versions.

A hard form of fragmentation can result from decisions to create a version of the software that is not compatible with other versions. That could occur as a result of a proprietary company deciding that backward compatibility imposes too much of a constraint and releasing a version that is not compatible with some existing applications and hardware. More commonly, hard fragmentation occurs under the open-source model when a software platform “forks” into multiple incompatible development efforts with different platform leaders.

Fragmentation imposes costs. Developers may have to write multiple versions of the same application to make sure that the application works the same way for all users of the various fragmented flavors of the platform. That may involve anything from trivial to wholesale changes in the code depending on the nature and degree of fragmentation. The incremental cost for writing applications for different versions may lead developers to limit themselves to writing applications for the most popular versions of the software platform.

Given the fixed cost of writing software applications some developers may decide not to write for a software platform at all if they cannot reach enough users with a single version of their applications. The software platform secures smaller positive network effects as a result of fragmentation leading to fewer compatible applications and thereby reduces the private and social value of a platform. Fragmentation also makes the platform less competitive with more standardized platforms or closed platforms that can provide greater value to members of all sides at no higher cost.

Fragmentation is a more serious problem for software platforms that use an open-source license. Proprietary software-platform owners can manage fragmentation by: (i) ensuring backward compatibility, (ii) utilizing the copyright and patent legal regimes to prevent modifications, (iii) denying access to source code, (iv) using pricing and contracts with third parties to discourage fragmentation, and (v) fragmenting their own platform only when the benefits exceed the costs. Open-source software platform owners, however, typically

FRAGMENTATION IS A MORE SERIOUS
PROBLEM FOR SOFTWARE PLATFORMS
THAT USE AN OPEN-SOURCE LICENSE

allow developers to modify and distribute software sometimes on the condition they do so under the same open-source license, but often not). When the initial software-

platform creators decide to release their software under an open-source license they make it possible for some parts of the developer community to decide to take the software platform in a different direction than either the creator, or other parts of the developer community, would like or could anticipate.

B. Negative Externalities and the Lemons Problems

Software platforms typically rely on the interaction of users, developers, hardware makers, content providers, advertisers, and other groups to generate positive network effects and platform value. Members of these groups can, however, also impose harm on other platform participants in their same group or in other groups.

Offensive material is a common problem for internet platforms. MySpace, for example, became a “vortex of perversion” because of the type of people it attracted and the content that was posted.⁵ This discouraged advertisers concerned about the possibility of being on the same web page as offensive content and thereby reduced the private value of the network.

Software platform participants also encounter the spate of problems that afflicts commerce generally. Sellers of complementary products such as applications or hardware may, for example, misrepresent their products, engage in various scams, or make it difficult to cancel recurring payments. Buyers may engage in fraudulent behavior as well.

Economic agents that provide complementary goods can also create a “lemons problem” for software platforms. The classic story involves the collapse of the Atari game console business in the early 1980s. Atari used a game cartridge that was an open standard making it possible for third parties to write games. Consumers could not observe the quality of a game until they played it. The availability of reviews was much more limited than it is today. A flood of low-quality games appeared and contributed to the rapid decline of this pioneering game company. The successful game console companies such as Sony (for its PlayStation) that followed Atari limit the ability of third parties to publish games for their platforms and impose quality controls.

ECONOMIC AGENTS THAT PROVIDE COMPLEMENTARY GOODS CAN ALSO CREATE A “LEMONS PROBLEM” FOR SOFTWARE PLATFORMS.

C. Competition Among and Between Software Platform Ecosystem

As with all products software platforms can differentiate themselves by price and along a variety of dimensions to appeal to various groups of heterogeneous consumers. But, as with all multi-sided platforms, they can also differentiate themselves by the pricing structure, which determines the relative participation of the various sides, as well as through a variety of business and design decisions that can result in differentiation of each of the sides.

Software platforms owners, in particular, can: choose whether to integrate into a combined hardware and software platform or to make themselves open to hardware makers; decide on the software platform

features to provide hardware makers, application developers, and other users of the APIs; determine the extent of possible differentiation or standardization across hardware makers and application developers; and devise rules and regulations for platform participants. Software platform owners can also decide whether to differentiate the platform itself by providing multiple versions of the platform with different features.

These decisions concerning differentiation result in externalities because, by influencing demand by members of one group on the platform, they affect the demand by members of the other groups on the platform. Differentiation could result in positive externalities by increasing demand by one group and thereby benefitting other groups. For example, differentiation of hardware could result in more users, which could thereby benefit providers of applications, which in turn would benefit users and hardware makers.

Differentiation could also result in negative externalities by reducing interoperability between members of the same or different groups. For example, differentiation of hardware could make applications incompatible across types of hardware thereby raising the costs for application developers who would react by reducing the supply of applications and raising the costs to users who would then become less likely to use the platform.

Software platform owners must account for these tensions between externalities and differentiation to maximize the value of their platforms. Owners that have made their software platform available through an open-source license, however, encounter more difficulties in managing the tradeoffs between externalities and

SOFTWARE PLATFORM OWNERS MUST
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differentiation than do owners that have secured and enforced traditional intellectual property rights. Under standard open-source licenses, hardware makers and even application developers are not intrinsically constrained by copyright or patent regimes not to make modifications to the software

platform code as they are with proprietary systems. These modifications could make some hardware and software incompatible. Moreover, developers could provide alternative and potentially incompatible versions of the software platform.

For software platforms, fragmentation raises particularly serious concerns over negative externalities that could reduce the value of the platform overall.

III. RULES AND STANDARDS FOR REGULATING EXTERNALITIES

The value of software platforms to their owners, and to their participants, depends on the extent to which the software platform can generate positive externalities and limit negative ones. The relationship between value and externalities creates powerful incentives for software platforms to control these externalities. Proprietary software platforms, motivated by profit, have developed governance systems to harness externalities to maximize the value of their platforms. Successful open-source software platforms have also developed governance systems to deal with positive and negative externalities.

In both cases, the governance systems typically consist of “standards” (norms for the platform established by custom or by design), “rules” (prohibitions of, or requirements, for specified behavior), and “enforcement” (punishment for violations and rewards for good behavior). To examine the prevalence and nature of governance systems for software platforms I examined 15 significant software platforms, as shown in Table 1. Almost all of these platforms have governance systems that involve standards, rules, and enforcement.⁶

The standards for participants arise from design decisions and requirements that software developers and hardware makers follow to comply with given parameters. Facebook provides highly structured methods for people to communicate with their friends and Apple has a highly structured hardware environment for users and applications.

Rules specify things that application developers or hardware makers must do to meet various compatibility requirements and things that they are proscribed from doing. A number of the platforms that involve user interactions also have a variety of community rules such as those involving obscene language, pornography, and hate speech.

Almost all the software platforms have enforcement mechanisms, including expulsion. Proprietary platforms typically identify rules and enforce those rules by contracts. The open-source and hybrid platforms, as well as some of the proprietary platforms, enforce rules through a combination of compatibility tests and trademark restrictions.

ALMOST ALL THE SOFTWARE PLATFORMS HAVE ENFORCEMENT MECHANISMS, INCLUDING EXPULSION.

Table 1: Survey of Software Platforms

	Proprietary	Open Source	Hybrid
PC and Game Console	Sony PlayStation Windows	Linux	
Internet	Facebook Salesforce Tencent	Bitcoin Firefox OpenStack	Ripple
Mobile Device	Apple iOS Windows Mobile	Tizen	Android Ubuntu

To provide a deeper understanding of the role of governance systems in regulating positive and negative externalities for software platforms the remainder of this section discusses three software platforms in detail. Each software platform raises different issues that provide insights for the competition analysis in the next section.

A. The Android Operating System

Google established the Android Open Source Project (“AOSP”) to coordinate the development of the software platform. In practice, Google is almost solely responsible for planning each new version of the software platform

and writing the code. It then releases that to the open-source community, which can debug and improve it as desired.

By providing a free high quality operating system to device makers and a convenient Java-based framework to developers Google secured rapid ignition and growth for Android. Of the 296.6 million smart phones sold in 2010, 67.2 million had the Android operating system. By mid 2014, there were more than 84 hardware companies that made Android handsets, thousands of developers who had published 1.3 million applications,⁷ and more than 1 billion users of Android-based phones and applications.⁸

The open-source model helped drive adoption but also resulted in fragmentation that limited the value of the platform. An August 2014 study by OpenSignal found, for example, that:

Android devices come in all shapes and sizes, with vastly different performance levels and screen sizes. Furthermore, there are many different versions of Android that are concurrently active at any one time, adding another level of fragmentation. What this means is that developing apps that work across the whole range of Android devices can be extremely challenging and time-consuming.⁹

THE OPEN-SOURCE MODEL HELPED DRIVE ADOPTION BUT ALSO RESULTED IN FRAGMENTATION THAT LIMITED THE VALUE OF THE PLATFORM.

There were 18,796 distinct Android devices in 2014. This fragmentation results in significant costs and barriers to entry by developers. Each separate device presents a risk that an application will not work properly. Another form of fragmentation results from different devices running different versions of the Android operating system. Six versions of the Android OS accounted for at least a 10 percent share of all devices with the most popular version accounting for 26.5 percent. By contrast, 91 percent of Apple mobile devices had the most recent version of the iOS as of August 2014, which was iOS 7; eight percent had the next oldest version and only one percent had earlier versions.

Over time Google has developed standards, rules, and enforcement mechanisms to deal with fragmentation and other externalities. It has developed a set of compatibility standards for hardware makers, which it launched in 2007. It has also provided various tests (also on a free and open-source basis) that hardware makers can use to ensure that their devices are compatible. Google only permits Google Play (Google's mobile applications store) and certain Google apps to be preloaded onto devices that pass these compatibility standards, which creates an additional incentive for OEMs to offer compatible devices. Google also has developed set of compatibility tests for the application developers.

In addition, Google has used innovation to reduce operating system fragmentation. It delivers important updates to users through Google Play Services, which offers a set of common APIs regardless of the version of Android a device is running.

Google ensures consistent "out of the box" functionality that consumers expect by licensing its Google Mobile Applications suite ("GMS"), which includes Google Maps, YouTube, and a few other apps. As part of

this license Google requires that the applications appear in particular screens and places on the mobile device. Google has argued that providing the GMS suite helps Android device makers compete with Apple and Windows phones, which also come preinstalled with software that consumers expect.

Google also operates a store for downloading Android applications. It imposes various quality controls on developers who want to place their applications in the store. It can remove those applications that violate the terms of Google Play's Developer Program Policy. That policy prohibits applications from a variety of activities including making modifications to the user's device, reordering default presentations of apps or settings, or engaging in various kinds of malicious and deceptive behavior.

B. The Bitcoin Digital Currency Platform

Bitcoin is a “software-based online payment system” that was created in 2008. It is based on a software platform that uses a distributed network of servers to: (i) process bitcoin transactions, (ii) create more bitcoins, and (iii) provide a compensation mechanism for the “miners” who run the servers that process transactions and create bitcoins. The software platform was established as an open-source project. Despite the media attention Bitcoin has received, while the volume of bitcoin transactions has increased Bitcoin shows no signs of the explosive growth that successful multi-sided platforms had early on.¹⁰

NEGATIVE EXTERNALITIES HAVE
PLAGUED BITCOIN.

Negative externalities have plagued Bitcoin. The digital currency was originally conceived to handle micro-transactions digitally. This “killer app,” however, provided a currency for the “dark web,” where transactions are made for hard drugs, firearms, and other unsavory items. It was the currency for “The Silk Road” which was an eBay of sorts for drugs and other illegal products and services. Traditional drug cartels, and other criminal gangs, also used bitcoins for money laundering. Furthermore, a number of the exchanges and vaults lost bitcoins through either malfeasance by the operators or by cyber-thieves.

Bitcoin does not have a robust governance system for dealing with these externalities. To begin with, the Bitcoin Foundation has suffered reputational problems. Of its five original board members one was convicted of money laundering and one was the founder of the bankrupt Mt. Gox, which allegedly lost about \$500 million bitcoins from hacking.

At the heart of these problems is the lack of exclusionary power—it does not have the ability to prevent anyone from using the Bitcoin platform. It can exhort; it cannot exclude. Even its power to exhort is limited. Some open-source projects such as Linux have a leader—often the original creator—whose moral authority can discipline the community. That is not the case with Bitcoin whose creator remains anonymous.

C. The Windows PC Operating System

Windows was introduced in the mid 1980s and gained widespread adoption in the 1990s. As of September 2014, more than 90 percent of computers worldwide had Windows installed. Like other software platforms

Microsoft took actions to promote positive externalities and reduce negative ones. To minimize fragmentation it made sure that each new version of Windows was backwards compatible with previous versions. As a result existing applications could work with the new versions of Windows. It also made sure that all copies of Windows it distributed provided application developers with access to the same set of features. It had software development kits (“SDKs”) that instructed developers on how to develop compatible applications.

However, it did not have any general mechanisms for limiting the availability of applications based on quality or other considerations related to negative externalities. It also did not provide major operating system updates free of charge. That resulted in frequent use of older operating systems.

Microsoft’s explicit governance efforts were directed mainly at computer manufacturers (also known as “Original Equipment Manufacturers” or OEMs.) Although the licenses are confidential there is some information available on them as a result of the 1998 antitrust case brought by the Department of Justice and various U.S. states. Microsoft prohibited computer manufacturer licensees from “removing any desktop icons, folders, or ‘Start’ menu entries; altering the initial boot sequence; and otherwise altering the appearance of the Windows desktop.”¹¹ These prohibitions limited the computer makers’ “flexibility and choices in configuring the PC desktop.” On the other hand these restrictions ensured that end users would have a consistent experience.

Like some other platforms Microsoft also gave computer manufacturers rewards, in the form of marketing dollars, for doing certain things that generated positive externalities. These were part of the Market Development Program. They included requirements for features such as boot-times, memory allocation, and product configuration.

Overall, these prohibitions and rewards contributed to Windows becoming a standard platform for computer manufacturers, manufacturers of peripherals, application developers, internet content providers, and corporate and personal users. As is well known, some aspects were found to exclude competition in violation of the antitrust laws.

IV. COMPETITION POLICY ISSUES

As has been described above, software platforms can create large and expanding communities by harnessing positive and negative externalities among the various groups that benefit from the platform. Governance systems play a key role in promoting positive externalities and restricting negatives ones. That is seen most clearly in rules that require platform participants to follow certain design principles that ensure compatibility and interoperability among platform components. The force of a governance system ultimately depends on the ability to exclude economic agents that refuse to follow the rules from participating on the platform.

The use of these governance systems, and the exclusion of participants that violate these rules, is presumptively pro-competitive. There is a clear nexus between the rules, standards, and enforcement

mechanisms that software platforms typically use and an effort to maximize the economic value to the community through the promotion of positive externalities and the restriction of negative ones. These rules, standards, and enforcement mechanisms are used across software platforms of all sizes and are typically unconnected with efforts to engage in anticompetitive behavior. Many governance systems regulate community standards that could not remotely affect competition, such as prohibiting participants from engaging in fraudulent or malicious behavior.

THE USE OF THESE GOVERNANCE SYSTEMS, AND THE EXCLUSION OF PARTICIPANTS THAT VIOLATE THESE RULES, IS PRESUMPTIVELY PRO-COMPETITIVE.

Competition policy should therefore exercise caution in condemning the application of governance rules for software platforms. The cost of false positives is high. The software platform community would lose significant economic value if competition policy limited the ability of platform governance systems to harness externalities. Positive network effects lead to a multiplier effect for externalities—they magnify the losses from reducing positive externalities or increasing negative ones.¹²

A presumption is not a free pass and caution does not mean a blind eye. Software platforms could enlist governance rules, just as they can use other tools at their disposal, to engage in anticompetitive behavior. A core issue, for example, in the classic Microsoft case was whether the company used rules for hardware makers to foreclose a potential platform competitor. The U.S. courts decided they had. Competition authorities and courts therefore face the usual conundrum: how to balance false positives and false negatives in the face of uncertainty and incomplete information.

A. *Antitrust Concerns For Platform Rules*

Software platform governance rules involve unilateral non-price practices. They often concern contracts between the software platform and members of the customer groups of the platform. Competition policy would ordinarily analyze these contracts as vertical restraints. Two concerns could arise if standard market-power related thresholds are met.

A horizontal concern is that the software platform is using the governance system to exclude one or more competitors—that is, another software platform—from the relevant antitrust market. That is, the effect of the vertical restraint is on horizontal competition. A key issue for multi-sided platforms in this situation is whether a company is engaging in practices that would prevent its platform rival from securing a critical mass of platform participants and thereby obtaining positive network effects.¹³ Software platform rules that deter participants from using rival platforms raise competition policy concerns for this reason.

The classic Microsoft case illustrates the horizontal issue. The U.S. Department of Justice (“DOJ”)

THE CLASSIC MICROSOFT CASE ILLUSTRATES THE HORIZONTAL ISSUE.

alleged that Microsoft engaged in a variety of practices to limit the emergence of software platforms, such as Netscape’s

browser, that would reduce Window's monopoly power in operating systems. The D.C. Circuit Court of Appeals agreed that some, but not all, of the practices the DOJ complained about involved exercises in market power to protect the Windows monopoly that lacked offsetting efficiency rationales.¹⁴

A few of the practices the D.C. Circuit found unlawful were ones that this article would characterize as governance rules. The Court focused on license provisions "prohibiting OEMs from: removing any desktop icons, folders, or 'Start' menu entries; (2) altering the initial boot sequence; and (3) otherwise altering the appearance of the Windows desktop."¹⁵ It found that these rules were anticompetitive with one exception. The third rule prohibited OEMs from automatically launching alternative interfaces. The court found that the pro-competitive benefits of that offset any anticompetitive harm.

Some software platforms also make applications, hardware devices, and other products that compete with products provided by businesses on various sides of the platform. A vertical concern is that software platforms are using governance rules to foreclose competing products and leverage their dominance in software platforms into the adjacent market for complementary products. That is, the effect of the vertical restraint is in an adjacent market.

The Microsoft case illustrates this concern as well. The government claimed that Microsoft was trying to foreclose Netscape's browser to establish a monopoly with Microsoft's Internet Explorer browser. Microsoft's standards, rules, and enforcement actions were key elements in that strategy. As discussed above Microsoft's contracts with hardware manufacturers imposed several rules concerning how they could modify the Windows desktop. The government claimed these were part of Microsoft's strategy to foreclose Netscape and other rivals from developing competing software platforms that would reduce Microsoft's operating system monopoly. The D.C. Circuit agreed that several of Microsoft's rules were on balance anticompetitive.

Horizontal and vertical concerns over governance rules ultimately turn on the same two issues under U.S. case law and under the decisional practice of the European Commission: whether the practice forecloses competition, and whether it generates efficiencies.

B. The Implications of Open-Source Licensing for Competition Analysis

The open-source licensing model raises some issues that are unique to software platforms. By design this model enables developers and hardware makers to modify the code for the software platform. The benefit of the open-source model is that it encourages innovation by allowing anyone to introduce changes. Participants in the ecosystem can decide for themselves whether those innovations are beneficial or not. The drawback of the open-source model is that it can lead to incompatible versions of the software platform and thereby reduce positive network effects. Governance systems for open-source software permit, but try to discourage, this fragmentation because it reduces positive network effects.

This tradeoff is similar to that between inter-brand and intra-brand competition. Governance rules that limit fragmentation increase the value of the software platform. They strengthen the ability of the software

platform to compete against rivals that have a proprietary model in which the platform owner has complete control over the degree of fragmentation. They therefore increase inter-brand competition. However, governance rules that limit fragmentation, if they are successful, also tend to narrow the degree of differentiation between variants of the software platform as well as the number of alternative viable versions of the platform. They therefore tend to reduce potential intra-brand competition, which competition policy sometimes frowns on.

However, governance rules for open-source software platforms are very different from manufacturer restraints on distributors in an important respect. The value of any software platform depends on the extent to which it provides a standard compatible platform for all participants. Manufacturer vertical restraints typically involve ancillary conditions, such as price and service, related to the sale of the product. Governance rules to control fragmentation are equivalent to rules that prohibit distributors from changing the features of the product they are selling.

HOWEVER, GOVERNANCE RULES FOR OPEN-SOURCE SOFTWARE PLATFORMS ARE VERY DIFFERENT FROM MANUFACTURER RESTRAINTS ON DISTRIBUTORS IN AN IMPORTANT RESPECT.

These considerations lead to an important point concerning the role of competition policy in promoting alternative software platform business models. Software platform creators have the option of choosing a proprietary, pure open-source, or hybrid proprietary/open-source model in developing and popularizing their platforms. Each of these models has its merits in terms of promoting the efficient development of platforms as is clear from the existence of successful platforms following each of these models. There is no economic reason to believe there are market failures in the selection of these alternative models by software platform creators. In particular there is no reason to believe that software platform creators are inefficiently choosing to pursue open-source licensing models rather than closed proprietary models. There is also no economic basis to believe that software platform creators are choosing open-source models for anticompetitive reasons. They obviously have no market power when they are making these decisions.

The application of competition policy should therefore be neutral across these alternative models. Courts and competition authorities should exercise care that they do not impose policies that could encourage software platform creators to choose one model over the other. Policies, for example, that restrain software platforms under an open-source license from limiting fragmentation would have the perverse, and inefficient, result of encouraging software platform creators to adopt closed proprietary platforms.

THE APPLICATION OF COMPETITION POLICY SHOULD THEREFORE BE NEUTRAL ACROSS THESE ALTERNATIVE MODELS.

C. Competition Policy Screens for Software Platform Rules

I have previously advocated for courts and competition authorities to follow a three-step test to evaluate complaints regarding an element of a governance system for a multi-sided platform.¹⁶ The same test should be followed for software platforms to balance the costs of errors from false positives, which can result in the sacrifice of significant positive network effects, and false negatives, which can allow the continuation of anticompetitive exclusion.

The test assumes that the complainant has established a relevant market, that the software platform has market power, and that the practice has the potential to harm competition:

1. In the first step the defendant has the opportunity to establish that the practice results from the application of a governance system for dealing with externalities. If the platform cannot do so then the standard rule of reason analysis applies. Otherwise the decision-maker moves to the second step.
2. In the second step the complainant has the burden of demonstrating that the practice in question is not reasonably related to the use of a governance system to restrict negative externalities or promote positive ones. The complainant could, for example, show that the rule is a pretext for excluding competition. If the complainant cannot do so then the matter is concluded in favor of the defendant. If the complainant can make this demonstration, the analysis proceeds to the third step.
3. In the third step the standard rule of reason analysis applies. In this step complainant has the burden of showing that the practice harmed competition through foreclosure. If the complainant meets that burden the platform defendant then has the burden of showing that the practice provides efficiencies that outweigh any anticompetitive effects.

In all steps the analysis is neutral to the type of software platform. The decision-maker avoids results that, if applied generally, would discourage software platform creators from choosing a closed proprietary model, or open-source licensing model, or a hybrid model of those two.

THE TEST PROVIDES A USEFUL METHOD FOR COMPETITION AUTHORITIES TO EVALUATE COMPLAINTS AND USING THEIR PROSECUTORIAL DISCRETION IN DETERMINING WHETHER A COMPLAINT AGAINST A GOVERNANCE PRACTICE MERITS CLOSE ATTENTION.

The details of this test of course will differ depending on the case law of the jurisdiction and decisional practice of the competition authority. The case law of the jurisdiction may preclude applying this test. However, the test provides a useful method for competition authorities to evaluate complaints and using their prosecutorial discretion in

determining whether a complaint against a governance practice merits close attention.

V. CONCLUSIONS

Software platforms drive innovation by enabling entrepreneurs, often anywhere in the world, to develop “applications” and to reach all the users of the platform, often anywhere in the world. They make innovation democratic, global, distributed, and decentralized. As the software platform model has progressed over the roughly four decades since the invention of the personal computer it has demonstrated its power to drive economic progress.

The value of these software platforms, and their ability to support large communities, depend on the ability of the platform to promote positive externalities and reduce negative externalities. Software platforms need governance systems that impose rules and standards and that have mechanisms for requiring platform participants to adhere to these rules and standards. They need to be able to exclude participants that harm others from the platform.

Most significant software platforms have established governance systems. On their face they restrict negative externalities and promote positive ones, thereby increasing the value of the platform to its participants. Competition policy should presume these governance systems, and the restrictions they place on platform participants—including their possible exclusion or expulsion from the platform—are efficient and therefore pro-competitive.

Software platforms could employ governance systems to foreclose competition and therefore these restrictions should not be per se lawful. Rather, courts and competition authorities should employ screens to protect pro-competitive restrictions and isolate anticompetitive ones. The application of these screens should be neutral to the licensing model chosen by the software platform creator. There is, in particular, no basis for imposing tougher limitations on software platforms operated under a pure or hybrid open-source model than on software platforms operated under a closed proprietary model. ▲

RATHER, COURTS AND COMPETITION
AUTHORITIES SHOULD EMPLOY SCREENS
TO PROTECT PRO-COMPETITIVE
RESTRICTIONS AND ISOLATE
ANTICOMPETITIVE ONES.

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² Software platforms consist of lines of computer code that support different features offered by the platform. They typically make some of their features available to third party developers. They do this by creating Application Programming Interfaces (“APIs”). APIs enable third parties to access and make use of these features. Some software platforms include operating systems that manage hardware, like Windows, but many others do not, like Facebook.

³ The existence of externalities and the need for a governance system is a general feature of multi-sided platforms. See David S. Evans, *Governing Bad Behavior By Users of Multi-Sided Platforms*, 27 *BERKELEY TECH. L.J.* 1112-1113 (2012). Available at SSRN: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1950474.

⁴ See, for example, CHARLES M. SCHWEIK & ROBERT C. ENGLISH, *INTERNET SUCCESS: A STUDY OF OPEN-SOURCED SOFTWARE COMMONS* (2012).

⁵ See Felix Gillette, *The Rise and Inglorious Fall of MySpace*, BLOOMBERG BUSINESSWEEK (Jun. 27, 2011), available at http://www.businessweek.com/magazine/content/11_27/b4235053917570.htm.

⁶ Bitcoin is the major exception as it lacks clear rules and enforcement methods. For detailed results for these platforms see Evans, *supra* note 1.

⁷ See AppBrain Stats (Oct 21, 2014), available at <http://www.appbrain.com/stats/number-of-android-apps>.

⁸ See Christopher Trout, *Android Still the Dominant Mobile OS with 1 Billion Active Users*, ENGADGET (Jun 25, 2014), available at <http://www.engadget.com/2014/06/25/google-io-2014-by-the-numbers/>.

⁹ *Android Fragmentation Visualized*, OPENSIGNALS (August, 2014), available at http://opensignal.com/assets/pdf/reports/2014_08_fragmentation_report.pdf.

¹⁰ For an overview of Bitcoin see David S. Evans, *Economic Aspects of Bitcoins and Other Decentralized Public-Ledger Currency Platforms*, THE UNIVERSITY OF CHICAGO COASE-SANDOR INSTITUTE FOR LAW & ECONOMICS Paper No. 685, available at SSRN: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2424516

¹¹ Memorandum Opinion, *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C., 2002) (No. 98–1233) p. 11.

¹² False negatives have costs too. Anticompetitive strategies by software platforms could prevent a rival platform or a rival complementary product from attracting users and thereby exclude these rivals from the market. The reduced competition, and perhaps the elimination of an alternative choice or even a new product, would impose losses on consumers. As a general matter false negatives do not result in the loss of positive externalities or have the multiplier effect mentioned above. Indeed, the rivals could fragment the market and thereby reduce positive network effects. The relative costs of false positives and negatives therefore also support a presumption that software platform governance systems, and their applications to the participants of the platform, are pro-competitive.

¹³ David S. Evans, *Economics of Vertical Restraints for Multi-Sided Platforms*, 9(1) COMPETITION POLY INT'L, (Spring 2013), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2195778.

¹⁴ For a review of the case see David S. Evans, Albert Nichols, & Richard Schmalensee, *United States v. Microsoft: Did Consumers Win?* 1(3) J. COMPETITION L. & ECON. 497–539 (2005). Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=757426.

¹⁵ Memorandum Opinion, *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C., 2002) (No. 98–1233) p. 11.

¹⁶ This three-step process for platform governance systems was proposed in Evans, *supra* note 3 at 1247ff.

*Price Restrictions in
Multi-sided
Platforms: Practices
and Responses*

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In connecting buyers to sellers, some two-sided platforms require that sellers offer their lowest prices through the platform, disallowing lower prices for direct sales or sales through competing platforms. In this article, we explore the various contexts where such restrictions have arisen, then consider effects on competition, entry, and efficiency. Where there are plausible mitigating factors, such as efficiencies from platforms' price restrictions, we explore those rationales and compare them to the harms. We identify a set of responses for competition policy, look at experiences to date, and suggest some future attempts to improve the functioning of these markets.

I. INTRODUCTION

In classic models of multi-sided platforms,² users rely on platforms to find transaction counterparts. In some contexts this is a natural modeling approach, as it captures transactions that could not have occurred without the platform. But if buyers and sellers can deal directly (perhaps thanks to the internet and other modern information technology), they may prefer to circumvent a platform, avoid its fees, and split the savings.

Against this backdrop, intermediaries have found ways to ensure that users prefer to buy through their platforms. In the most laudable cases, an intermediary offers genuine benefits for purchases through a platform. For example, if a buyer and seller do business within the eBay marketplace, they enjoy guarantees, dispute resolution assistance, and the ability to rate each other (which reinforces incentives for good behavior). Take a transaction off eBay and all of these disappear, which makes eBay's fee more palatable. Similar benefits keep guests and hosts on the Airbnb booking service. For passengers needing pickups from transportation services Uber and Lyft, circumventing the platform becomes infeasible due to time-sensitive requirements and unpredictable transaction counterparts.

Few would oppose intermediaries that offer genuine benefits to keep buyers and sellers on a platform. But other intermediaries invoke controversial strategies to obtain additional transactions. Consider the American Express "no steering" rules currently challenged by the Department of Justice.³ Since Amex fees are understood to be roughly 0.5 percent more than competitors,⁴ merchants have every incentive to push buyers towards other payment cards or even cash. But American Express contracts prohibit merchants from encouraging consumers to pay with less expensive cards, providing incentives for consumers to use less expensive cards, or even informing customers of the costs of accepting various cards.⁵

Though merchants may dislike them, Amex fees are critical to Amex's strategy for attracting consumers: With larger payments from merchants, Amex can offer consumers larger benefits such as additional rebates. Notably, consumers are largely shielded from the direct cost of the payment mechanism they choose. Of

available payment methods, Amex carries the highest fees to most merchants, but it also provides the highest benefits to consumers. Savvy consumers choose accordingly.

A similar structure permeates platforms, marketplaces, and other intermediaries that let sellers set prices. From travel booking to online marketplaces and myriad others, consumers often have a choice of distribution channel. Usually, prices are equal no matter the mechanism chosen, but some offer greater benefits than others. Sophisticated consumers systematically choose the channel with the most benefits—even if, as is often the case, the channel provides those benefits by charging higher fees to sellers.

Markets with this structure raise challenging questions for competition policy. Rather than driving prices down, competition among platforms often drives benefits up, then asks sellers to pay the resulting costs. While improvements in information technology often make it cheaper to provide a platform's service, sellers see little of the savings. More efficient competitors typically struggle to gain market share as the benefits of their offerings are concealed from consumers who see no savings.

SOPHISTICATED CONSUMERS SYSTEMATICALLY CHOOSE THE CHANNEL WITH THE MOST BENEFITS—EVEN IF, AS IS OFTEN THE CASE, THE CHANNEL PROVIDES THOSE BENEFITS BY CHARGING HIGHER FEES TO SELLERS.

In our working paper *Price Coherence and Excessive Intermediation*,⁶ we examine the mechanisms at issue in these markets and identify a theory of harm. Our analysis indicates that platforms will indeed want to restrict sellers from charging more for intermediated transactions. That restriction causes inflated retail prices, excessive adoption of platform services, over-investment in benefits to buyers, and a reduction in consumer surplus and sometimes welfare. This paper draws out the competition policy lessons from such price restrictions in multi-sided platforms.

We proceed as follows. After an introduction to affected markets, we explore the types of restrictions at issue, then consider effects on competition, entry, and efficiency. Where there are plausible mitigating factors, such as efficiencies from platforms' price restrictions, we explore those rationales and compare them to the harms. We identify a set of responses for competition policy, look at experiences to date, and suggest some future attempts to improve the functioning of these markets.

II. AFFECTED MARKETS

A. *The Key Effects as Seen in Credit Cards*

Payment card networks are well-known and in some ways epitomize the impact of platforms' price restrictions. In most transactions, consumers face the same price when paying through a payment card with high seller fees (such as a credit card with significant rewards), a card with low seller fees (such as a PIN-based debit card), or cash. Sophisticated consumers sensibly choose the first in light of its benefits. Consumers may recognize that

cash and PIN-based debit cards are often cheaper for merchants. But the savings flow entirely to merchants, so consumers have no reason to direct their spending to these channels.

The resulting incentives cause overuse of premium payment cards. Consider a card that provides a consumer with one frequent flier point per dollar spent. Based on prevailing flight costs and redemption options, a consumer might reasonably value this benefit at \$0.01 per point, or \$1 for 100 points earned on a \$100 purchase. If the consumer faced a 2 percent higher price to pay with such a card—presenting the consumer with the approximate cost the merchant incurs to accept that card—the consumer would obviously decline, as it would be unattractive to pay \$2 in fees to obtain \$1 in benefit. But with prices predictably equal whether a consumer chooses cash or credit, the consumer instead compares the \$1 in benefit with \$0 of cost to the consumer.

This market structure can reduce consumer welfare and total surplus. Consumers incur costs to sign up for and use cards they would not otherwise want. Card networks incur costs to offer benefits beyond the efficient level. Sellers end up raising their retail prices to cover fees to card networks.

1. Blocking Lower-Cost Alternatives

One might imagine a competing payment system that charges lower fees to merchants to get more merchants on board. Beginning in 2007, several “decoupled debit” issuers proposed to collect funds from customers by automated clearinghouse (“ACH”) withdrawals, charging merchants much lower fees than credit cards, often as little as 0.5 percent to process transactions. But consumers had little incentive to shift to decoupled debit. With just 0.5 percent from merchants, these cards could not match the rebates and benefits provided by typical credit cards.

Despite the failure of decoupled debit, others persist in this general approach. A consortium of retailers, including Best Buy and Walmart, in 2012 announced the Merchant Customer Exchange (MCX) a lower-cost payment mechanism intended to supplant credit cards. Recognizing that consumers would compare MCX benefits with other payment methods, MCX touted all manner of benefits including merchant-specific promotions and integration with merchants’ existing loyalty programs. Nonetheless, lower payments from merchants to MCX imply lower rebates from MCX to consumers (compared to credit card cashback and points). It remains unclear whether occasional merchant-specific promotions can match comprehensive credit card benefits. Greater coordination among merchants could help MCX, but the consortium model raises predictable competition concerns that necessarily limit such coordination. Notably, despite its announcement and publicity in 2012, MCX has failed to begin public operations. We suspect that this reflects not only technical difficulties but also uncertainty about the merits of the underlying offer.

ONE MIGHT IMAGINE A COMPETING PAYMENT SYSTEM THAT CHARGES LOWER FEES TO MERCHANTS TO GET MORE MERCHANTS ON BOARD.

A similar challenge faces Bitcoin, a cryptographic payment service that (among other uses) could let consumers send funds to merchants with low transaction costs. For merchants considering accepting Bitcoin, lower transaction processing costs are a key selling point. But if the posted price is the same whether a consumer pays by credit card or by Bitcoin, why would a consumer ever choose Bitcoin? With equal prices, paying by credit card is always cheaper for consumers thanks to points and rebates.

B. Parallel Experiences in Airline Distribution

Less familiar to most readers, global distribution systems (“GDSs”) connect airlines to travel agents and online travel agents. GDSs effectively require that participating airlines offer “full content”—all their fares, including their lowest fares. An airline might prefer to sell its cheapest tickets only on its own site to avoid GDS charges. But GDSs charge particularly high fees to airlines that participate only in part.

Thanks to GDSs, a consumer can visit any travel agent and be reasonably confident that the price will match the airline’s own website or call center. (This equality excludes special fees for telephone service.)

Despite sharp drops in IT and communication costs, GDS fees have increased over time. In 1995, an airline paid a GDS approximately \$3 per flight segment, on average.⁷ By 2002, this had increased to \$4.25.⁸ If an airline withheld its cheapest fares from a GDS, it paid \$4.38 per segment as of 2002,⁹ but \$7.31 as of 2010.¹⁰

When airlines pay GDSs, most of the fees flow through to travel agents. These payments allow online travel agents to offer service at no additional charge to consumers and defray some costs for retail travel agents. But the resulting costs weigh heavily on airlines. Indeed, GDS expenses exceeded airline profits for approximately two-thirds of the last ten years for the three largest U.S. airlines. (Authors’ calculations based on financial statements and estimated GDS costs.)

The resulting market structure deters disintermediation of GDSs. New entrants have devised “Direct Connect” alternatives that link airlines more closely to travel agents, allowing them to circumvent GDS intermediaries. But travel agents hesitate to make the change because moving to Direct Connect means foregoing a GDS payment. In principle airlines could pay travel agents to move to Direct Connect, but such payments negate the savings they intend to achieve from Direct Connect. The obvious strategy is to make the airline’s cheapest fares available only through Direct Connect, so that a travel agent has to switch in order to provide customers with the lowest possible prices. But GDS rules require full content and hence prohibit this approach.

THE RESULTING MARKET STRUCTURE
DETERS DISINTERMEDIATION OF GDSS.

C. Online Marketplaces and the Risk of Showrooming

Some online marketplaces, most notably Amazon Marketplace, prohibit sellers from offering lower prices on their own sites or any other online channel. In particular, Amazon’s General Pricing Rule requires that “the item

price and total price of an item [a seller] list[s] on Amazon.com [must be] at or below the item price and total price at which [the seller] offer[s] the item via any other online sales channel.” Some competition authorities have taken a dim view of this practice: In 2013, German and U.K. regulators questioned Amazon’s rule, and Amazon responded by removing this policy from its marketplace contracts in the European Union. However, the rule remains in effect elsewhere.

When marketplaces defend this restriction, they flag the risk of opportunistic “showrooming” by buyers. One might imagine a buyer finding a product and a suitable seller on an online marketplace. But if the buyer anticipates a lower price on the seller’s own website, the buyer may go there to finish the purchase and thereby deny the marketplace a fee for a transaction it facilitated. By prohibiting the seller from setting a direct price below the price it charges on the marketplace, the marketplace discourages such behavior.

But the cure could be worse than the disease. Suppose that, in addition to its search benefit of assisting buyers finding sellers, an online marketplace also offers other significant benefits commensurate with its fee—perhaps customer service, guarantees, or overall convenience. Such

WHEN MARKETPLACES DEFEND THIS RESTRICTION, THEY FLAG THE RISK OF OPPORTUNISTIC “SHOWROOMING” BY BUYERS.

benefits reduce or eliminate the incentive for showrooming. (Consider the numerous benefits buyers and sellers receive when transacting at eBay or Airbnb.) Conversely, if a platform’s fees sharply exceed the non-search value it provides, showrooming by savvy customers imposes discipline to keep the platform’s prices low.

Notably, the costs of most online marketplaces are relatively modest. Compared to the huge costs of rent and staff at a bricks-and-mortar showroom, online marketplaces have it easy. Meanwhile, even where the risk of showrooming exists, some sellers find ways to protect themselves and their distributors. For example, most commercial insurers require consumers to submit name, address, and other details to obtain a price quote. If the insurer’s records indicate that a customer has already obtained a quote from one broker, the insurer’s systems will not provide a second quote to that customer for the same type of coverage.

Online marketplaces can similarly discourage showrooming. For example, both Amazon Marketplace and eBay provide no area on a seller profile page where a seller can link to an external store that bypasses the marketplace. Airbnb goes so far as to screen pre-booking communications between host and guest to remove email addresses and phone numbers, preventing the parties from doing business directly and avoiding Airbnb fees.

MEANWHILE A MARKETPLACE’S PROHIBITION ON LOWER PRICES ELSEWHERE SERVES TO SUPPRESS COMPETITION ON THE CRUCIAL DIMENSION OF PRICE.

Meanwhile a marketplace’s prohibition on lower prices elsewhere serves to suppress competition on the crucial dimension of price. A new entrant would be unlikely to match the selection at Amazon Marketplace, and Amazon’s renowned customer service would also defy easy copying.

But an entrant could easily undercut Amazon’s 15 percent fee. But for Amazon’s restriction, buyers would see the lower fee and post lower prices, attracting buyers to

this new marketplace and facilitating competition. By prohibiting sellers from offering lower prices elsewhere, through another marketplace or on their own sites, Amazon's price restriction on sellers prevents this form of competition.

D. Hotel Booking Services Restricting Discounts

Leading hotel booking services similarly ban hotels from offering lower prices on their own websites or through competing booking services. European regulators¹¹ and U.S. private litigation¹² have alleged that these provisions prevent price competition, including preventing booking services from using a portion of their booking fee to fund discounts to consumers. For example, Germany's Bundeskartellamt alleged that the restrictions "virtually eliminat[ed] competition for lower room prices between ... hotel booking portals."

In ongoing U.S. litigation and in public discussions prior to the U.K. settlement, hotel booking services have vigorously defended the restriction at issue. They noted customer dissatisfaction resulting from comparison shopping, including time required to search and the perception of not getting "the best deal." They claimed that their approach would eliminate these problems and assure that every consumer always got the best price.

Hotel booking services may also face problems of showrooming; consumers search for hotels on a booking service, then book directly (if that is cheaper). With prices constrained to be equal across booking services, consumers have no incentive to engage in this behavior. On the other hand, that constraint also suppresses price competition among booking services.

III. THEORIES OF HARM AND EFFICIENCIES

These markets reveal three ways that platforms' price restrictions on sellers can impede or distort competition. First, such provisions can limit or suppress direct sellers, e.g. by limiting or preventing disintermediation. Second, such provisions can limit or suppress competition between platforms on the basis of costs and efficiency. Finally, such provisions deter entry by more efficient platforms that do not or cannot impose price restrictions on sellers.

We model these harms in our working paper Price Coherence and Excessive Intermediation.¹³ We show there that by restricting sellers from passing on the platform's fees, a platform can profitably raise demand for its service. The restriction operates by raising the relative price of direct purchases and purchases from platforms that do not impose the restriction. The restriction causes more buyers to use platforms that impose price restrictions. Moreover, with price restrictions in place, we show that these platforms over-invest in benefits to buyers funded through higher fees to sellers. The result is that low-cost platforms are driven out by high-cost platforms. Unlike resale price maintenance ("RPM"), these vertical restraints restrict

WE SHOW THERE THAT BY RESTRICTING SELLERS FROM PASSING ON THE PLATFORM'S FEES, A PLATFORM CAN PROFITABLY RAISE DEMAND FOR ITS SERVICE.

relative prices rather than absolute prices. Unlike Most Favored Nation Clauses (“MFNs”), these vertical restraints restrict prices to be the same across different channels rather than across different buyers.

Notably, these vertical restraints can harm competition even if a platform does not have a large market share. Having attracted some buyers, a platform has market power with respect to sellers wanting to access those buyers, even if the platform’s share of buyers is small. Indeed, we show that the harm arising from a platform’s price restrictions on sellers is magnified when there is intense platform competition.¹⁴

Our theory of harm also considers the multi-sided structure of these markets. A simplistic approach would argue that these restrictions create harm because the restrictions allow platforms to impose higher fees on sellers. In contrast, our theory of harm takes into account that some buyers want to use the platform anyway and benefit from the price restriction on sellers. Considering the effects on both sides, we find an unambiguous harm: greater benefits to buyers that purchase through platforms are offset by sellers setting higher prices, leaving inefficiencies from excessive usage of platforms and over-investment in buyer-side benefits. More generally, the restrictions prevent competition from favoring low-cost platforms or direct purchases that create greater total surplus.

GREATER BENEFITS TO BUYERS THAT PURCHASE THROUGH PLATFORMS ARE OFFSET BY SELLERS SETTING HIGHER PRICES, LEAVING INEFFICIENCIES FROM EXCESSIVE USAGE OF PLATFORMS AND OVER-INVESTMENT IN BUYER-SIDE BENEFITS

Despite the potential concerns raised by platforms’ price restrictions, there are possible efficiencies. Above, we noted a possible offsetting efficiency in that restrictions can discourage showrooming. Another possible efficiency, which we discuss below, is preventing excessive surcharging of platform services. In both contexts, it may be possible to achieve these benefits through less restrictive means, short of a complete ban on

sellers setting differential prices.

IV. POLICY RESPONSES

Seeing the problems of price restrictions on sellers, some competition regulators have tried to intervene. Early responses focused on payment card networks, though policy-makers subsequently broadened their efforts. In this section, we present three broad policy responses and their effectiveness to date.

A. *Granting Sellers More Flexibility in Pricing*

Regulatory interventions often begin by observing that platforms limit sellers’ pricing choices. A natural response is to loosen those restraints.

1. **Allowing And Encouraging Surcharges For Transactions Through Platforms**

If a buyer chooses to buy through a platform, a seller may wish to pass the resulting cost through to the buyer in order to encourage the buyer to consider cheaper alternatives. Platforms' rules often ban such surcharges, but regulatory interventions can disallow any such bans. For example, the Netherlands and Sweden have long disallowed both no-surcharge rules and no-discrimination rules.

Though credit card surcharges are permitted in most jurisdictions (notable exceptions being ten U.S. states including California and New York), surcharges remain unusual in most places. In response, a few regulators have taken further steps to encourage sellers to revisit the prospect of surcharges. Most notably, Australia has allowed the use of surcharges for purchases paid by credit card. In 2003, Australia required card networks to inform merchants of their right to impose surcharges on credit card purchases. Many Australian merchants subsequently added surcharges.

While Australia's intervention may have discouraged excessive card usage, it created a new problem: Australian merchants charged credit card surcharges that were, on average, double what card acquirers charged merchants. Rather than passing costs through to consumers, the surcharges became a profit center—particularly troubling when consumers fail to anticipate the fees. In 2013, the Reserve Bank of Australia allowed card networks to limit merchant surcharges to the reasonable cost of card acceptance.¹⁵ Disputes continued as to what costs could be considered in that calculation, and some consumers continued to complain that card surcharges were excessive.

Meanwhile, sellers in other sectors have also applied surcharges to discourage use of high-fee platforms. For example, in 2004 to 2006, Northwest Airlines and American Airlines imposed surcharges on tickets booked through high-fee GDSs, encouraging travel agents to switch to alternatives.¹⁶ The recent Australian case *Flight Centre*¹⁷ challenged a travel agent's efforts to block similar tactics: Flight Centre attempted to require airlines to offer the same prices through Flight Centre that they offered via their respective direct bookings, an approach that was found to block the distribution of cheaper airfares through other channels.

A FEW REGULATORS HAVE TAKEN FURTHER STEPS TO ENCOURAGE SELLERS TO REVISIT THE PROSPECT OF SURCHARGES

2. Allowing Sellers to Offer Discounts for Purchases That Bypass High-Fee Platforms

In some markets, discounting may help shift consumers away from platforms with high seller fees. At first glance, it may appear to be equivalent for sellers to discount when buyers come through favored platforms or purchase directly, versus for sellers to surcharge when buyers choose high-fee platforms. In fact the approaches differ.

Bourguignon et al.¹⁸ shows the difference in the context of payments when consumers are imperfectly informed about the price differentials associated with using different payment instruments. In particular, a cash

discount is a windfall to consumers who are already in the shop and planning to pay with cash. In contrast, a surcharge enables a retailer to exploit a consumer who has made an investment to come to the store. Thus, sellers are more likely to use surcharges than discounts. Moreover, when there are several different platforms, adding a surcharge for the highest-cost channel has a different effect than discounting the lowest-cost channel

For these reasons, allowing only for discounts but not surcharges is likely to be a less effective policy approach to shift buyers away from alternatives with high seller fees. This may explain why card platforms have generally allowed cash discounts but such discounts have rarely been used.

ALLOWING ONLY FOR DISCOUNTS BUT NOT SURCHARGES IS LIKELY TO BE A LESS EFFECTIVE POLICY APPROACH TO SHIFT BUYERS AWAY FROM ALTERNATIVES WITH HIGH SELLER FEES.

Several cases have considered whether a platform may prevent a seller from steering buyers to other lower-fee platforms. Recent U.S. Department of Justice (“DOJ”) settlements with Visa and MasterCard banned any contract provisions disallowing incentives for consumers to use favored payment mechanisms.¹⁹ Similar DOJ litigation against American Express is ongoing.²⁰

Discounts were also the core of a recent U.K. intervention as to hotel booking services. In 2014 commitments to the U.K. Office of Fair Trading (which, in mid-2014, was folded into the new Competition and Markets Authority, “CMA”), leading hotel booking services and hotel chains agreed to allow discounts for a customer who joins a membership program run by a hotel or booking service. The OFT explained:

The commitments mean that all [booking services] and hotels ... will be able to offer discounts off headline room-only rates so long as customers: 1) sign up to the membership scheme of an OTA or hotel to be able to view specific discounts, and 2) make one undiscounted booking with the OTA or hotel in question to be eligible for future discounts.²¹

On one view, the OFT intervention could help reduce the net cost of hotel booking: Through discounts to members of their respective membership programs, booking services may compete away some of their booking commissions, thereby reducing net prices to consumers. Of the consumers who stay in hotels, most do so frequently, so the single full-price booking may not cause much consumer harm.

That said, the OFT’s approach raises other complications. First, it remains unclear how membership discounts will fit with comparison shopping. Sophisticated travelers ordinarily impose discipline on booking services, in part by using tools like Kayak to compare prices across hotel booking services. But if discount prices are only available through membership programs, comparison shopping tools may be unable to tabulate the prices that consumers care most about.

Furthermore, the OFT’s approach appears to encourage consumers to use booking services, particularly when visiting a small hotel. A given consumer is unlikely to have previously stayed at a given small hotel and

joined that hotel's membership program (especially for an independent facility not part of a chain). As a result, most consumers would not qualify for the membership discount permitted under the OFT's settlement. In contrast, many consumers have already joined a booking service and made at least one reservation through such a service. Thus, when staying at a small hotel, a consumer is likely to be able to obtain a discount only through a booking service but not directly from the hotel. If more consumers choose to use booking services, this may increase small hotels' dependence on booking services, which would ultimately yield higher booking fees and higher prices.

Experience in other markets yields a mixed prognosis for using discounts to pull consumers towards platforms with low seller fees. Consider buyers' agents showing residential real estate. In the United States, buyers' agents are typically paid 2.5 percent to 3 percent by sellers' agents, a market structure that encourages every buyer to use an agent since there is no savings from a direct purchase. But *United States v. National Association of Realtors*²² required sellers' agents to "cooperate with"—and pay commission to—"limited service buyers' agents" who provide significant refunds to buyers. As of 2014, sophisticated buyers can typically negotiate at least a one percent rebate from a buyer's agent—a discount for consumers who forego some personal service in favor of online listings or other alternatives.

EXPERIENCE IN OTHER MARKETS YIELDS A MIXED PROGNOSIS FOR USING DISCOUNTS TO PULL CONSUMERS TOWARDS PLATFORMS WITH LOW SELLER FEES

The market for private motor insurance in the United Kingdom offers a means to facilitate discounts while addressing concerns about the side effects of such an intervention. In an investigation in 2014, the CMA noted contractual agreements between price comparison websites and insurance issuers that disallowed issuers from offering lower prices through competing comparison sites. Thus, if a new comparison site was prepared to reduce its advertising fee in order to offer lower prices to consumers, these agreements would prohibit the insurer from joining that new site—unless it was willing to lose marketing through existing sites. The CMA banned such provisions, rejecting contracts that require insurers to offer the same prices on all price comparison sites. That said, the CMA allowed continued restrictions prohibiting insurers from undercutting comparison sites through direct purchases, finding that direct purchases could undermine comparison sites (due to showrooming), and thereby reducing price competition.

A. Regulating Platforms' Fees

With buyers choosing platforms and sellers paying the cost, regulators often worry that fees exceed the efficient level. A natural response is to regulate fees directly, i.e. by setting a maximum fee that a platform may charge a seller.

Payment card interchange fees (the main determinant of the fees that merchants pay) have been regulated in Australia (debit and credit cards) and the United States (debit cards), among other jurisdictions. (European regulations are pending, for both debit and credit.) Regulations have required substantial reductions in interchange fees. For credit cards in Australia and Europe and for debit cards in the United

States, regulations cut interchange fees by approximately half. The lower fees anticipate eliminating rebates to consumers, ending consumers' incentives to use payment cards merely to obtain such benefits.

How should fees be regulated? One approach sets interchange fees based on the costs that issuing banks incur in handling card transactions. This approach has been adopted in Australia and the United States. However, it is not clear why issuers' costs should be recovered from merchants rather than from cardholders directly.

In contrast, the European Commission has chosen a different approach, seeking to make merchants indifferent between cards and cash so that buyers choose efficiently. Based on Rochet & Tirole,²³ this

ALTHOUGH THE APPLICATION OF THE MERCHANT INDIFFERENCE TEST REMAINS CONTROVERSIAL, IT POTENTIALLY PROVIDES A COHERENT WAY FORWARD FOR REGULATING SELLERS' FEES IN OTHER CONTEXTS.²⁴

“Merchant Indifference Test” considers the fact that when consumers pay by card, merchants save the costs of handling cash. A positive fee to merchants can be efficient in such a setting if it allows the fee to cardholders to be reduced (or benefits increased) to reflect the merchant's benefit, so that cardholders internalize merchant benefits when deciding

whether to pay by card. Although the application of the Merchant Indifference Test remains controversial, it potentially provides a coherent way forward for regulating sellers' fees in other contexts.²⁴

When some sellers and firms are vertically integrated, a parity provision can induce firms to avoid excessive fees. Consider airline GDS reservation systems in the United States in the 1990's. Non-vertically integrated airlines claimed that GDS fees were excessive. But the U.S. Department of Transportation (“DOT”) hesitated to set exact permissible fees or even ranges of fees, as such an intervention would run counter to its deregulatory mandate. Instead, 1993 rules required that any airline that owned a reservation system was required to make its flights available through competitors' reservation systems.²⁵

Crucially, participation was required only in systems with “commercially reasonable” fees. The DOT declared fees to be presumed commercially reasonable if they did not exceed the amount a given airline pays to another reservation system, or if they did not exceed the amount a given airline's reservation system charges to other airlines. This rule discouraged reservation systems from raising their fees; an airline owning a reservation system anticipated that if it raised fees to other airlines, it would then have to pay increased fees to other reservation systems. (Note that these rules ceased to apply when airlines divested their reservation systems.)

B. Requiring That Buyers, Not Sellers, Pay Platform Fees

Alternatively, regulation may simply require that platforms not charge sellers anything—a price of zero. Unlike in a one-sided setting, a price cap of zero does not necessarily prevent the platform from recovering its costs, as the platform's costs could be covered by buyers. This could be efficient if sellers obtain no convenience or technological benefits from having a platform handle transactions. (The Merchant Indifference Test would call

for no fee to sellers in this case.)

On the other hand, if sellers obtain benefits when a platform handles transactions, a positive seller fee may be efficient if it reduces the fee to buyers and thereby encourages buyers to internalize sellers' benefits when deciding whether to use the platform. Thus, a price of zero may be too low. Additionally, requiring that buyers pay the platform for its transactions may be inefficient if this increases transaction costs, for example where the buyer does not transact directly with the platform. (Consider the prospect of Google charging users when they run searches or click ads, which would require that users pay Google and then separately pay the seller when they purchase.)

A price of zero can also offer salutary incentive effects. Consider a financial advisor evaluating investment options for a client. The advisor's recommendations typically combine both a client's best interests (in a suitable investment product) and the advisor's own interests (encouraging the client to choose an investment with a high referral fee or commission). To block the latter incentive so that advisors focus on client interests only, U.K. regulators have required that financial advisors' fees be separately itemized to customers, not paid by investment funds.²⁶ Some investment advisors sought workarounds, though regulators specifically admonished them not to do so. Meanwhile, surveys of investors and advisors indicate gaps in willingness to pay for advising service. Evaluating outcomes in the United Kingdom, Clare suggests that the restriction on payments to advisors may create a shortfall in available advisors.²⁷

A PRICE OF ZERO CAN ALSO OFFER SALUTARY INCENTIVE EFFECTS.

Australia passed similar legislation in 2012.²⁸ These changes took effect in 2013, but 2014 amendments tentatively removed various requirements including relaxing the ban on conflicted remuneration.²⁹ As of November 2014, requirements in Australia remain in flux.

C. Changing Market Structure to Facilitate Disintermediation

In some markets, it is impossible to make purchases directly from a seller; these sellers direct all purchases through intermediaries. (This could be because sellers are unable to undercut their own distributors, and direct sales at equal prices would not attract many buyers.) A buyer who places little value on the intermediary's service is nonetheless forced to pay associated costs.

Regulation may address this concern by requiring sellers to offer a direct service and to require these be priced without the intermediaries' commissions. For example, in regulations to take effect in 2015, the Monetary Authority of Singapore will require that "basic" life insurance be offered through direct online sales, bypassing broker and advisors, with no allowance for the commissions ordinarily paid to those intermediaries.³⁰ Consumers seeking such insurance are encouraged to buy it online, and news articles tout the resulting savings.³¹

To date, such efforts have been limited. For example, the Singapore intervention covers only certain classes of “basic” life insurance. A consumer seeking other insurance or other financial services has no easy means to avoid paying a commission to a broker or advisor, even if the consumer seeks no assistance from the broker. Nor have other regulators widely pushed sellers to offer direct sales; some sellers have moved in this direction, often citing excessive costs in intermediation, but the decision is usually initiated by the firm rather than a regulator.

V. LOOKING AHEAD

In addition to their broader effects on competition and prices, the restrictions at issue have distinctive distributional effects. Sophisticated users are typically the beneficiaries, including through their advantage in learning how to collect rebates and otherwise claim benefits from platforms. For example, credit card users enjoy the points and rebates that card issuers provide.

But Schuh et al.³² notes the harm to non-users, estimating that each non-card-using household pays \$149 to card-using households. These funds distinctly flow from low-income households to high-income households, making the structure regressive. Similar benefits flow to sophisticated users in hotel booking services (“Expedia+ Rewards”), home-buying (savvy shoppers better positioned to negotiate a rebate from a buyer’s agent), and myriad other affected markets. Because sophisticated customers are more likely to have high incomes, these benefits tend to be regressive.

IN ADDITION TO THEIR BROADER EFFECTS ON COMPETITION AND PRICES, THE RESTRICTIONS AT ISSUE HAVE DISTINCTIVE DISTRIBUTIONAL EFFECTS.

A regulator seeking to intervene in such markets faces several challenges. First, affected markets at issue are distinctively complex. At best, they feature three parties, but sometimes more. (Sometimes multiple intermediaries sequentially facilitate a single transaction.) Meanwhile, in a static analysis holding prices fixed, platforms appear to provide benefits to buyers without offsetting price increases. Yet, in practice, prices are not fixed; to the contrary, industry-wide cost shocks are substantially passed through to consumers, and benefits must be funded.

Effective interventions require considering these dynamic effects and working creatively to find adjustments that offset such problems. In the context of payment cards, these efforts are well underway. But in other markets with similar restrictions causing similar problems, such scrutiny is limited or missing altogether.

Drawing on experience from payments, as well as the analysis in Edelman & Wright³³ and the competition concerns explored here, we think platforms’ price restrictions on sellers deserve a careful and critical look. ▲

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- ²¹ OFT, *supra* note 11.

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*Economic
Considerations
Raised by the
Federal Trade
Commission's
Investigation of
Google's Search*

*BY ROBERT J. LEVINSON & MICHAEL
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Economic Considerations Raised by the Federal Trade Commission’s Investigation of Google’s Search Practices

BY ROBERT J. LEVINSON & MICHAEL A. SALINGER¹

In January 2013, the Federal Trade Commission closed its nineteen-month antitrust investigation into Google’s search practices. The primary issue in that investigation was Google’s use of Universal Search results. The argument that Google’s display of Universals violated the antitrust laws appeared to rest on a theory of vertical foreclosure. Under the vertical foreclosure theory, Google’s thematic results compete with third-party thematic search sites, and the “proper” role for Google’s general search engine was to act as an honest broker among the alternatives. The FTC’s investigation and its resolution raised interesting antitrust issues, some of which were novel, and some of which were fundamental to sound antitrust enforcement. Among these are several that we consider in this article: (1) What is the nature of the economic relationship between Google and third parties that receive (and perhaps rely on) traffic referred to them by Google’s general search engine?; (2) Is “general search” a relevant antitrust market, and is general search a distinct product or service, inherently separate from thematic search?; and (3) Should innovations by Google that expand the scope of what its general search engine can do—and place it in competition with other websites—be viewed as “monopoly leveraging” or, alternatively, as “innovation competition”?

I. INTRODUCTION

In January 2013, the U.S. Federal Trade Commission (“FTC”) closed its nineteen-month antitrust investigation into Google’s search practices.² The primary issue in that investigation was Google’s use of Universal Search Results (“Universals”).³ A Universal is a type of result that appears on Google’s general Search Engine Results Pages (“SERPs”) that (1) groups a set of results from Google’s own thematic search results—that is, specialized search results pertaining to specific themes, such as shopping or information on local businesses—and (2) provides a link to the more complete set of Google thematic results. Publishers of websites that specialized in shopping and local searches evidently complained that Google placed its Universals at higher positions on its SERPs relative to the links to their own sites.⁴ The FTC investigated whether this allegedly “biased” conduct constituted an unfair method of competition proscribed by Section 5 of the FTC Act.⁵

The argument that Google’s display of Universals violated the antitrust laws appeared to rest on a theory of vertical foreclosure. One possible starting point in the process of purchasing an item or locating

THE ARGUMENT THAT GOOGLE’S DISPLAY OF UNIVERSALS VIOLATED THE ANTITRUST LAWS APPEARED TO REST ON A THEORY OF VERTICAL FORECLOSURE.

a local business online is to enter a query into Google. Google’s response might include links to third-party thematic search engines (such as NexTag.com for shopping queries, or Yelp.com for queries made to locate local businesses). The user could then click on a link to such a website, re-enter his query on that site, and receive results tailored

to the sort of information he is seeking. In such cases, the user would receive information through a two-step process, with Google providing the first step and another firm supplying the second. Google's Universals, in contrast, could respond to general searches on Google with links to Google's own thematic search results.

Under the vertical foreclosure theory, Google's thematic results compete with third-party thematic search sites, and the "proper" role for Google's general search engine was to act as an honest broker among the alternatives. By this reasoning, the FTC should have ascertained whether Google had anticompetitively favored its own thematic results by means of its placement of Universals on its SERPs; and, if such "bias" existed, the FTC should have viewed this as vertical foreclosure of the rival thematic websites.⁶

Another perspective is that Google's development of Universals was an innovation that improved the quality of the information available from Google and the speed at which users obtained that information. This is consistent with the view that general and thematic search engines are not vertically situated in an inherently two-step search process, but instead compete to be the starting point of searches,⁷ and that Google's development of Universals was a competitive innovation intended to overcome a disadvantage that general search engines faced in competition with thematic search engines.

In closing its investigation, the FTC accepted that (i) the behavior at issue was innovation in product design, (ii) the third-party thematic websites complaining about Google were competitors rather than suppliers or customers, (iii) harm to competitors from successful product design innovation is a natural consequence of competition, and (iv) antitrust intervention based on such harm could have protected competitors at the expense of competition.⁸

THE FTC'S INVESTIGATION AND ITS RESOLUTION RAISED INTERESTING ANTITRUST ISSUES, SOME OF WHICH ARE NOVEL, AND SOME OF WHICH ARE FUNDAMENTAL TO SOUND ANTITRUST ENFORCEMENT.

The FTC's investigation and its resolution raised interesting antitrust issues, some of which are novel, and some of which are fundamental to sound antitrust enforcement. Among these are several that we consider in this article:

1. What is the nature of the economic relationship between Google and third parties that receive (and perhaps rely on) traffic referred to them by Google's general search engine?
2. Is "general search" a relevant antitrust market, and is general search a distinct product or service, inherently separate from thematic search?
3. Should innovations by Google that expand the scope of what its general search engine can do—and place it in competition with other websites—be viewed as "monopoly leveraging" or, alternatively, as "innovation competition"?

II. GENERAL, THEMATIC, AND UNIVERSAL SEARCH

Internet users sometimes know where to find the information they want. For example, some who want to book a ticket on the 7 AM U.S. Airways shuttle from Washington to New York on a particular date will know that they can do so at www.usairways.com. Others will not.

The information available on the World Wide Web is disorganized and widely dispersed. Users often need help in finding the information they want. America Online (“AOL”) offered one early solution—a relatively closed environment that provided the classes of information that AOL expected its subscribers to want. AOL users could navigate outside the AOL environment, but AOL did not help them find the vast amount of content outside of AOL’s “walled garden,”⁹ that is, on the broader Web.

Another early effort, from Yahoo!, cataloged online content using a hierarchical structure, with broad categories (such as News, Shopping, and Sports), subcategories within each category, and further divisions of subcategories within subcategories. Users “clicked through” these hierarchical levels to find the information they were looking for rather than by entering search query terms. While Yahoo! search maintains this hierarchical index structure to some extent even today, its original approach became impractical as the Web expanded and cataloging all available websites became too time-consuming and expensive.

A. *General Search Engines*

Today’s “general” search engines were made possible by (i) the development of software “Web crawlers” that could index the Web,¹⁰ (ii) proprietary algorithms for matching results to queries, and (iii) schemes for displaying results. Google achieved its initial success because its PageRank algorithm was better at matching websites to queries than were the approaches used by the other general search engines of the time (Lycos, Alta Vista, and Excite). Google’s early results were based on a computer algorithm (which rapidly became multiple algorithms) that assigned scores to webpages for each query issued to Google.

The rankings of the resulting “natural” search results—that is, the positions on the Google SERP at which links to these webpages were displayed in response to a specific user query—were based on these scores. Those scores were proxies for a webpage’s quality and relevance for any particular query. Improvements to the algorithms that “decide” what information would be the best response to a query were, and remain, a key dimension of innovation competition among Web search providers.

B. *Thematic Search*

THEMATIC SEARCH (ALSO KNOWN AS “VERTICAL” SEARCH) IS AN ALTERNATIVE WAY TO FIND RELEVANT INFORMATION ON THE WEB.

searches for local businesses.

Thematic search (also known as “vertical” search) is an alternative way to find relevant information on the Web. Thematic search sites that predated Google include Travelocity and Expedia in travel search, and City Search in

Thematic search sites have advantages, relative to general search sites, as starting points for queries. One major advantage is that, by using a thematic search site, the searcher can reveal the type of information he seeks. For example, a user who accesses a shopping site and searches for “digital camera” has revealed his intent to obtain information on the characteristics, pricing, and availability of digital cameras, and to possibly purchase one. In so doing he has also suggested that he is not looking for other results that might be returned by a general search engine (such as historical information on the evolution of digital cameras), and avoids receiving such unwanted information.

Thematic search engines also have drawbacks. One is that users must know which thematic search engine to use. Hotels.com is a useful way to locate hotel rooms only when one knows of its existence and how to navigate to it. Users can learn of the nature and location of particular thematic search sites in a variety of ways. One of these is the free publicity afforded by Google’s natural search results.¹¹ This is why “Search Engine Optimization” (“SEO”) has become an important aspect of website design.¹² Third-party websites, including thematic search engines, use SEO to achieve frequent and prominent placement in the SERPs of general search engines such as Google. We understand that such thematic search sites complained to the FTC about how Google changed its algorithms and employed Universals.

C. *Universal Search*

Google understood the natural advantage thematic search sites had relative to general search sites in inferring user intent. Google responded by introducing thematic search sites of its own, such as News,¹³ Shopping (originally called “Froogle”), Images, and Video. It introduced Images and Video search because its general search algorithms were ill-equipped to handle such information. Originally, Google’s thematic search results were available as tabs near the top of the Google homepage and SERPs.¹⁴ To access Google’s video results, for example, a user would click on the Video tab on the Google home page before entering his query, or on the corresponding tab at the top of the general SERP that was returned following his query.

Google’s Universals, in contrast, were links to Google’s thematic results that appeared on its general SERPs. Each Universal replaced a “blue link” on the page when Google’s algorithms assessed a significant probability that the user was seeking the class of information that one of its thematic search engines was designed to capture.

GOOGLE’S UNIVERSALS, IN CONTRAST, WERE LINKS TO GOOGLE’S THEMATIC RESULTS THAT APPEARED ON ITS GENERAL SERPS.

Google’s Universals represented a change both in the algorithms Google used to rank results and in how it displayed results. A Universal consisted not only of a link to a full set of thematic results, but also to some of the top listings from its thematic results. For example, the Images Universal would contain a small number of images. The user could click directly through to one of the images from the general SERP without clicking on the link to the full set of Google’s thematic Images results.

Google’s strategy for delivering better search results therefore proceeded in steps. It first made thematic results available from tabs on the Google home page (before the user entered his query) or on its general SERP (after entering the query). With Universals, Google placed some of its thematic results into the body of its general SERPs, along with other general search results. This represented a probabilistic approach to assessing user intent. If it could ascertain user intent perfectly, then Google would have returned only the results of its shopping search results in response to a “shopping” query made using its general search engine, only the results of news search results in response to “news” queries, and so on. But since two people (or the same person at different times) entering the identical query might be engaged in different classes of search, a general search engine cannot ascertain intent with certainty.

One piece of evidence that Universals are a competitive approach to solving a fundamental shortcoming of general search engines is that Microsoft Bing and Yahoo! have also adopted them. Perhaps the similarity is mere imitation, but the more compelling explanation is that Universals are an appropriate way to remedy limitations associated with earlier general search engines.

D. Universals and the FTC’s Investigation

Google’s Shopping and Local Universals provided access to two categories of thematic results that also were addressed by third-party thematic search engines. Google’s general SERPs did (and still do) sometimes return links to these third-party sites. Nevertheless, publishers of such sites evidently complained that the algorithm generating Google’s general SERPs was biased against them, triggering Google’s Universals too frequently and placing them too high on its SERPs relative to links to their own sites.

The fundamental facts giving rise to the investigation were therefore as follows: Google began as a general search engine in which users would enter queries and Google would return “blue links”¹⁵ to websites its algorithms identified as best responding to the query. At about the same time, other companies developed thematic search engines.¹⁶ Google’s search results often listed these third-party sites in its search results. Google developed its own thematic search algorithms, which were initially available to users as separate results pages. It then placed some of the results of its thematic search results (together with a link to its more complete set of thematic results) into its general SERPs by means of Universals. It fell to the FTC to determine how to view these facts from an antitrust perspective.

III. UNIVERSALS AS COMPETITIVE INNOVATION

Google handled approximately six billion queries per day during 2013 at no charge.¹⁷ Google’s websites earned \$37.5 billion in advertising revenues during that year.¹⁸ Google has two groups of customers—users and advertisers—and the demand of at least one group depends on that of the other. Advertisers’ demand for ads in Google’s SERPs depends on users’ demand for Google search.

Google's business model is "two-sided." Its success in one side of its business (search advertising) hinges on its success in the other (natural search). In so doing it engages in an active supply relation with both "sides" of its business, supplying users with organic search results in order to stimulate views of (and demand for) the search ads that it sells to advertisers. It does not follow, however, that all businesses that do internet search have a two-sided business model. Two sided businesses can, and frequently do, compete with firms that employ one-sided business markets.¹⁹ For example, commercial broadcast television channels that rely on advertising but provide content to consumers for free, and therefore operate under a two-sided business model, compete with suppliers of video content that is sold directly to viewers on DVDs, subscription internet video streaming services, and non-advertiser-supported cable TV channels such as HBO.²⁰

IT DOES NOT FOLLOW, HOWEVER, THAT ALL BUSINESSES THAT DO INTERNET SEARCH HAVE A TWO-SIDED BUSINESS MODEL.

To sell advertising, Google must attract searchers by convincing them that Google is the more efficient way to find the information they want. This relative efficiency depends, at any point in time, not only on what Google offers but, also, on the available alternatives. Google initially attracted many users by providing them with links to websites that might contain the information they were seeking. As efficient as people may have found this "card catalog" approach to be in 1999, however, it does not follow that this approach would have been preferred by users once new and competing services evolved. When Google started, social media did not exist as an alternative way to find information from "friends;" internet search was exclusively a desktop activity with no competition from "thematic" mobile "apps" such as Yelp's; and Amazon had not become a general shopping platform and, therefore, a thematic shopping search engine. One would expect Google to respond competitively to these and other developments, innovating to become the starting point for types of queries that it had previously handled relatively poorly in competition with others that handled such queries.

In assessing whether Google's use of Universals was competitive behavior, a key question to consider is, "With whom does Google compete when it tries to attract people who are searching for information?" No one denies Google's success as a general search engine. But, from the perspective of antitrust enforcement, does it follow that Google is dominant in a relevant antitrust market for general search?

IN ASSESSING WHETHER GOOGLE'S USE OF UNIVERSALS WAS COMPETITIVE BEHAVIOR, A KEY QUESTION TO CONSIDER IS, "WITH WHOM DOES GOOGLE COMPETE WHEN IT TRIES TO ATTRACT PEOPLE WHO ARE SEARCHING FOR INFORMATION?"

One hypothesis is that Google's primary competitor is Microsoft's Bing, the second most widely used general search engine in the United States. The functional similarities of the Bing and Google search engines might cause some to suspect that Google and Bing are the "closest substitutes" in a market for "general search" (which would include Yahoo! as well).

This narrow focus on general search misses two essential points. First, even though Google and Bing are general search engines, there is no such thing as an episode of general search. Each search has a specific intent. Alternatives to general search engines exist as ways of finding different types of information, and general search

engines compete with the relevant alternatives for each type of search. Someone looking to book a flight might consider Google, Bing, Travelocity, Orbitz, Expedia, Kayak, or others as the starting point. Those seeking sports scores would view ESPN.com to be an alternative to Google. The fact that Travelocity would be an odd starting point to look for sports scores does not prevent it from being a competitive alternative to Google for travel searches, and the fact that ESPN.com does not provide travel services does not stop it from competing with Google for the attention of those seeking sports scores.

Second, generality is a feature that Google and Bing share in their competition for different classes of search. Specific product features do not, however, generally delineate relevant antitrust markets. In some

TO THE EXTENT THAT GOOGLE'S INNOVATIVE EFFORTS FOCUS ON OVERCOMING THIS DISADVANTAGE OF GENERALITY, THEN A FOCUS ON THE COMPETITION WITH OTHER GENERAL SEARCH ENGINES MISSES A SIGNIFICANT DIMENSION OF MARKET COMPETITION.

cases, a feature can delineate a market if it confers such an advantage that a significant group of customers will only consider products with that feature (or would require a significant price differential to consider products without that feature). Generality is, all else equal, a desirable feature for a search engine, as it saves searchers from having to remember or bookmark different sites for different classes of searches.

But this feature has a major disadvantage as well. As already explained, the user intent motivating queries issued to general search engines is inherently more ambiguous than that driving queries issued to thematic search engines. This increases the relative likelihood that the user of a general search engine will receive undesired results. To the extent that Google's innovative efforts focus on overcoming this disadvantage of generality, then a focus on the competition with other general search engines misses a significant dimension of market competition. Google could develop a better approach than Bing and Yahoo! to satisfy the needs of someone who, in search of a digital camera to buy, issues a query for "digital camera," and still have trouble attracting searchers if its approach was not good enough to prevent searchers from going directly to the thematic sites.

On one level, Google competes for users on a query-by-query basis. But individual queries do not delineate internet search markets because no company designs search engines to handle any specific query. They design them to handle classes of queries. This point applies equally to Google and thematic search sites. A substantial portion of Google's innovative efforts is focused on improving its performance for specific classes of queries, in competition not only with other general search engines but, also, with "thematic" search sites. Just as a department store competes with more specialized stores that offer some of the same classes of goods, general search engines compete with specialized search engines that offer one or more of the same classes of searches. Google's development of Universals was part of its fundamental strategy for competing in key categories of search, which are the relevant markets for evaluating the antitrust claims against it. Universals allowed Google's general search engine to address the key informational disadvantage it (and any other general search engine) faces when competing for specific classes of searches.²¹

IV. THE VERTICAL PERSPECTIVE

Google SERPs frequently return links to third-party thematic search sites in response to user queries. A query for "digital camera" on Google's general search engine likely will return, among other things, links to shopping

search sites. In that case, someone interested in buying a digital camera might click on such a link and ultimately accomplish his original intent after retyping the query into the shopping site and choosing one of the offerings that resulted. The third-party thematic search sites that received traffic from Google benefit from this, as would users satisfied with this result. To the extent that Google users were satisfied, Google benefited also (as satisfied users are likely to return).

This process might appear to resemble a vertical economic relationship among firms. It entails two steps provided by different firms. The relationship between Google (as a general search engine) and thematic search sites therefore might seem similar to the relationship between a cement producer and a concrete producer or between a cable television network and a cable system operator. Extending the analogy, Google's development of its own thematic search sites and subsequent decision to place links to those sites on its general SERP resembles vertical integration, and its alleged "bias" toward its own thematic search would then appear to be vertical foreclosure.

A. Google's Relationship to Third-Party Websites

These analogies break down for a simple reason. Concrete producers purchase cement. Cable operators license cable networks. Google does not buy the right to list vertical websites in its natural search results and these third-party thematic websites do not pay for placement.²² The publishers of websites that appear (or might appear) in Google's natural search results are neither customers nor suppliers. In this specific capacity,²³ they do not have a vertical relationship with Google.

These websites compete with Google, but the economic relationship with Google extends beyond a conventional competitive relationship. Google's natural search creates positive externalities for sites that appear in its results. The sites themselves create externalities for Google, some of which are positive and some of which are negative.²⁴ Being the beneficiary of positive externalities from Google does not make a website a customer, and providing positive externalities to Google does not make a website a supplier. While websites feel "harmed" when Google reduces or eliminates the positive externalities it generates for them, the "harm" does not constitute antitrust injury. No firm has an antitrust obligation to provide positive externalities to other firms; and providing such externalities does not create an antitrust obligation to continue to do so.²⁵

THESE WEBSITES COMPETE WITH GOOGLE, BUT THE ECONOMIC RELATIONSHIP WITH GOOGLE EXTENDS BEYOND A CONVENTIONAL COMPETITIVE RELATIONSHIP.

B. Absence of a Unique Two-Step Process

At issue in the FTC's investigation were episodes of search in which one enters a query into Google and then either clicks on a Google Universal result or a link to a vertical search site. Implicit in the allegation that Google's search results were "biased" in favor of its Universals, and that this constituted anticompetitive "leveraging," is that the opportunity to enter a query and to click on a Universal are two separate products.

That is, the allegations implicitly define each user interaction with Google—either by hitting “Enter” or clicking a mouse—as the consumption of a distinct product.

As George Stigler observed, “Economists ... have generally treated as a (technological?) datum the problem of what the firm does—what governs its range of activities or functions.”²⁶ Economic models of leveraging—whether through vertical integration or tying—assume two stages of production, each producing a separate product. The identification of distinct stages of production and products might, as a technological and business matter, be obvious with respect to cement and concrete or video content production and distribution, but the economics literature has not laid out principles that would allow one to accept or refute such distinctions in other, more difficult cases.

While economists have not paid enough attention to this problem, the courts have tangled with this issue. The area of antitrust law that has dealt with this issue explicitly is tying law. As articulated by Justice O’Connor in her concurring opinion in *Jefferson Parish v. Hyde*:

[T]here must be a coherent economic basis for treating the tying and tied products as distinct. All but the simplest products can be broken down into two or more components that are ‘tied together’ in the final sale. Unless it is to be illegal to sell cars with engines or cameras with lenses, this analysis must be guided by some limiting principle.²⁷

THIS “COHERENT ECONOMIC BASIS” FOR A SEPARATE PRODUCTS TEST CANNOT BE LIMITED TO A DETERMINATION OF WHETHER IT IS ECONOMICALLY EFFICIENT TO ONLY OFFER THE COMPONENTS SEPARATELY.

This “coherent economic basis” for a separate products test cannot be limited to a determination of whether it is economically efficient to only offer the components separately. Such a standard might make sense if antitrust analysis and enforcement were both perfect and costless, but they are not. In the real world, a desirable separate products test would limit the set of actionable cases to those involving conduct

that likely would lead to consumer harm in the absence of enforcement, and in which enforcement would be unlikely to harm consumers by dampening competition or reducing innovation.

To the extent that such a standard exists in tying law,²⁸ it is problematic. But Google’s use of Universals is not tying,²⁹ and the facts of the Google investigation differed from a standard tying case in two important ways that make formulating a single product test even more difficult than it is in tying.

In tying cases, selling the tying and tied goods separately is feasible. A hospital can separate its sales of surgical services and anesthesiology. The feasibility of doing so is not sufficient to make products separate, but it is necessary. Such evidence might provoke (but would not prove) allegations of anticompetitive conduct. In the Google investigation, on the other hand, no one seriously suggested that Google should not have developed thematic search and included links to its thematic search results in its general search results. Technology companies like Google routinely compete by adding new functionalities to their products. Hardware companies do so by adding new modules and circuits. Software companies do so by adding new code (and, therefore, new features). These new modules, circuits, and programs are all “components.” In many cases an

outside observer might believe that these components could be sold efficiently on an a la carte basis. But this does not mean that consumer welfare would be higher if the firms' competitive product integration decisions were regulated or discouraged. As a result, the need for a limiting principle is even greater here than in standard tying cases.

A second feature that distinguishes the issues in the Google investigation from standard tying cases is that tying doctrine does not prevent a company from offering the tying and tied goods together as long as it offers the tying good separately. Thus, complying with tying doctrine increases the range of options available to consumers. But Google can have only one set of default general search results.³⁰ Had the FTC chosen to bring an enforcement action, consumers would have faced the prospect of losing some or all access to Universals on Google's SERPs, irrespective of whether they benefitted from having Universals presented to them on Google search pages. Such an outcome would have been much more heavy-handed than a conventional tying remedy, and again highlights the need for a "limiting principle."

HAD THE FTC CHOSEN TO BRING AN ENFORCEMENT ACTION, CONSUMERS WOULD HAVE FACED THE PROSPECT OF LOSING SOME OR ALL ACCESS TO UNIVERSALS ON GOOGLE'S SERPS

While it remains unclear exactly how to formulate a separate products test that provides a sufficiently limiting principle, the general standards for evaluating single-firm conduct provide an alternative doctrinal approach to accomplishing the same objective. The competing standards—(i) balancing, (ii) disproportionate harm, and (iii) "no-economic-sense"—differ according to how they weigh the relative risks and costs of false positives and negatives (meaning false inferences that a violation has occurred or not, respectively). A balancing test treats false positive and false negatives as being equally likely and costly ex ante. A disproportionate harm test is similar to a no-economic-sense test in that it treats the cost and risk of false positives as being greater than the cost and risk of false negatives. A no-economic-sense test treats the costs and risks of false positives as being much greater than the costs and risks of false negatives.³¹ With a no-economic-sense test, however, any pro-competitive explanation for a firm's behavior can serve as a valid defense regardless of the size of the claimed efficiency. A disproportionate harm test requires that the efficiencies from the claimed competitive justification not be much smaller than the possible anticompetitive harm.

The same conceptual standard need not apply to all forms of unilateral conduct. As noted above, the Supreme Court's standard for predatory pricing is a no-economic-sense test. It has justified that standard in part to avoid discouraging precisely the sort of price competition that the antitrust laws are designed to encourage and in part out of the view that predatory pricing is a rare and rarely successful tactic.

Google's use of Universal search is a product design decision. The argument for using a no economic

THE ARGUMENT FOR USING A NO ECONOMIC SENSE TEST WITH PRODUCT DESIGN IS AT LEAST AS COMPELLING AS IS THE ARGUMENT WITH RESPECT TO PREDATORY PRICING.

sense test with product design is at least as compelling as is the argument with respect to predatory pricing. Product innovation is the most important dimension of competition for a company like Google. The courts and antitrust authorities should be at least as reluctant to chill product

innovation by search engines as it is to chill price competition by a manufacturing business like an oil refiner or a steel company. Moreover, pricing decisions have objective cost standards to serve as benchmarks for courts to judge behavior, for companies to know what behavior is legal, and to serve as the basis for injunctive relief. No such standards are available for product design.

Even with a no-economic-sense standard, one still needs to understand what evidence would lead one to conclude that Google's use of Universals made no economic sense (absent any anticompetitive potential). Should the FTC and ultimately the courts (with the aid of expert analysis) have made their own assessments of whether Google's use of Universals made no economic sense, or should they have deferred to Google's own analysis? Even with the aid of outside experts, one needs to question the competence of the FTC and the courts to assess what makes economic sense with respect to Google's product design. As a result, we believe that sound antitrust enforcement and doctrine should require a finding that Google designed its product in a way that it knew made no economic sense absent the consideration of damaging its competitors.

C. Evaluating Expansions in the Scope of Google's Activities

Whether Google's thematic results are separate products might be viewed as a technical antitrust detail. But there is a broader issue at stake. When the FTC characterized Google's Universals as distinct Google "properties," it implied that Google had integrated into content. We would not characterize Google Universals as "content" that is distinct from search results.

But Google has developed its own content and licensed other content for placement on its SERPs. In doing so, it has expanded beyond its original "card catalog" role. Because Google general search is not a relevant market, Google cannot have a dominant position from an antitrust perspective. And because Google does not have a vertical relationship with the publishers of websites that want to appear in its natural search results, its behavior cannot result in vertical foreclosure. But it is interesting to consider the appropriate antitrust perspective on such behavior even if it were dominant in a relevant antitrust market.

BECAUSE GOOGLE GENERAL SEARCH IS NOT A RELEVANT MARKET, GOOGLE CANNOT HAVE A DOMINANT POSITION FROM AN ANTITRUST PERSPECTIVE.

market, Google cannot have a dominant position from an antitrust perspective. And because Google does not have a vertical relationship with the publishers of websites that want to appear in its natural search results, its behavior cannot

As useful as it is to have a "card catalog" for the Web, it is plausible and perhaps obvious that getting the information one wants directly from a general search engine is better than having to navigate to another website. Had limits been placed on Google's placement of Universals relative to other website links, it could have faced later demands to justify its placement of its own content relative to links to websites that might contain comparable content. As competition among websites for the attention of users militates toward the direct provision of information (which it has), such limitations on Google would have prevented it from competing effectively. This would have protected competitors at the expense of competition.

V. CONCLUDING COMMENTS

In this article, we have evaluated the allegations that Google’s use of Universals violated the antitrust laws. Google might have been expected to advance the “innovation in product design” perspective in its own defense. The “vertical foreclosure” perspective might have been expected from those that complained to the FTC about Google’s use of Universals. A careful consideration of both perspectives leads us to conclude Google’s use of Universals was not anticompetitive and so did not violate the antitrust laws.

Moreover, the FTC did not have a case because it lacked key elements of proof. It would have had to allege that general search is a relevant antitrust market, but it is not. It would have had to allege that Google had engaged in vertical foreclosure even though Google had no vertical economic relationship with the allegedly foreclosed parties. More fundamentally, however, Google’s use of Universals was not an antitrust violation because, in so doing, it was behaving competitively. The FTC was therefore wise, in our view, to close its investigation. ▲

MOREOVER, THE FTC DID NOT HAVE A CASE BECAUSE IT LACKED KEY ELEMENTS OF PROOF.

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² Google and other general search engines deliver “paid” (i.e., advertising) and “natural” (or “organic”) search results. “Natural search results are those listings that appear at the discretion of the search engines and that do not incur a charge to the listed site.” WEB 1 MARKETING, INC., INTERNET MARKETING GLOSSARY, *available at* <http://www.web1marketing.com/glossary.php?term=natural+search+results> (last accessed June 12, 2014).

³ The scope of this article is limited to the FTC’s investigation of Google’s use of “Universals.” We do not consider other issues raised in the FTC investigation or the European Commission’s more recent investigation of Google’s practices.

⁴ Statement of the Commission Regarding Google’s Search Practices, In the Matter of Google Inc. (January 3, 2013) (hereafter “FTC Statement”), at 1-2. *Available at* <http://www.ftc.gov/public-statements/2013/01/statement-commission-regarding-googles-search-practices> (last accessed June 12, 2014).

⁵ FTC Statement, *id.* at 2. The FTC closed its investigation after deposing many Google executives, interviewing numerous other industry participants, and reviewing over nine million pages of documents. *Id.* at 1.

⁶ Even if one accepts that the relationship between Google and publishers of thematic search engines was vertical in nature—a proposition with which we disagree—Google’s development of Universals would have constituted vertical integration, not a vertical restraint.

⁷ The SERP returned by Google in response to the query “Chicago hotels” might include a link to Hotels.com. One can get to Hotels.com without starting at Google, however, and Hotels.com engages in promotional efforts (such as television advertising) to convince people to do so.

⁸ FTC Statement, *supra* note 4 at 2-3.

⁹ See, e.g., Chris Gaither, *AOL Plans to Move Offerings Outside its ‘Walled Garden’ and Onto the Web*, SEATTLE TIMES (April 4, 2005); available at http://seattletimes.com/html/business/technology/2002229768_aolimage04.html (last accessed June 12, 2014).

¹⁰ The major general search engines index only the “surface Web,” i.e., those websites that have not refused access to Web crawlers. See, e.g., Wikipedia, *Surface Web*, available at http://en.wikipedia.org/wiki/Surface_Web (last accessed June 12, 2014).

¹¹ Users also can learn how to access thematic websites as the result of, e.g., advertising by site operators, site reviews on the Web and elsewhere, access to apps that are specific to the thematic sites, and word of mouth.

¹² For a description of SEO, see, e.g., Wikipedia, *Search Engine Optimization*, available at http://en.wikipedia.org/wiki/Search_engine_optimization (last accessed June 12, 2014).

¹³ Google introduced Google News shortly after September 11, 2001, when Google’s general SERPs failed to deliver useful results to users who entered the query “World Trade Center.” See Danny Sullivan, *Google & the Death of Osama bin Laden*, SEARCH ENGINE LAND (May 2, 2011), available at <http://searchengineland.com/google-the-death-of-osama-bin-laden-75346> (last accessed June 12, 2013).

¹⁴ Screenshots illustrating Google Universals are presented in Michael A. Salinger & Robert J. Levinson, *The Role for Economic Analysis in the FTC’s Google Investigation* (June 2013), available at http://www.law.northwestern.edu/research-faculty/searlecenter/events/internet/documents/Salinger_Economics_of_Google_and_Antitrust_Case_Searle_conference_version.pdf (last accessed June 12, 2014).

¹⁵ The first page of Google’s SERP had ten “blue links.” When Google’s algorithms identified more than ten possibilities, its results contained additional pages.

¹⁶ We include in this grouping not only “vertical” websites that provided links to different websites, but, also, websites that allowed searches that relied on internally-defined content, such as Amazon.com.

¹⁷ Statistic Brain, *Google Annual Search Statistics*, available at <http://www.statisticbrain.com/google-searches/> (last accessed June 12, 2014).

¹⁸ Google, Form 10-K submitted to the United States Securities and Exchange Commission, December 31, 2013, at 27. Available at http://investor.google.com/pdf/20131231_google_10K.pdf (last accessed June 12, 2014).

¹⁹ As David Evans and Richard Schmalensee have observed, “[t]wo-sided platforms often compete with ordinary (single-sided) firms and sometimes compete on one side with two-sided platforms that serve a different second side.” David S. Evans & Richard Schmalensee, *The Industrial Organization of Markets with Two-Sided Platforms*, 3(1) COMPETITION POLY INT’L. 150-179 (Spring 2007).

²⁰ Movie theaters do now show paid advertisements. If advertising remains a small fraction of their revenue, then viewing them as operating primarily on a one-sided business model remains a reasonable approximation.

²¹ The FTC has considered many times whether department stores constitute a relevant product market and have concluded that they do not. See, e.g., Federal Trade Commission, Statement of the Commission

Concerning Federated Department Stores, Inc./The May Department Stores Company, FTC File No. 051-0111 (August 30, 2005), *available at* http://www.ftc.gov/sites/default/files/documents/closing_letters/proposed-acquisition-federated-department-stores-inc.may-department-stores-company/050830stmt0510001.pdf (last accessed June 12, 2014).

²² Google does sometimes display content that it has licensed or developed itself. Google Maps is an example of vertical integration into content. Google also has vertical relationships with the providers of content it licenses. (For example, the results of a Google search for “Washington weather” will include licensed content about local weather conditions).

²³ Publishers of websites that might appear in Google’s natural search results can (and often do) bid to be sponsored links in Google’s results. When they do, they are customers.

²⁴ Whether this externality is positive or negative depends on the extent to which Google users benefit or suffer from the appearance of a link to the site in Google’s results. Sites that users ignore (and therefore unnecessarily clutter the SERP) or that turn out not to be useful to those who do click through to them can create negative externalities for Google.

²⁵ One might argue (as David Evans has to us) that websites are indeed a third side of the Google’s business platform because Google puts out information to help websites design themselves to appear more prominently in its organic results. Also, websites can deny crawling access to Google. As a practical matter, Google does not have to compete to get permission to crawl websites. With respect to the information that Google provides websites to facilitate their search engine optimization efforts, the relationship is analogous to the relationship between newspapers and people/organizations that want press coverage. A newspaper benefits from having interesting stories to cover and it might interact with potential subjects to help them understand what is newsworthy and what is not. That interaction does not confer on the subjects of news stories the same (or any) customer status as advertisers and readers have.

Put another way, virtually every business is a “nexus of contracts,” meaning that virtually every business is a platform for organizing the interaction of different parties, see Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3(4) J. FIN. ECON. 305-360 (October, 1976). But not every firm is a multi-sided business. Indeed, most are not. So not every group interacting with a firm is a group of customers. In part, “parties that pay are customers and parties that are paid are suppliers.” Another consideration is the centrality of competition to attract the group to the company’s strategy. The succinct description of Google’s business is that it sells advertising and needs to attract searchers in order to do so. Any sensible economic model of Google would take explicit account of the relationship between the number of searches on Google and the advertising Google sells.

²⁶ George J. Stigler, *The Division of Labor is Limited by the Extent of the Market*, 59(3) J. POL. ECON. 185-193 (June 1951).

²⁷ *Jefferson Parish v. Hyde*, 466 U.S. 2 (1984).

²⁸ The Supreme Court made the single product test a formal part of tying law in *Jefferson Parish*, and it presumably did so to limit the scope of the per se rule against tying without overturning it. As the appeals court observed in *Microsoft*, however, the single product test is only a “rough proxy for whether a tying arrangement may, on balance, be welfare-enhancing.” *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001). Given how common tying is, however, it is a basic principle of decision theory that a rough screen is insufficient. *See*

Keith N. Hylton & Michael Salinger, *Tying Law and Policy: A Decision-Theoretic Approach*, 69 ANTITRUST L.J. 469-526 (2001).

²⁹ Google search is free. Presumably, there cannot be a tie-in sale without a sale.

³⁰ Google does provide users a set of options, but the defaults clearly matter in a quite fundamental way.

³¹ A “no-economic-sense” test would accept the alleged theory of harm (and so the challenged conduct would “fail” the test) when, but for its potential for anticompetitive effects, the challenged conduct would not constitute rational behavior on the part of the alleged perpetrator. An important distinction with respect to a no-economic-sense test is whether, in order to fail the test, a firm’s behavior must *qualitatively* make no economic sense but for its potential to create anticompetitive effects, or whether it is necessary for the *quantified magnitude* of the behavior to violate some established benchmark for “making no economic sense.” Predatory pricing doctrine illustrates the distinction. One might (qualitatively) argue, in some circumstances, that charging less than the short-run profit-maximizing price makes no economic sense save for its entry-detering or exit-inducing effects. In *Brooke Group*, the Supreme Court explicitly rejected such claims, finding that alleged “above-cost predation” at prices below profit-maximizing levels do not violate Section 2 of the Sherman Act. See, *Brooke Group v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993). The requirement instead is that a successful predatory pricing claim be based on a (quantitative) showing of pricing below the relevant notion of cost.



Cases on Multi-Sided Platforms

*Antitrust Issues in
Two-Sided Network
Markets: Lessons
from In Re Payment
Card Interchange
Fee and
Merchant Discount
Antitrust Litigation*

BY ALAN O. SYKES

Antitrust Issues in Two-Sided Network Markets: Lessons from In Re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation

BY ALAN O. SYKES¹

In 2013, I served as a court-appointed expert in consolidated class and individual plaintiff antitrust litigation against Visa and Mastercard in the Eastern District of New York. The litigation involved a challenge to default interchange fees established by Visa and Mastercard, and to certain network rules imposed on affiliated merchants. Although it was not my task to adjudicate the dispute, an evaluation of the reasonableness of the eventual settlement from an economic perspective inevitably entails a comparison between what the plaintiffs received in the proposed settlement and the expected returns to the plaintiffs of litigating the case to conclusion. The returns to litigation in turn depend on the prospects of establishing liability, the likely magnitude of damages and the nature of any injunctive relief conditional on liability, and of course the costs of litigation. In this commentary, I focus on the liability, damages, and injunctive relief issues because of their economic novelty and broader implications for other antitrust cases.

I. INTRODUCTION

In 2013, I served as a court-appointed expert in consolidated class and individual plaintiff antitrust litigation against Visa and Mastercard in the Eastern District of New York. The litigation involved a challenge to default interchange fees established by Visa and Mastercard, and to certain network rules imposed on affiliated merchants. My task was to evaluate economic issues pertaining to the reasonableness of a proposed settlement in the litigation,² a settlement that has been described as the largest monetary settlement in antitrust history,³—with an initial monetary component (subject to opt outs) exceeding U.S. \$7 billion—along with changes in network rules that, most prominently, would allow merchants to surcharge credit card transactions. The settlement was approved by Judge John Gleeson and is now on appeal.⁴ My report to the court of August 28, 2013 is a matter of public record,⁵ and I draw on that report in what follows.

AN EVALUATION OF THE
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FROM AN ECONOMIC PERSPECTIVE
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SETTLEMENT AND THE EXPECTED
RETURNS TO THE PLAINTIFFS OF
LITIGATING THE CASE TO CONCLUSION

Although it was not my task to adjudicate the dispute, an evaluation of the reasonableness of the settlement from an economic perspective inevitably entails a comparison between what the plaintiffs received in the proposed settlement and the expected returns to the plaintiffs of litigating the case to conclusion.⁶ The returns to litigation in turn depend on the prospects of establishing liability, the likely magnitude of damages and the nature of any injunctive relief conditional on liability, and of course the costs of litigation. In this

commentary, I will focus on the liability, damages, and injunctive relief issues because of their economic

novelty and broader implications for other antitrust cases. Readers interested in comments on other aspects of the proposed settlement may wish to consult my report to the Court.

The issues are complex and to a considerable degree novel, owing to several important characteristics of the Visa and Mastercard networks. First, the fact that each is a “network” immediately suggests the importance of network externalities in their operation. Second, each network for a time was administered as a joint venture among banks before initial public offerings (“IPOs”) established stand-alone companies. The policies at issue in the litigation were largely put in place while the two networks operated as joint ventures. Third, both networks operate as four-party payment mechanisms, in which thousands of banks that service merchants (“acquiring banks”) collect payments on behalf of the merchants from thousands of banks that issue cards to consumers (“issuing banks”) (thus the four-party merchant-acquirer-issuer-consumer payment chain). Finally, both networks involve two-sided markets, earning revenues from both merchants and card-carrying consumers indirectly through payments received from issuing and acquiring banks.

Against this backdrop, the plaintiffs challenged two sets of practices. The first—“default interchange”—consists of a default fee set by each network to be paid by acquiring banks to issuing banks for the service of collecting payment from consumers and bearing certain risks such as risks of fraud. Individual acquiring and issuing banks are free to negotiate a different fee between themselves, and sometimes do, but the default fee often prevails. The default interchange fee is not uniform, but varies with the type of card being used (as well as in other ways, such as the place of use and whether it is used in person). Premium cards (such as “signature cards”) that provide generous cash back or hotel or airline rewards, for example, have higher interchange fees.

Second, the plaintiffs challenged various “network rules” that merchants must accept to participate in the two networks. The “honor all cards” rule requires merchants to accept all cards carrying the Visa or Mastercard logo regardless of the attached interchange fee. Certain “anti-steering rules”—such as the “no surcharge” rule—further prohibit merchants from imposing surcharges on credit card transactions generally, or on high fee cards in particular, and from using certain other tactics to steer customers toward cheaper payment mechanisms. Elimination of the no surcharge rule is an important part of the proposed settlement. Certain “non-discrimination rules,” which likewise prevent merchants from discriminating in their treatment of payment options, were also challenged.

Because of the special characteristics of the credit card industry noted earlier, the application of familiar antitrust doctrines to these practices is complex and, in my view, raises substantial obstacles to the plaintiffs on both liability and damages. I will focus on those that are somewhat special for the credit card industry due to the industry characteristics noted above. Thus, I will not dwell on important issues in the litigation such as the propriety of class certification in the case, or the effects of a negotiated release in a prior related case (the “Visa check” litigation).

BECAUSE OF THE SPECIAL CHARACTERISTICS OF THE CREDIT CARD INDUSTRY NOTED EARLIER, THE APPLICATION OF FAMILIAR ANTITRUST DOCTRINES TO THESE PRACTICES IS COMPLEX AND, IN MY VIEW, RAISES SUBSTANTIAL OBSTACLES TO THE PLAINTIFFS ON BOTH LIABILITY AND DAMAGES.

The focus instead is on:

- the legal characterization of the challenged practices as “horizontal” or “vertical” and its significance,
- the question whether the defendants possess market power,
- the question whether the practices at issue are on balance anticompetitive under the rule of reason,
- the question whether plaintiffs can prove their damages with reference to an acceptable benchmark or counterfactual,
- the question whether a court would likely be willing to enjoin the network rules left in place by the proposed settlement, and
- the question whether plaintiff merchants are barred from recovering damages by the indirect purchaser principle of *Illinois Brick* and its progeny.⁷

II. *PER SE* ILLEGALITY OR RULE OF REASON?

The antitrust implications of default interchange and network rules can depend importantly on their legal characterization. Under well-settled principles of antitrust, certain “horizontal” practices (such as price-fixing) are deemed illegal *per se*, other horizontal practices as well as “vertical” practices are subject to a “rule of reason,” and certain unilateral practices of individual firms are beyond antitrust scrutiny unless the entity in question is a “monopoly” or engaged in an “attempt to monopolize” that would subject it to Section 2 of the Sherman Act. As an initial legal step in analyzing the antitrust implications of the challenged practices by Visa and Mastercard, it is appropriate to ascertain their proper characterization in this framework.

Both sides in the litigation devote considerable attention to the matter in their filings. With regard to default interchange, the plaintiffs argue that it represents price-setting, and was originally the product of decisions by the joint ventures controlling Visa and Mastercard, which were controlled by member banks. Accordingly, they contend, it should be seen as horizontal price-fixing and deemed illegal *per se*. Defendants have two key responses. First, they argue that the Visa and Mastercard IPOs, and their attendant conversions from joint ventures to stand-alone entities, eliminated any element of horizontal conduct. Second, they argue that default interchange economizes on the potentially high transaction costs of individual negotiations between thousands of acquiring and issuing banks, and eliminates a hold-up problem that acquirers would face in dealing with an issuer with which no prior interchange fee had been set. In their view, it considerably reduces the transaction costs of the four-party payment system and makes acquiring banks more willing to participate.

My own view is that the defendants have the stronger position, and there is serious doubt that the

THERE IS SERIOUS DOUBT THAT THE PLAINTIFFS COULD SUCCEED IN SECURING *PER SE* CONDEMNATION OF DEFAULT INTERCHANGE.

plaintiffs could succeed in securing *per se* condemnation of default interchange. In particular, even if default interchange can be characterized as “horizontal” because it predates the IPOs or because bank officials play some subsequent role

in running Visa and Mastercard as stand-alone entities, and even though it is price-related, default interchange

can receive rule of reason scrutiny if it is connected in an important way to the success of a joint venture or similar cooperative arrangement that delivers a valuable good or service that its members cannot easily produce on their own. Default interchange makes it possible for virtually any bank to enter the network and compete to serve merchants or consumers without having to incur the transaction costs of interchange fee negotiations with the other participating banks. The fact that banks are free to negotiate alternative bilateral interchange fees if they wish is also pertinent.

The decision by the Supreme Court to afford rule of reason treatment to the blanket licensing practices of ASCAP and BMI in the music industry affords a rough analogy.⁸ Blanket licensing of musical compositions economizes on the transaction costs of individual negotiations between composers and licensees just as default interchange economizes on negotiations between acquiring and issuing banks. An additional factor in the Supreme Court's reasoning in *BMI* was the ability of composers to negotiate individual licenses if they wish, much as acquiring and issuing banks are free here to reject default interchange and negotiate their own interchange fee.

With regard to the network rules in question, these are not the sorts of practices (such as price-fixing or market allocation) that are ordinarily candidates for *per se* condemnation. These rules can further be argued to have assisted importantly in building and maintaining the networks, by assuring consumers that their Visa and Mastercard logo cards will be accepted, and without penalty, by all merchants participating in the networks. Credit card networks become more valuable to participants (both merchants and consumers) as more participants join them—a conventional network externality. The assurance that each consumer's card will be accepted by all merchants participating in the network, without penalty or discrimination, makes participation in the network more attractive to consumers, leading to more consumer members and thus more merchant members seeking to secure their business.

In short, defendants have strong arguments that default interchange and the various network rules have played, and may continue to play, an important role in the growth and success of the Visa and Mastercard networks. Under these circumstances, a rule of reason analysis with respect to all practices is in order.

It is noteworthy that in prior litigation against Visa and Mastercard, the restrictions at issue there, although deemed to have horizontal dimensions, have been evaluated under the rule of reason.⁹ The recent Department of Justice action against Visa, Mastercard, and American Express concerning anti-steering merchant restraints proceeded on the premise that the restraints would be subject to rule of reason analysis.¹⁰ Visa and Mastercard settled that litigation, and it is now going to trial against American Express, with the government proceeding on a rule of reason theory. Network determined interchange rates were scrutinized under the rule of reason in *National Bancard Corp.*¹¹ Finally, notwithstanding its rule of reason challenges to anti-steering rules in recent litigation, the Justice Department has refrained from challenging default interchange altogether, let alone on grounds of *per se* illegality.

III. DEFAULT INTERCHANGE AND NETWORK RULES UNDER THE RULE OF REASON

Antitrust analysis pursuant to the rule of reason follows a standard template. The first question is whether the defendant(s) possesses market power, which is generally understood as the power to raise price above a competitive level (typically marginal cost). Market power can be proven by direct evidence or by inference, the latter generally based on a large enough “market share” in a relevant antitrust “market.” If market power is absent, the defendant(s) are presumed to lack the ability to harm competition through the challenged practices. If market power exists, the inquiry proceeds to consider whether the challenged practices harm competition. If they do, the defendant may offer a pro-competitive justification for them, which the plaintiff may then rebut or, if not rebutted successfully, may nevertheless overcome by a showing that the harm to competition outweighs the pro-competitive benefits.¹²

A. *Market Power*

Although some degree of uncertainty exists, the plaintiffs would likely prevail on the proposition that Visa and Mastercard possess market power. Visa and Mastercard were found to possess market power in prior

ALTHOUGH SOME DEGREE OF
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litigation in the Second Circuit, in an opinion that was affirmed on appeal.¹³ In that case, the Court accepted the proposition that network services for general purpose credit charge cards constitute a relevant market (in relation to merchants and issuers as buyers), and determined that both

direct evidence and market share data (Visa 47 percent and Mastercard 26 percent) supported a finding of market power for both networks, especially in light of market concentration.¹⁴ New entry into the general purpose card market also appears difficult and uncommon.

Nevertheless, the economic experts in the interchange fee litigation devote a great deal attention to the market power question. A substantial portion of the debate focuses on the proper definition of the “relevant market” for antitrust purposes. Plaintiffs’ experts argue that the relevant market is no broader than general purpose credit and charge cards. This market definition was also put forward by the Justice Department in its recent case against Visa, Mastercard, and American Express (now going to trial against American Express). Three of plaintiffs’ experts go so far as to argue that Visa- and Mastercard-branded cards each constitute a relevant market from the perspective of merchants because of various network restrictions on merchants. (Strategically, of course, a finding that each credit card network was its own “monopoly” could trigger monopolization claims under Section 2 of the Sherman Act.)

In making their arguments, plaintiffs’ experts emphasize such factors as (i) the imperfect substitutability between credit/charge cards, debit cards, cash, and checks as payment mechanisms from the perspective of users, (ii) the fact that merchant acceptance of Mastercard and Visa cards does not decline significantly in response to increases in interchange fees by either network, (iii) the ostensible lock-in effects of the anti-steering rules that compel an all-or-nothing choice to accept or decline all cards from a particular network, (iv) the related collective action problem that merchants face in opting out of an important card network, and (v) the empirical claim that increases in interchange fees increase the profits of issuing banks. Plaintiffs further offer

evidence that Visa and Mastercard earn supra-competitive profits.

Defendants' experts dispute the market definition claims and market power inferences put forward by plaintiffs. Among many other points, they argue that card networks compete among each other and with other payment mechanisms for merchant acceptance, that "output" has increased rather than decreased—contrary to what one would expect from anticompetitive price increases—and that the plaintiffs' experts improperly account for the "two-sided" nature of the card market. Regarding the last point, they argue that that increases in interchange fees finance various benefits to cardholders, and that the total price of card usage (to both merchants and consumers) should be the focus of attention, not simply interchange or the merchant discount. They argue that this total price has declined. Defendants also dispute the claim that the Visa and Mastercard networks earn supra-competitive profits.

The defendants' experts are right to argue that the two-sided nature of the general purpose payment card business injects subtleties into the analysis that do not arise in a typical antitrust case, and that may call into question some of the reasoning in *United States v. Visa*.¹⁵ The market definition exercise in antitrust ordinarily asks whether a hypothetical monopolist in a candidate for a "relevant market" could impose a small but significant and non-transitory increase in price ("SSNIP").¹⁶ If so, the candidate market becomes a relevant market for antitrust analysis.

THE DEFENDANTS' EXPERTS ARE RIGHT TO ARGUE THAT THE TWO-SIDED NATURE OF THE GENERAL PURPOSE PAYMENT CARD BUSINESS INJECTS SUBTLETIES INTO THE ANALYSIS THAT DO NOT ARISE IN A TYPICAL ANTITRUST CASE,

When this framework is applied to the typical case, the prospect of a SSNIP represents an escalation of price above marginal cost, and is thus an indicator of the ability of a hypothetical monopolist to earn supra-competitive returns. In a two-sided market, however, the possibility arises that a price increase on one side of the market will be wholly or substantially offset by a price decrease on the other side of the market. With reference to the credit card market, if, hypothetically, any increase in interchange by the "hypothetical monopolist" were offset by a commensurate decrease in cardholder fees or an increase in cardholder benefits, supra-competitive returns would not follow.¹⁷

Accordingly, one must be careful applying the hypothetical SSNIP test in a two-sided market. In particular, one cannot draw an inference of market power simply from past increases in interchange rates relative to processing costs on the merchant side of the market, or the fact that such increases led few if any merchants to drop out of the Visa and Mastercard networks.¹⁸ In theory, merchants might accept increases in interchange not because of the lack of actual or potential competition from other payment mechanisms, but because interchange increases are accompanied by increased benefits to cardholders that make them more likely to use credit cards, so that higher merchant discounts are offset by increased sales.

That said, plaintiffs' experts marshal evidence that the total price to merchants and cardholders together increases as interchange rises, that higher interchange increases the profits of issuing banks, and that higher interchange passes through only partially to cardholders. They further contend that interchange revenue is

dissipated through rent-seeking expenditures that do not benefit cardholders (and thus confer no indirect benefits on merchants). Defendants contest these claims, but plaintiffs have a substantial set of arguments that, if accepted, answer the proposition that they have neglected the two-sided nature of the industry. Plaintiffs also develop rebuttal evidence with respect to the defendants' other economic arguments, such as the claim that output has increased.¹⁹

Taking all of the evidence together, and considering the outcome in *United States v. Visa*, plaintiffs have a substantial economic basis for claiming that a hypothetical monopolist of general purpose credit and charge card services could impose a SSNIP, based on a properly conceptualized two-sided or total price. Such a finding would support a definition of the market limited to such services, in which Visa's share is apparently over 40 percent and Mastercard's share is somewhat under 30 percent, and could in turn support a finding that both entities possess market power. Defendants raise significant issues, however, which call into question some of the reasoning in *United States v. Visa*, and create at least modest uncertainty about the market power issue.

DEFENDANTS RAISE SIGNIFICANT ISSUES, HOWEVER, WHICH CALL INTO QUESTION SOME OF THE REASONING IN UNITED STATES V. VISA, AND CREATE AT LEAST MODEST UNCERTAINTY ABOUT THE MARKET POWER ISSUE.

B. *The Net Economic Effects of Default Interchange, Honor All Cards, and Related Practices*

If the core practices at issue are subject to rule of reason analysis, the plaintiffs must prevail on the proposition that those practices are on balance anticompetitive. This task presents a considerably more formidable hurdle for the plaintiffs than the market power issue.

The practices challenged by plaintiffs at the outset of litigation include default interchange; merchant rules that prevented merchants from encouraging cardholders to use less expensive payment mechanisms through discounts, surcharges, and other means; non-discrimination rules; and rules that prevent merchants from declining to honor certain cards within the network altogether (honor all cards). During the pendency of litigation, Visa and Mastercard settled litigation brought by the Department of Justice with an agreement to permit discounting and related measures to encourage the use of less expensive payment mechanisms. And, as noted earlier, the proposed settlement approved by Judge Gleeson would, subject to certain constraints, eliminate the defendants' no-surcharge rules. Accordingly, the core practices that would remain in place after the proposed settlement include default interchange, the honor all cards rules (superimposed on what has been termed the "honor all paper" obligation), and non-discrimination rules.

These rules are interrelated both in their history and their rationale, which I summarize here in abbreviated form.²⁰ When Bank of America, for example, began to franchise other banks to issue cards or to provide services to merchants who accept cards (i.e., when it evolved toward a four-party network), it was essential to create an environment in which acquiring banks were willing to provide payment services to merchants, and issuing banks were willing to issue cards and pay the acquiring banks for transactions involving their affiliated merchants.

Further, BankAmericard had the ongoing objective of expanding its network of consumers and merchants, and it was important to induce broad acceptance of the card by merchants, including acceptance of the cards issued by franchised issuers. Honor all cards agreements with merchants evolved and did much to assure consumers that their cards would be accepted wherever the BankAmericard logo (later Visa logo) was displayed. This rule was important to the willingness of consumers to carry the card and the willingness of merchants to accept it—the so-called “chicken and egg” issue. Of course, merchants would not agree to honor all cards unless they were assured of payment by their acquiring banks, which in turn needed assurance of payment by issuing banks.

Issuers thus agreed to accept all transactions presented by acquiring banks (“honor all paper”). But this arrangement created some difficulties—how would the issuing banks be compensated? They bore costs of issuing cards, investigating the creditworthiness of cardholders, dealing with fraud and delinquency, and so on, which had to be covered. A simple honor all paper obligation on the part of issuing banks would give them no leverage to extract compensation from acquirers, and they would then have to cover all costs with cardholder fees.

Such an arrangement was perceived to be inadequate by members of the emerging BankAmericard system. An initial effort to require acquiring banks to compensate issuers provided that acquirers should pass the full merchant discount along to the issuing bank, with the expectation of reciprocity when the roles were reversed. This apparently proved unworkable due to dishonesty regarding the size of the merchant discount, and various other forms of opportunism. To solve this problem, default interchange was introduced, which sets an interchange rate that will prevail absent a bilateral negotiation to establish an alternative rate. The history of the Mastercard (formerly Interbank) system is broadly similar although different in some details.

In short, honor all cards rules and default interchange played an important role in making four-party systems attractive to all participants and in expanding their reach. Honor all cards rules assured consumers that they could easily and reliably determine where their cards will be accepted. The related honor all paper rules assured merchants and their acquiring banks that they would be paid, and default interchange provided revenue to issuing banks (in the absence of an alternative negotiated arrangement) that helped to cover not only their costs of processing transactions but the various benefits and incentives that their cards offered to consumers. It is conceivable that four-party systems might have evolved differently, but a powerful argument can be made that these rules did much to facilitate the growth and success of the Visa and Mastercard networks over time.

HONOR ALL CARDS RULES AND DEFAULT INTERCHANGE PLAYED AN IMPORTANT ROLE IN MAKING FOUR-PARTY SYSTEMS ATTRACTIVE TO ALL PARTICIPANTS AND IN EXPANDING THEIR REACH.

Various non-discrimination rules can also be understood as protecting the value of the network and its utility to card users. By prohibiting merchants from treating Visa and Mastercard holders less favorably than users of competing payment mechanisms, they help ensure that cardholders are not targeted by price

discrimination against them, and work to keep the competition between Mastercard and Visa and other payment networks on a “level playing field.”

Finally, there can be no doubt that the Mastercard and Visa networks provide substantial benefits to consumers and merchants. Consumers need not worry about acquiring cash in advance, and about the risk of loss or theft. Checks pose risks of fraud to merchants that they avoid by accepting cards within a network. Debit cards have advantages in these respects, but credit cards have further advantages—consumers can obtain goods and services on credit, enjoy float if they pay off their debts promptly, enjoy certain protections against problematic purchases, and benefit from various rewards and incentives. This list of benefits to consumers who use credit cards is not exhaustive. And because consumers find the cards attractive, merchants who accept cards can expect to make more sales to consumers who carry them.²¹

Given the role that default interchange, honor all cards, and non-discrimination rules played in the development and success of the Visa and Mastercard networks, and given the benefits to consumers and

INSTEAD, THEY ARGUE THAT PRACTICES SUCH AS DEFAULT INTERCHANGE HAVE OUTLIVED THEIR USEFULNESS AS THE VISA AND MASTERCARD NETWORKS HAVE “MATURED” OVER TIME.

merchants of those networks, a strong argument can be made that such practices serve—or at least served—a pro-competitive function. Plaintiffs’ experts largely accept this proposition. Instead, they argue that practices such as default interchange have outlived their usefulness as the Visa and Mastercard networks have “matured” over time. As I

understand this claim, the suggestion is either that the penetration of the Visa and Mastercard networks among merchants and consumers is now so great that the systems no longer require the measures at issue to promote merchant and cardholder acceptance or, as one expert suggests, that the challenge of expansion lies primarily on the merchant side rather than the consumer side of the market, and would be facilitated by lower interchange rates.

Defendants’ experts contest the characterization of the market as “mature,” observing that (i) growth in merchant acceptance and consumer use of cards has remained fairly rapid, (ii) competition from newly emerging technologies requires continued efforts by both networks to retain their market position (including by implication the practices at issue in this case), (iii) much room exists for networks to induce consumers to use their credit cards more often even if most consumers already carry the cards (presumably through interchange fees that finance greater incentives for card use), and (iv) the “maturation” of the market does not remove the need for interchange fees to balance the costs of payment systems between merchants and consumers.

I will not attempt to adjudicate this battle of experts over the existence and implications of industry “maturity,” and simply observe that the practices at issue lie historically at the core of the defendants’ highly successful business model. They were put in place many years ago, at a time when defendants can argue with considerable force that they lacked market power—even if they might be found to possess it today. In the face of such evidence, a court will likely be reluctant to declare that these practices have become antitrust violations

by virtue of industry maturation, especially given the uncertainties that would attend their abolition (discussed at greater length below).

A variety of other considerations raise further doubts about the ability of plaintiffs to establish that default interchange and accompanying network rules are on balance anticompetitive. First, an important body of theoretical work on two-sided markets suggests that it may be socially desirable for prices to be higher on the side of the market that is less price-sensitive.²² If merchants are less price-sensitive than consumers, this body of theory implies that economic welfare can be enhanced if merchants bear a substantial proportion of the total costs incurred by credit card issuers (through a mechanism such as interchange). A corollary is that socially desirable interchange fees need not be tied to the costs of processing merchant transactions.²³ To be sure, this fact does not establish that Mastercard and Visa set the socially optimal interchange fees, and indeed the literature suggests that privately determined interchange can and typically will deviate from the social optimum (potentially in either direction).²⁴

A VARIETY OF OTHER CONSIDERATIONS RAISE FURTHER DOUBTS ABOUT THE ABILITY OF PLAINTIFFS TO ESTABLISH THAT DEFAULT INTERCHANGE AND ACCOMPANYING NETWORK RULES ARE ON BALANCE ANTICOMPETITIVE.

If the theoretical literature offers one robust conclusion, however, it is that the determinants of socially optimal interchange rates are complex and dependent on a variety of subtle factors. Theoretical and empirical work on such matters is ongoing and at “an early stage.”²⁵ There is little basis for believing that socially optimal interchange rates are zero, for example, or some other amount that may have been chosen by any particular set of national regulators (such as those in Europe and Australia, to which the plaintiffs direct attention).

Second, the merchant fees charged by three-party networks (such as American Express and Discover, which serve as both issuer and acquirer) offer some reference point for assessing the total fees charged by Visa and Mastercard. To the best of my knowledge, no general purpose (non-debit) card network of any consequence has ever operated without significant interchange fees (or substantial merchant fees in a three-party network). Discover has somewhat lower fees than Visa and Mastercard historically, while American Express has somewhat higher fees. To be sure, plaintiffs argue that these fees are distorted by the anticompetitive pricing “umbrella” established by Visa and Mastercard, but the fact that American Express, Discover, and other smaller three-party general purpose card networks (e.g., Diner’s Club) have had substantial merchant fees for years raises additional doubts about the ability of plaintiffs to show that the fees in the Mastercard and Visa networks are anticompetitive.

Finally, a showing that default interchange and related network rules for the Visa and Mastercard systems are anticompetitive requires, in my estimation, a convincing description of a counterfactual world in which the purportedly anticompetitive practices of each network are eliminated, and in which the resulting

WHAT WOULD THAT COUNTERFACTUAL WORLD LOOK LIKE?

market equilibrium is demonstrably superior from an economic standpoint. What would that counterfactual world look like? In a garden variety antitrust case involving,

say, simple price-fixing, the counterfactual world is one in which the conspiracy to elevate prices disappears and prices decline toward their competitive level, with an attendant increase in economic welfare in accordance with standard price theoretic models in microeconomics.

If Mastercard and Visa did not set default interchange (and perhaps did not have certain network rules such as honor all cards), it is much more challenging to ascertain what would exist (or would have existed²⁶) as an alternative. The expert reports mention various possible scenarios and one can readily imagine others. If issuers were bound by an honor all paper requirement with no default interchange, they might find themselves at the mercy of acquiring banks who offered them no compensation for their services, and no revenue to put toward funding the cost of cardholder benefits and incentives. This scenario leads to a variety of questions:

- Would issuers drop out of the business, or be content to shift all costs to cardholders?
- How would that affect the value of the networks to their participants and the competition among issuers?
- Would honor all cards and paper rules be abandoned?
- Would issuers then negotiate bilateral interchange agreements with major acquirers?
- Would the transaction costs of those negotiations prove prohibitive as some defense experts argue?
- Could small issuers and acquirers effectively engage in such bilateral negotiations?
- Would some mechanism evolve to economize on the costs of bilateral negotiations (whereby small acquirers and issuers work through large banks with their own bilateral agreements to avoid the need for their bilateral negotiations involving small players)?
- Would new steering practices by merchants be so effective that interchange rates were competed down to the level of the rates on debit cards (as argued by two of the plaintiffs' experts)?
- Might Visa and Mastercard instead simply restructure their operations to avoid any lingering basis for antitrust liability (after all, their IPOs were motivated at least in substantial part by that purpose according to plaintiffs), eliminating any vestige of collaboration among issuer banks, and then proceed largely as in the past setting interchange fees as single entities?
- Might they somehow move away from the four-party model toward a three-party model without materially reducing merchant fees?
- Would large issuers such as Chase and Citibank break off on their own, creating new proprietary cards?

- And, to cut to the bottom line, what would be the costs of negotiating and implementing whatever changes might emerge? How would equilibrium interchange and/or merchant fees compare to current levels? How much would cardholders be affected, perhaps adversely, through changes in fees and incentives?

I would not suggest that any particular scenario is the most likely or plausible. Moreover, the construction of a proper counterfactual scenario requires one to identify precisely which practices represent antitrust violations and which do not, an exercise that gives rise to many possible permutations given the number of practices put in issue by the plaintiffs. The point here is simply that a great deal of uncertainty attends the question of what the proper counterfactual world would look like, stripped of whatever practices are alleged (or found) to be anticompetitive. And, if the counterfactual scenario is highly uncertain, it becomes exceedingly difficult to conclude that the market equilibrium stripped of the alleged anticompetitive practices would be superior from an economic standpoint—the essence of the inquiry under the rule of reason.

IF THE COUNTERFACTUAL SCENARIO IS HIGHLY UNCERTAIN, IT BECOMES EXCEEDINGLY DIFFICULT TO CONCLUDE THAT THE MARKET EQUILIBRIUM STRIPPED OF THE ALLEGED ANTICOMPETITIVE PRACTICES WOULD BE SUPERIOR FROM AN ECONOMIC STANDPOINT—THE ESSENCE OF THE INQUIRY UNDER THE RULE OF REASON.

Perhaps mindful of this problem, plaintiffs' experts at times finesse it. One expert for plaintiffs argues that Mastercard and Visa could survive in a world with zero interchange rates. He also points to the Australian experience, in which the Reserve Bank of Australia has regulated interchange rates without (he argued) reducing the size of the Mastercard and Visa networks there to any significant extent. Another expert offers damages counterfactuals based on a but-for world in which he claims that Visa and Mastercard could have survived despite considerably lower interchange fees. He notes that interchange fee regulation in places like Australia has not put either network out of business.

With all respect, however, the question for rule of reason purposes (as well as for damages calculation) is not whether the networks could survive (or could have survived in the past) with zero interchange by shifting all costs to cardholders, or whether they could survive at some positive but reduced interchange rate established by Australian or other national regulators. Rather, the question is what *market equilibrium* would emerge if the alleged anticompetitive practices were eliminated, and how that equilibrium would compare from an economic standpoint to the *status quo*. It is possible that an alternative market equilibrium might be economically superior, but without the capacity to identify it with any confidence, one can question whether the plaintiffs can succeed in establishing that the challenged practices—such as default interchange and honor all cards rules—are on balance anticompetitive (or, as discussed further below, whether the plaintiffs can establish their damages convincingly).

In this regard, it is noteworthy that U.S. Federal enforcement agencies have devoted considerable attention to practices in the general purpose credit and charge card industry. As noted, they challenged (successfully) rules that restricted Mastercard and Visa issuers from also issuing American Express and Discover

cards, and they achieved a successful settlement with the Visa and Mastercard defendants in litigation regarding certain network rules that discouraged discounting and certain other practices promoting the use of less expensive payment methods.

To my knowledge, however, the enforcement agencies have refrained thus far from bringing challenges to default interchange, honor all cards, and certain other network rules put in issue by plaintiffs. A plausible inference from the absence of enforcement actions regarding these practices is that Federal enforcers regard the economic issues with respect to these practices as complex, and the potential net benefits of any challenge to them as uncertain given the present state of economic knowledge.

IV. OTHER SOURCES OF LITIGATION UNCERTAINTY

A. *Damages*

Plaintiffs' experts submitted materials containing or suggesting quantitative damages analyses on behalf of class plaintiffs based on certain assumptions about the "but-for" world that would have arisen in the absence of the challenged practices. They consider some alternative possibilities, including the measurement of damages on the assumption that interchange would be zero absent the alleged anticompetitive practices, or the assumption that interchange would remain but at lower levels, perhaps approximating those set by regulation in certain countries. Another expert suggests a different counterfactual benchmark—a world in which merchants use steering mechanisms to such a degree and with such efficacy as to drive credit card interchange rates down to the level of interchange fees on debit cards.

These approaches to damages quantification are subject to substantial challenges. First, for the reasons suggested in the last section, it is not at all clear what the proper counterfactual should be. It seems speculative to suppose that the counterfactual market equilibrium in the absence of the challenged practices would involve zero interchange given all of the other ways that the market might evolve or have evolved, and the fact that to my knowledge no general purpose credit or charge card network of any consequence has ever evolved with zero interchange (or comparable merchant fees in a three-party network).

THESE APPROACHES TO DAMAGES
QUANTIFICATION ARE SUBJECT TO
SUBSTANTIAL CHALLENGES.

to suppose that the counterfactual market equilibrium in the absence of the challenged practices would involve zero interchange given all of the other ways that the market might

The notion that the counterfactual market equilibrium would involve interchange at a rate set by some set of foreign regulators seems equally speculative. Given the important differences to consumers between credit cards and debit cards, the substantially greater total costs to issuers of credit cards relative to debit cards, and all of the questions raised in the litigation about the likelihood and efficacy of merchant steering mechanisms, it also seems speculative to suppose that credit card interchange would be competed down to the level of debit card interchange.

Second, a question arises as to how damages should be conceptualized in a two-sided market. Assume, as plaintiffs argued, that the elimination of challenged practices would result in lower interchange rates by some amount, and that the challenged practices are indeed deemed anticompetitive. Assume further, however, as plaintiffs' experts concede at least up to a point, that lower interchange fees would result in higher fees and charges to cardholders, reduced awards, and a diminution in other incentives to use cards. Is it sensible to treat the entire reduction in interchange as "damages" due to an anticompetitive overcharge, or must one offset that amount by the detriment to cardholders from lower interchange? From an economic standpoint, a powerful argument can be made for focusing on the two-sided or total price as the better way to conceptualize any overcharge, as it captures the extent to which all affected parties in the aggregate have been harmed by any anticompetitive practices.²⁸

A POWERFUL ARGUMENT CAN BE MADE FOR FOCUSING ON THE TWO-SIDED OR TOTAL PRICE AS THE BETTER WAY TO CONCEPTUALIZE ANY OVERCHARGE

This issue in turn brings into play a debate among the experts—defendants argue that, at the margin, all increases in interchange are passed through to cardholders, although plaintiffs dispute the underlying empirics. To the degree that increases in interchange result in increased cardholder benefits, reductions in interchange may have the opposite effect, so that any benefits to merchants from reduced interchange fees might be offset in whole or in part by a loss to cardholders.

B. Injunctive Relief

In addition to damages, litigation might result in injunctive relief that goes beyond the increased opportunity to surcharge provided in the proposed settlement. For example, the Court might enjoin Visa and Mastercard from setting default interchange rates, enjoin the enforcement of the honor all cards rule, or enjoin the enforcement of some non-discrimination rule.

Just as the net economic impact of the challenged practices is difficult to identify for purposes of rule of reason analysis, however, and the proper counterfactual is difficult to identify for purposes of damages analysis, so too are the consequences for the general purpose card industry of any move to enjoin these long-time core business practices. The potential for serious unintended consequences is considerable.²⁹ These factors, in my view, would likely make a court hesitant to enjoin the core practices left standing by the proposed settlement.

A court will also likely be mindful of the fact that private antitrust litigation is not the only mechanism for addressing possibly anticompetitive practices. Federal antitrust enforcers can and have instituted actions to challenge certain network practices, resulting in favorable adjudication and settlement. Likewise, parties who believe themselves harmed by anticompetitive practices can and have secured legislative relief from Congress. The recent regulation of interchange rates for debit card transactions by the Federal Reserve, pursuant to the Dodd-Frank Act, is illustrative.

Federal enforcement actions have obvious advantages over private antitrust litigation in cases involving difficult economic issues, particularly if relief would involve changing the business models of successful U.S. companies.

FEDERAL ENFORCEMENT ACTIONS HAVE OBVIOUS ADVANTAGES OVER PRIVATE ANTITRUST LITIGATION IN CASES INVOLVING DIFFICULT ECONOMIC ISSUES, PARTICULARLY IF RELIEF WOULD INVOLVE CHANGING THE BUSINESS MODELS OF SUCCESSFUL U.S. COMPANIES.

well as investigative powers, that a court does not possess.

The Federal enforcement agencies have large economics staffs, typically headed by distinguished industrial organization economists. The availability of substantial economic input from a staff, employed by an entity with no direct monetary interest in the outcome of litigation, can reduce the risk of errors. The Congress also has access to a range of expertise, as

For all of these reasons, there is considerable doubt whether the plaintiffs could secure significant injunctive relief going beyond what the Federal enforcers have pursued in their own action, even if they were to establish liability. The business practices at issue lay at the heart of a decades-old and highly successful business model, and the potential for unintended consequences from interference with that business model is high.

C. *The Indirect Purchaser Issue*

Defendants argue that plaintiffs cannot recover damages in this action because merchants are indirect purchasers of the services provided by the defendants and their member issuers (following cases such as *Illinois Brick*).³⁰ Interchange fees are paid by acquiring banks to issuing banks, the argument runs, and are at most passed along to merchants as indirect purchasers. Plaintiffs argue that the indirect purchaser doctrine does not apply because interchange fees are effectively paid by merchants rather than acquirers, and because many acquirers are also members of the Mastercard and Visa networks as issuers, falling within a purported exception to the indirect purchaser doctrine.

THE QUESTION WHETHER THE INDIRECT PURCHASER DOCTRINE APPLIES TO MERCHANTS IN A FOUR-PARTY PAYMENT SYSTEM IS A SERIOUS ONE.

incorrectly decided.

The question whether the indirect purchaser doctrine applies to merchants in a four-party payment system is a serious one. Other cases have invoked the indirect purchaser doctrine to bar damages claims by merchants or other bank customers in arguably analogous situations.³¹ Plaintiffs argue that these cases are distinguishable and/or

To the degree that economic analysis has any relevance the applicability of the indirect purchaser doctrine, one might bring it to bear in relation to the policy rationale behind *Illinois Brick* and related cases. My understanding of the indirect purchaser doctrine is that it stems initially from a concern about the possibility of multiple recoveries. If each purchaser at each point in a chain of transactions (e.g., wholesaler, retailer, consumer) could sue to recover the full monopoly overcharge (trebled under the antitrust laws), total damages would become excessive. To avoid this outcome, some manner of apportionment might be used—one

might attempt to compute the amount of harm borne by the wholesaler and separate it from the overcharges passed on to the retailer, do the same at the retail level, and so on. But this apportionment problem would be complex in many cases and subject to error.³² To avoid such issues, the indirect purchaser doctrine provides that the direct purchaser can recover the full overcharge with no deduction for amounts passed downstream, while indirect purchasers are barred from recovery.

If the rationale for the indirect purchaser doctrine is the avoidance of a costly and error prone apportionment problem, it has less force when apportionment is straightforward because contractual arrangements allow a court easily to ascertain what portion of a monopoly overcharge is passed along the chain of distribution (as in the possible “cost-plus” exception to *Illinois Brick*).³³ It also has less force when direct purchasers may be disinclined to sue, perhaps because they have an economic interest in maintaining the anticompetitive overcharge.

Plaintiffs in this litigation can perhaps appeal to these policy considerations, arguing that acquirer fees are easily separated from interchange fees that are paid to issuers and passed along to merchants (regardless of who “pays” interchange as a formal matter), and that some acquirers are also issuers and thus directly or indirectly benefit from any anticompetitive practices. Whether these considerations would be sufficient to overcome the tendency of courts to apply the indirect purchaser doctrine rather strictly, however, is unclear.³⁴

V. CONCLUSION

For the reasons developed above, the plaintiffs in the interchange fee litigation face a substantial and perhaps rather large probability of eventual failure both as to liability and as to the prospects of significant monetary and injunctive relief. A high probability exists that the issues will be analyzed under the rule of reason, and a review of the economic issues in the case suggests that the plaintiffs will have difficulty establishing that the intra-network practices are on balance anticompetitive.

The plaintiffs also face considerable difficulty in establishing a persuasive counterfactual for the computation of damages, assuming that they can overcome obstacles to liability, as well as significant potential risk under the indirect purchaser doctrine. Related considerations along with prudential factors raise further doubts about the likelihood of any injunctive relief going significantly beyond the terms of the proposed settlement.

GIVEN ALL OF THE ISSUES ON WHICH THE PLAINTIFFS CASE MIGHT FAIL, THE CUMULATIVE PROBABILITY OF FAILURE APPEARS TO BE QUITE SUBSTANTIAL.

Given all of the issues on which the plaintiffs case might fail, the cumulative probability of failure appears to be quite substantial. ▲

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² In class actions, a question arises as to whether class plaintiffs’ and counsel represent the interests of the class as a whole adequately, and the court serves as an independent check on the wisdom of settlement under

Rule 23 of the Federal Rules of Civil Procedure.

³ <http://www.law360.com/articles/495780/7-25b-visa-mastercard-swipe-fee-deal-gets-approval>.

⁴ The full text of Judge Gleeson's order may be found at <http://www.scribd.com/doc/191371357/IN-RE-PAYMENT-CARD-INTERCHANGE-FEE-AND-MERCHANT-DISCOUNT-ANTITRUST-LITIGATION>.

⁵ <https://www.competitionpolicyinternational.com/assets/Uploads/opinion.pdf>. The expert reports in the case are confidential, although I do make reference to aspects of the expert reports in my own public report. In preparing this commentary, I make no references to confidential materials beyond those contained in my report to the Court, and I have deleted all references to specific expert reports.

⁶ See, e.g., Richard A. Posner, *Economic Analysis of Law* §21.5 (5th ed. 1998); Steven Shavell, *Foundations of Economic Analysis of Law* §17.2 (2004).

⁷ I also assume for purposes of analysis that initial allegations of inter-network conspiracy between Visa and Mastercard—an agreement between them to set interchange rates—are not supportable. An agreement between Visa and Mastercard on interchange fees would be a *per se* violation of Section I of the Sherman Act, and if proven would no doubt entitle plaintiffs to a finding of liability and potentially quite substantial damages.

⁸ *Broadcast Music, Inc. v. CBS, Inc.*, 441 U.S. 1 (1979).

⁹ *United States v. Visa U.S.A., Inc.*, 344 F.3d 229 (2d Cir. 2003) (prohibition on the issuance of Discover and American Express cards by member banks).

¹⁰ See *United States et. al. v. American Express et. al.*, Amended Complaint for Equitable Relief, Civil Action no. CV-10-4496, filed December 21, 2010 (discussing defendants' market power, alleging that defendants' practices unreasonably restrain trade and are not reasonably necessary to accomplish defendants' alleged pro-competitive goals).

¹¹ *National Bancard Corp. v. Visa U.S.A., Inc.*, 779 F.2d 592 (11th Cir. 1986)

¹² E.g., *United States v. Visa*, *supra* note 9; *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001).

¹³ *United States v. Visa*, *supra* note 9.

¹⁴ *Id.*, 344 F.3d at 240.

¹⁵ *Id.*

¹⁶ See, e.g., U.S. Department of Justice and Federal Trade Commission 2010 Horizontal Merger Guidelines §4.1 (product market definition).

¹⁷ Dr. Frankel seems to acknowledge the point in one of his academic publications: “[T]he interchange fee might be used to cartelize an industry, as might occur if the interchange fee is set high and banks do not compete through rebates to consumers...” Dennis W. Carlton & Alan S. Frankel, *The Antitrust Economics of Credit Card Networks: Reply to Evans and Schmalansee Comment*, 63 ANTITRUST L.J. 903, 913 (1995).

¹⁸ See *United States v. Visa*, *supra* note 9, 344 F.3d at 240 (“despite recent increases in both networks’ interchange fees, no merchant had discontinued acceptance of their cards”).

¹⁹ In addition to the issues noted in the text, the expert reports contain discussion of the significance of “price discrimination” by the defendants in the setting of different interchange rates for different merchants or categories of merchants. At one time, it was widely thought that price discrimination was evidence of

market power. More recent economic learning undermines this view, suggesting that price discrimination is in fact quite common in markets that are highly competitive and in which firms do not earn supra-competitive returns. See Michael E. Levine, *Price Discrimination without Market Power*, 19 YALE J. REG. 19 (2002). I concur that price discrimination is not necessarily an indicator of market power.

²⁰ For additional detail, see, e.g., DAVID S. EVANS, INTERCHANGE FEES: THE REGULATION OF WHAT MERCHANTS PAY FOR CARDS (2011), available at <https://www.competitionpolicyinternational.com/assets/Hot-Tubs/Interchange-Fees-web.pdf>.

²¹ I recognize that some debate exists among the experts in the case as to the “social” versus “private” value of these additional sales by merchants who accept cards. To some degree, merchants who accept cards may simply increase their sales at the expense of merchants who do not.

²² For a relatively early, non-technical discussion, see Jean Charles Rochet & Jean Tirole, *An Economic Analysis of the Determinants of Interchange Fees in Payment Systems*, 2 REV. NETWORK ECON. 69 (2003).

²³ *Id.*

²⁴ See, *id.* §3.2 and sources cited therein; David Evans, *supra* note 20, chapter 1.

²⁵ *Id.* at 20.

²⁶ I recognize that for the purposes of computing past damages, the question is what would have happened absent the anticompetitive practices in the past, not what will happen without them in the future. In thinking about liability under the rule of reason, however, one can appropriately ask what the market would look like absent the challenged practices and, accordingly, I couch the text as a forward-looking discussion.

²⁷ *United States v. Visa*, *supra* note 9.

²⁸ I am mindful, however, of the point noted by one expert for plaintiffs—inefficiency in the market might arise not only because the “total price” is elevated above the competitive level, but also because the merchant price is “too high” and the cardholder price “too low” from the standpoint of social optimality. It is not at all clear to me, however, how this wrinkle might be factored into a quantitative analysis of antitrust damages.

²⁹ An independent commentary concluding that a court would not be likely to enjoin these practices is Steven Semeraro, *Taming Credit Card Fees by Requiring the Biggest Banks to Compete for Merchant Acceptance: An Interbank Competitive Model*, Thomas Jefferson School of Law Research Paper No. 2223518 (Feb. 2013).

³⁰ The indirect purchaser doctrine would not bar the plaintiffs from securing injunctive relief. *Illinois Brick Co. v. Illinois*, 431 U.S. 720 (1977).

³¹ *Paycom Billing Svcs., Inc. v. Mastercard Int’l, Inc.*, 467 F.3d 283 (2d Cir. 2006); *Kendall v. Visa USA*, 518 F.3d 1042 (9th Cir. 2008); *In Re ATM Fee Antitrust Litigation*, 686 F.3d 741 (9th Cir. 2012).

³² See *Illinois Brick*, 431 U.S. at 737, *supra* note 30.

³³ *Id.* at 736

³⁴ See, e.g., *Kansas v. Utilicorp United, Inc.*, 497 U.S. 199 (1990) (rejecting exception to indirect purchaser doctrine where overcharges allegedly passed on in full to utility customers).

*Two Sides of the
Cartes Bancaires
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*BY FRÉDÉRIC PRADELLES &
ANDREAS SCORDAMAGLIA -TOUSIS*

The Two Sides of the Cartes Bancaires Ruling: Assessment of the Two-Sided Nature of Card Payment Systems Under Article 101(1) TFEU and Full Judicial Scrutiny of Underlying Economic Analysis

BY FRÉDÉRIC PRADELLES & ANDREAS SCORDAMAGLIA-TOUSIS ¹

The European Court of Justice recently delivered two seminal rulings in *Groupement des Cartes Bancaires v Commission* and *MasterCard v Commission*. These two judgments brought much awaited clarification to the application of Article 101 of the Treaty on the Functioning of the European Union (“TFEU”) in two important areas. First, they spelled out the distinction between “by object” and “by effect” restrictions of competition. Second, they presented a novel analysis for the assessment of efficiencies under Article 101(3) TFEU in the context of multi-sided market. These clarifications will have important implications on the future assessment of two-sided markets under Article 101(1) TFEU. All the more, the Court in *Cartes Bancaires* made some important statements that have the effect of intensifying the level of judicial review of matters over which the Commission has traditionally enjoyed a “margin of appraisal,” such as for complex economic matters.

I. INTRODUCTION

Thursday, September 11, 2014, marked an important day for competition law as the European Court of Justice (“ECJ” or the “Court”) delivered two seminal rulings in *Groupement des Cartes Bancaires* (“CB”) v *Commission* (“*Cartes Bancaires*”)² and *MasterCard v Commission* (“*MasterCard*”).³ These two judgments brought much awaited clarification to the application of Article 101 of the Treaty on the Functioning of the European Union (“TFEU”) by respectively spelling out the distinction between “by object” and “by effect” restrictions of competition under Article 101(1) TFEU and also by analyzing the assessment of efficiencies in the context of multi-sided markets under Article 101(3) TFEU.

Given that both cases concerned alleged infringements of EU competition law in the sector of card payment systems, these clarifications were brought in the context of an archetypical example of a two-sided market. Economists roughly define “two-sided” markets (or more generally multi-sided markets) as “markets in which one or several platforms enable interactions between end-users, and try to get the two (or multiple) sides ‘on board’ by appropriately charging each side. That is, platforms court each side while attempting to make, or at least not lose, money overall.”⁴ Accordingly, payment card systems are two-sided because (i) they serve two distinct groups of customers (cardholders and merchants) with a joint demand (in the sense that they operate only if both cardholders and merchants jointly agree to use a card for a transaction), and (ii) they have “network externalities” arising from the fact that more cardholders make the card payment system more valuable for merchants, and vice versa.⁵

Thus, two-sided markets have the specificity that the assessment of price substitutability of products on one side of the platform, in isolation of the other side, would lead to flawed conclusions insofar as an increase

in the price on one side necessarily has implications for demand on the other side. Two-sided markets have in the past been assessed by the Commission, both under antitrust rules (e.g. trading services⁶), and most frequently under merger control (e.g., such as “ad networks”⁷).

For the above reasons, *Cartes Bancaires* and *MasterCard*, read in conjunction, lend themselves to drawing insightful conclusions for the future assessment of two-sided markets under Article 101 TFEU. All the more, with a view to ensuring compatibility with the requirements of Article 6(1) of the European Convention of Human Rights (“ECHR”), the Court in *Cartes Bancaires* made some important statements to the effect of intensifying the level of judicial review of matters over which the Commission has traditionally enjoyed a “margin of appraisal,” such as for complex economic matters. In this regard, economic assessments typically form the most contentious elements of competition analysis in two-sided markets.

CARTES BANCAIRES AND MASTERCARD, READ IN CONJUNCTION, LEND THEMSELVES TO DRAWING INSIGHTFUL CONCLUSIONS FOR THE FUTURE ASSESSMENT OF TWO-SIDED MARKETS UNDER ARTICLE 101 TFEU

A. Factual Background

The Groupement des Cartes Bancaires (“CB Group”) was established by the main credit institutions operating in France to manage a system for bank card payments and withdrawals (the “CB system”). This system, which competes and cooperates with Visa and MasterCard in France, enables the use of bank cards for payments issued by CB members (issuing side) to all affiliated merchants and withdrawals from ATMs controlled by any of the members of CB Group (acquiring side).

The disputed measures consisted mainly of a series of proposed new fees that would be paid by CB Group members when issuing cards or joining the group and, in particular: (i) the so-called MERFA⁸ formula to determine the fees payable by card issuers, to be based on a series of parameters that would have ensured that members that mainly issue cards (as compared to acquiring merchants and installing ATMs) would have paid higher fees; (ii) a three-year membership fee per card issued; and (iii) a so-called “wake-up” fee applicable to members that were inactive or not very active before the new pricing measures. According to CB Group, those measures were aimed at combating “free-riding” on the investments made by the main member credit institutions and encouraging new competitors to acquire merchants and install ATMs.

In 2002, CB Group notified the measures to the Commission under Regulation 17/62 and, in 2004, CB Group decided not to implement those measures. The Commission found that CB Group’s 2002 notification aimed to conceal a “real content of an anti-competitive agreement” and subsequently issued two statements of objections, one in 2004 (sent to CB Group and to eleven major banks), which the Commission later withdrew, and one in 2006 (sent only to CB Group). This led to the Commission adopting an infringement decision in 2007, despite the fact that the CB Group had effectively never implemented the contested measures.⁹ The Commission found that the purpose of the measures was to keep the price of payment cards artificially high to the advantage of the major banks and to the detriment of new entrants. The

Commission ordered CB Group to abolish the measures concerned and to refrain from adopting measures with a similar object or effect in the future.

CB Group contested the Commission's decision before the General Court ("GC"). In 2012, the GC upheld the Commission's decision¹⁰ that the pricing measures had as their "object" the restriction of competition; the GC did not examine the pleas contesting the analysis in the decision of the effects of the measures. According to the GC, these measures hindered new entry on the market for the issuing of payment cards in France. CB Group appealed to the ECJ arguing that the GC had erred in applying the concept of restriction of competition "by object."

In particular, CB Group argued that the Commission had failed to assess the measures' objectives properly—i.e., the legitimate objective of avoiding free-riding in the CB system—as well as the measures' legal and economic context, mainly by misinterpreting the case law and ignoring the two-sided operation of the payment system. The Court, in line with Advocate General Wahl's opinion,¹¹ decided to set aside the GC judgment and to refer the case back to the GC for an analysis of the effects of the measures.

CB GROUP ARGUED THAT THE COMMISSION HAD FAILED TO ASSESS THE MEASURES' OBJECTIVES PROPERLY— I.E., THE LEGITIMATE OBJECTIVE OF AVOIDING FREE-RIDING IN THE CB SYSTEM—AS WELL AS THE MEASURES' LEGAL AND ECONOMIC CONTEXT, MAINLY BY MISINTERPRETING THE CASE LAW AND IGNORING THE TWO-SIDED OPERATION OF THE PAYMENT SYSTEM

B. Structure

The main novelty of *Cartes Bancaires*—its "first side"—is that the Court expressly endorses a restrictive interpretation of "by object" restrictions under Article 101(1), which, in turn, paves the way for the consideration of the two-sided nature of a system in the qualification of a "by object" or "by effect" restriction (see Section II, Subsection A below). The *MasterCard* ruling also provides a novel interpretation of Article 101(3) accommodating efficiencies in the specific context of two-sided markets (see Section II, Subsection B below). These two rulings go hand-in-hand in showing how the "bifurcated" architecture of Article 101, namely Articles 101(1) and 101(3), interacts to better accommodate the economic specificities of two-sided markets.

The "second side" of *Cartes Bancaires* consists of the Court's reiteration of the principle that the GC must generally undertake a "full judicial" review and cannot therefore use the Commission's "margin of assessment" for dispensing with an in-depth review of the law and facts. Exercising rigorous scrutiny over the GC's assessment, the Court exemplifies the expected standard of judicial review in the appraisal of complex economic matters (see Section III, Subsection A below). The Court thereby makes an implicit, yet strong, statement with a view to confirming the compatibility of the current level of EU judicial review with the requirements set out in Article 6(1) of the ECHR (see Section III, Subsection B below).

II. FIRST SIDE OF CARTES BANCAIRES: THE TWO-SIDED NATURE OF A SYSTEM AS A KEY ELEMENT OF THE ARTICLE 101 ANALYSIS

A. *An Essential Element of the Contextual Characterization Of Restrictions Under Article 101(1)*

1. The Restrictive Interpretation and Contextual Analysis of “By Object” Restrictions

Article 101(1) prohibits agreements that have as their “object or effect” the restriction of competition. If it is shown that an agreement has an anticompetitive object, anticompetitive effects are presumed and there is no need to show adverse effects on competition before concluding that Article 101(1) is infringed. How a practice is classified therefore entails serious consequences both for the companies involved¹² and for antitrust enforcers.

In *Cartes Bancaires* the Court for the first time expressly stated that the concept of restriction of competition “by object” must be interpreted restrictively.¹³ The Court referred to settled case law according to which “by object” restrictions of competition are those that are “regarded, by their very nature, as being harmful to the proper functioning of normal competition.”¹⁴ Only where conduct reveals a “sufficient degree of harm” to competition may the Commission find that there is no need to examine its effects, because such analysis would be redundant.¹⁵ The Court gave the example of a price fixing cartel— “[e]xperience shows that such behaviour leads to falls in production and price increases, resulting in poor allocation of resources to the detriment, in particular, of consumers.”¹⁶

IN CARTES BANCAIRES THE COURT FOR THE FIRST TIME EXPRESSLY STATED THAT THE CONCEPT OF RESTRICTION OF COMPETITION “BY OBJECT” MUST BE INTERPRETED RESTRICTIVELY.

According to the Court, when assessing whether conduct can be considered “sufficiently harmful” to be a restriction “by object,” the Commission needs to take account of “all relevant aspects of the economic and legal context in which that coordination takes place, it being immaterial whether or not such an aspect relates to the relevant market.”¹⁷ In doing so, it should have regard, in particular, “to the nature of the services at issue, as well as the real conditions of the function and structure of the markets.”¹⁸

This contextual analysis needed for the characterization of “by object” restrictions reiterates settled case law of the ECJ.¹⁹ The novelty in *Cartes Bancaires* lies however in that the Court specifies that the relevant economic or legal aspects are to be taken into account “whether or not such an aspect relates to the relevant market.” It follows that, unlike the previous case law cited that often dealt with one-sided markets, the Court in *Cartes Bancaires* seized the opportunity to extend the contextual analysis to all the relevant sides of multi-sided markets.

2. The Court’s Assessment

The Court found that the GC had failed to properly apply the core criterion for ascertaining the object of the CB Group measures, namely whether in themselves they “revealed a sufficient degree of harm to competition.”

First, the Court held that the GC erred in law by taking the view that a restrictive object could be inferred from the wording of the measures and the mere possibility that the measures might restrict competition.²⁰ Moreover, having acknowledged that the measures sought to establish a certain balance between the issuing and acquiring activities of the members of CB Group, the Court held that the GC was entitled “at the most [emphasis added] to infer from this that those measures had as their object the imposition of a financial contribution on the members which benefit from the efforts of other members for the purposes of developing the acquisition activities of the system.”²¹ This element could not, by its very nature, be considered harmful to the proper functioning of normal competition.

It follows that a “by object” type of analysis is not appropriate for a complex set of arrangements whereby an association of undertakings, like CB Group, decides that some new pricing measures are needed to rebalance the issuing and acquisition activities of its bank members with the objective of ensuring its continuation as a reliable and successful payment system in France. Probably such measures would have led some banks to change their contribution and/or issuing policies and prices. But that change was precisely what CB Group considered necessary to prevent the risks of implosion to be expected from the continuation of massive free-riding by those who, without having invested in the creation and development of the payment system, were happy to be admitted and actively use it.

Given the absence of relevant precedents, the Court stated that the GC and the Commission could not consider such measures as restrictive by object “by [their] very nature” without properly proving it. Therefore, the GC had to examine its effects on competition before finding them restrictive under Article 101(1), especially so since it found that combating free-riding is in itself perfectly legitimate.

Most importantly, for the purpose of the analysis of two-sided markets, the Court also noted that by carrying out the market analysis solely on the issuing of payment cards in France, rather than considering also the market for payment systems, the GC had mixed up the definition of the relevant market and the contextual analysis needed to decide whether an agreement has as its object to restrict competition.²² It clarified that this assessment must take into account all relevant factors irrespective of whether they relate to the relevant market or not. As a logical consequence, the Court held that the balancing between issuing and acquiring activities, and ultimately determining whether the measures foreclosed new entrants, was to be performed in the context of examining the effects of those measures on competition under Article 101(1).

IT CLARIFIED THAT THIS ASSESSMENT MUST TAKE INTO ACCOUNT ALL RELEVANT FACTORS IRRESPECTIVE OF WHETHER THEY RELATE TO THE RELEVANT MARKET OR NOT.

the market for payment systems, the GC had mixed up the definition of the relevant market and the contextual analysis needed to decide whether an agreement has as its object to restrict competition.²² It clarified that this assessment must take into account all relevant factors irrespective of whether they relate to the relevant market or

3. The Contextual Analysis of “By Effects” Restrictions

Where conduct does not reveal a “sufficient degree of harm” to form a “by object” restriction, the effects of the coordination must be considered and the Commission must show that competition has *in fact* been distorted to an appreciable extent. The *Cartes Bancaires* ruling deferred this assessment to the GC. However, the Court

in *MasterCard* did provide important guidance on how effects-based analysis is to be carried out in the context of two-sided markets. The Court indicated that the Commission had to examine the alleged restriction of competition “within its actual context” and that to establish a “by effects” restriction:

it is necessary [...] to take into account any factor that is relevant, having regard, in particular, to the nature of the services concerned, *as well as the real conditions of the functioning and the structure of the markets, in relation to the economic or legal context in which that coordination occurs, regardless of whether or not such a factor concerns the relevant market.*²³

This contextual and across-markets analysis for the assessment of possible “by effect” restrictions to competition naturally and accurately reflects the analysis needed for the qualification of the type of restriction as “by object” or “by effect.” The Court reiterates a consistent line of case law, according to which, in assessing whether a decision has a restrictive effect on competition, it is necessary to examine competition within the actual context in which it would occur in the absence of the agreement in dispute. However, just like in *Cartes Bancaires*, the Court does more than that. For the first time it expressly extends this contextual analysis to all the relevant sides of multi-sided markets.

4. Analysis and Implications

The Commission’s practice in recent years has shown an increasing reliance on “by object” analysis when applying Article 101(1); this analysis has often been done in a rather simplistic and formalistic way. Indicatively, over the last ten years, the Commission has issued 18 Article 101(1) (non-cartel) infringement decisions, in 16 of which competition was considered restricted “by object.”²⁵ This record suggests that the Commission—probably prompted by the desire to achieve procedural economies—opts for the “by object” box whenever possible to avoid a full effects analysis before considering efficiency benefits under Article 101(3). To avoid such analysis the Commission has sought to create new categories of “by object” infringements that in the past would most likely have been treated as restrictions “by effect” (e.g., integrated airline alliances such as *AA/BA/IB*²⁶ and *Continental/United/Lufthansa/Air Canada*²⁷). This has blurred the boundaries between “by object” and “by effect” restrictions.²⁸

THIS RECORD SUGGESTS THAT THE COMMISSION OPTS FOR THE “BY OBJECT” BOX WHENEVER POSSIBLE TO AVOID A FULL EFFECTS ANALYSIS BEFORE CONSIDERING EFFICIENCY BENEFITS UNDER ARTICLE 101(3).

The Court’s judgment has three very important consequences regarding the qualification of “by object” restrictions. First, it is now clear that the Commission must show likely effects on competition unless it is clear that the restriction at issue, by its very nature, harms competition. Second, showing that a certain measure is merely “capable” of restricting competition is insufficient to find a “by object” restriction, except in the case of clear-cut restrictions. Finally, agreements involving complex measures, such as the CB system, are not subject to the “by object” standard because the truncated analysis under the “by object” concept is not suitable for determining whether such measures are caught by Article 101(1). A proper effects-based analysis must be conducted.

Along these main implications, another notable contribution of *Cartes Bancaires* is the clarification that, when examining conduct in two-sided markets, competition rules cannot be applied to one side only (e.g., issuing of bank cards) with total disregard of the other (e.g., acquisition of merchants). Consideration must be given to the interactions between the issuing and acquisition activities of a payment system and the consequent “indirect network effects” (i.e., that the extent of merchants’ acceptance of cards and the number of cards in circulation each affects the other). Such analysis needs to be performed when considering whether the conduct at issue has an anticompetitive object or effect. The Court’s apparent rejection of the truncated contextual analysis for the determination of “by object” restrictions by looking into the effects²⁹ increases predictability and legal certainty in this very important area.

***B. A Possible Element of Assessment of Efficiencies Under Article 101(3)*³⁰**

1. The Relevant Market for Conducting the Article 101(3) Balancing Test Pre-Mastercard

Unlike U.S. antitrust law, which applies the “rule of reason” to narrow the scope of agreements caught by an antitrust prohibition, Article 101 adopts a so-called “bifurcated” approach. Accordingly, anticompetitive effects of agreements are analyzed under Article 101(1) and pro-competitive effects have to be balanced against the anticompetitive effects under Article 101(3). In turn, Article 101(3) exempts from the prohibition of Article 101(1) agreements that: (i) improve the production or distribution of goods or (ii) promote technical or economic progress (i.e., lead to “efficiencies”) while allowing consumers a fair share of the resulting benefits without (iii) imposing restrictions which are not indispensable to the attainment of these objectives or (iv) allowing the elimination of competition in respect of a substantial part of the relevant market.

These four conditions are cumulative and exhaustive. The bifurcation of Article 101 entails that there is no balancing of overall effects under Article 101(1) and implies that Article 101(3) provides, in principle, the only framework for conducting an economic analysis of the consumer/welfare benefits that a particular agreement creates.

Under the Article 101(3) Guidelines (the “Guidelines”),³¹ to allow consumers a fair share of the benefits and exempt an anticompetitive agreement from prohibition, the net effect of an agreement must at least be neutral from the point of view of those consumers directly or likely affected by it.³² This concretely means that the assessment of benefits flowing from restrictive agreements is, in principle, made within the confines of each relevant market to which the agreement relates, i.e., efficiencies within a relevant market must outweigh the anticompetitive effects produced by the agreement within that same relevant market. Therefore, as a rule, in situations such as those present in two-

THE COURT’S APPARENT REJECTION OF THE TRUNCATED CONTEXTUAL ANALYSIS FOR THE DETERMINATION OF “BY OBJECT” RESTRICTIONS BY LOOKING INTO THE EFFECTS INCREASES PREDICTABILITY AND LEGAL CERTAINTY IN THIS VERY IMPORTANT AREA.

THEREFORE, AS A RULE, IN SITUATIONS SUCH AS THOSE PRESENT IN TWO-SIDED MARKETS, NEGATIVE EFFECTS ON CONSUMERS IN ONE PRODUCT MARKET CANNOT BE COMPENSATED BY POSITIVE EFFECTS FOR CONSUMERS IN ANOTHER UNRELATED PRODUCT MARKET.

sided markets, negative effects on consumers in one product market cannot be compensated by positive effects for consumers in another unrelated product market.

The Guidelines provide only a limited exception to this rule where the two markets are related, provided that the “group of consumers affected by the restriction and benefiting from the efficiency gains are *substantially the same*”³³ (so-called “consumer commonality”). For example, in assessing the efficiencies in *Continental/United/Lufthansa/Air Canada*,³⁴ the Commission took into account the benefits produced on routes connected to the route of concern because there was considerable commonality between passenger groups using them. The main advantage of this “consumer commonality” is that by limiting the possibility of a balancing across markets, the Commission avoids subjective evaluations and comparisons across different consumers.

However, as the U.K. Office of Fair Trading pointed out in its “101(3) Discussion Note,” matching those who benefit to those who bear the costs may, at times, lead to undesirable results.³⁵ In *MasterCard*, for instance, the platform under consideration was a payment cards system and the two sides of the market were cardholders and merchants. These two groups of consumers are interdependent to the extent that a cardholder will consider the potential use of a card (in shops, ATMs etc.) when deciding to subscribe to a new payment card system (the platform), while merchants will consider the number of potential cardholders when accepting a specific card. Solely taking into account efficiencies that can be generated by one group (e.g., cardholders) omits taking account of equally important efficiencies for the viability of the system that serve the interests of another (e.g., merchants).

Under the above-described Commission approach on the balancing of cross-market efficiencies, the definition of the relevant market limits the scope of the benefits that can be demonstrated by the parties, notwithstanding the multi-sided nature of a market. As a result, if the market definition is not consistent, parties may be unduly deprived of the benefits of 101(3). Commentators have pointed out that there is case law requiring the Commission to, at times, take into account the beneficial effects of the agreement on any market, regardless of a specific link with the relevant market, i.e., irrespective of “consumer commonality.”³⁶ This interpretation is hard to reconcile with a textual reading of the Guidelines. The *MasterCard* ruling therefore offered a good opportunity for the Court to clarify the framework of analysis under Article 101(3).

COMMENTATORS HAVE POINTED OUT THAT THERE IS CASE LAW REQUIRING THE COMMISSION TO, AT TIMES, TAKE INTO ACCOUNT THE BENEFICIAL EFFECTS OF THE AGREEMENT ON ANY MARKET, REGARDLESS OF A SPECIFIC LINK WITH THE RELEVANT MARKET.

2. The Broadened Relevant Market for Conducting the Article 101(3) Balancing Test Post-Mastercard

The judgment originates from a Commission decision of 2007 that found that the setting of the Multilateral Interchange Fee (“MIF”) by the banks affiliated to the MasterCard network infringed Article 101.³⁷ According

to the Commission, the MIFs paid by banks providing merchants with services (“acquiring banks”) to the banks issuing the cards (“issuing banks”) had the effect of restricting competition insofar as they inflated the costs charged to merchants by their acquiring banks (so-called merchant service charges; “MSC”). This reduced price competition between acquiring banks to the detriment of merchants and their ultimate customers. The Commission found also that the MIF was not “objectively necessary” for the operation of a payment card scheme and that there was no evidence showing that any objective advantages counterbalanced the disadvantages of the MIF for merchants and their consumers.

MasterCard appealed against the decision before the GC,³⁸ and subsequently before the ECJ. The Court, concurring with Advocate General Mengozzi’s opinion,³⁹ dismissed the appeal in full. Despite upholding the GC’s judgment, the ruling provides some useful guidance on the plea of efficiencies in the context of two-sided markets.

The appellants argued that the GC had failed to take account of the efficiencies flowing from the MIF to both merchants and cardholders—the two sides of credit card transactions. The appellants claimed that the GC erred in law in focusing exclusively on the benefits to merchants, despite having recognized that efficiencies may be taken into account for any market and service and that the cardholder and merchant markets were related.⁴⁰

The Court clarified the analysis of efficiencies under Article 101(3). The Court held that, in order to assess whether a measure that creates restrictive effects in regard to one of the two groups of consumers associated with that two-sided system leads to efficiencies:

it is necessary to take into account the system of which that measure forms part, including, where appropriate, all the objective advantages flowing from that measure *not only on the market in respect of which the restriction has been established, but also on the market which includes the other group of consumers associated with that system* [emphasis added], in particular where, [...], it is undisputed that there is interaction between the two sides of the system in question. To that end, it is necessary to assess, where appropriate, whether such advantages are of such a character as to compensate for the disadvantages which that measure entails for competition.⁴¹

The Court made therefore clear that the absence of “consumer commonality” that is required by the Guidelines is not, in itself, an obstacle to cross-market efficiencies.

Accordingly, in order for efficiencies in a separate, but connected, market to be taken into account, the agreement must in the first place have “appreciable objective advantages” for consumers in the market

THE COURT MADE THEREFORE CLEAR THAT THE ABSENCE OF “CONSUMER COMMONALITY” THAT IS REQUIRED BY THE GUIDELINES IS NOT, IN ITSELF, AN OBSTACLE TO CROSS-MARKET EFFICIENCIES.

concerned. It follows that when the restrictive effects are limited to one market only of a two-sided system, the advantages occurring on a separate, but connected, market cannot in themselves compensate for such effects absent the proof of “appreciable objective advantages” on the market of concern.⁴² The ECJ added that this condition applies in

particular when, as in the *MasterCard* case, the consumers in one market “are not substantially the same” as the consumers in another market.⁴³ On the facts, the ECJ held that the appellants failed to establish any such advantages in the merchant market and, as such, the restrictions that the MIF caused to the latter could not be offset by the advantages for cardholders in the related market.

3. Analysis and Implications

Despite the Court’s rejection of the efficiency plea on its facts, *MasterCard* represents a decisive departure from the Commission policy and practice as articulated in its Article 101(3) Guidelines in three fundamental respects: (i) in principle, the Commission, in examining possible efficiencies in two-sided markets, must take into account all the objective advantages flowing from both sides of the market;⁴⁴ (ii) the Court requires a minimum of efficiencies (i.e., appreciable objective advantages) in the side in which the restrictive effects of the agreement occur for the benefits in related markets to be relevant; and (iii) once this minimum is established, however, benefits in related markets are accounted for regardless of any consumer commonality. For companies operating within the perimeter of multi-sided markets, the *MasterCard* ruling marks an important broadening of possible efficiency defense arguments, increasing the chances of benefitting from an Article 101(3) exemption.

FOR COMPANIES OPERATING WITHIN THE PERIMETER OF MULTI-SIDED MARKETS, THE MASTERCARD RULING MARKS AN IMPORTANT BROADENING OF POSSIBLE EFFICIENCY DEFENSE ARGUMENTS

This development is in line with the treatment of two-sided markets in *Cartes Bancaires* to the extent that, for the “by object” characterization, the contextual assessment operates across both sides. *MasterCard* therefore naturally reflects this broadened approach onto the application of Article 101(3). Given that the Commission can rely on aspects of all sides of a multi-sided scheme to prove the existence of a distortion of competition under Article 101(1), it is only fair for an undertaking to be able to rely on pro-competitive effects stemming from various sides of that very same scheme.

III. SECOND SIDE OF CARTES BANCAIRES: MOVING TOWARDS A SYSTEM OF FULL JUDICIAL REVIEW OF COMMISSION DECISIONS

A. *The General Standard of Full Judicial Review Applied to “Complex Economic Matters”*

1. The Principle of Effective Judicial Review of Commission Decisions

Inspired by the French administrative tradition, Article 263(2) TFEU requires that judicial control over the legality of a Commission decision is to be performed on the basis of four specific grounds of review: (i) lack of competence, (ii) infringement of an essential procedural requirement, (iii) infringement of the Treaties or of any rule of law relating to its application, or (iv) misuse of powers. This so-called “review of legality” allows EU Courts to carry out a comprehensive review of both questions of law and fact, and assess whether the evidence

relied on by the Commission is precise and sufficient to establish the existence of the alleged infringement to the requisite legal standard.

Accordingly, EU Courts may partially or completely annul a Commission decision but have no “jurisdiction to remake the contested decision” as the “assumption of such jurisdiction could disturb the inter-institutional balance established by the [EU Treaties].”⁴⁵ The Commission is therefore vested with a so-called “margin of assessment.”⁴⁶ In essence, EU Courts, and the GC in particular that has exclusive jurisdiction to find and assess the facts, are not supposed to “replace” the Commission’s decision with a new one or re-examine its merits. The review of legality is supplemented by the EU Courts’ unlimited jurisdiction—under Article 31 of Regulation No 1/2003 and in accordance with Article 261 TFEU—that empowers them, in cases where a fine has been imposed, to carry out a review of legality to substitute their own appraisal for the Commission’s and, consequently, to cancel, reduce, or increase the fine or penalty payment imposed without having to annul the contested measure on the basis of article 263 TFEU.⁴⁷

In its preliminary observations in *Cartes Bancaires* the Court reminds some important principles on judicial review that the GC needs to abide by.⁴⁸ The Court recalls that the principle of effective judicial protection is a general principle of EU law, which has been given expression by Article 47 of the Charter.⁴⁹ Citing *Chalkor*,⁵⁰ the Court further notes that, when seized to adjudicate upon an action for annulment under Article 263 TFEU, “the GC must generally undertake, [...], a *full review* [emphasis added] of whether or not the conditions for applying [Article 101 TFEU] are met.”⁵¹

Further, the Court points out that in carrying out its “full review,” the GC cannot use the “margin of assessment” which the Commission enjoys “by virtue of the role assigned to it in relation to competition policy by the EU and FEU Treaties,” to dispense with an in-depth review of the law and the facts,⁵² “Full review” is therefore, *a contrario*, to be understood as the GC’s duty to carry out its own independent assessment of all relevant facts of the case, irrespective of the Commission’s “margin of assessment.”

While the above pronouncements—that are repeated verbatim in *MasterCard*⁵³—reiterate settled EU case law, it is the first time that the Court in such clear terms dissociates in a principled manner the intensity of the judicial review from the Commission’s “margin of assessment.” Moreover, in the absence of any fines, *Cartes Bancaires* stands for authority that the full review requirement stems autonomously from the control of legality alone and is therefore unrelated to the Court’s unlimited jurisdiction under Article 31 of Regulation 1. This is particularly the case given that the case law asserting the “full judicial review” requirement (e.g., *Chalkor*, *KME*) concerned cartel cases where the GC concurrently exercised its unlimited jurisdiction with respect to fines.

2. The Application of Full Judicial Review in Complex Economic Matters

The Court also illustrated how “full judicial review” is to be exercised in practice, in the context of economic assessments. As mentioned above, the Court noted that the Commission’s margin of assessment did not mean

that the GC had to refrain from reviewing the Commission's legal classification of information of an economic nature. In doing so, it expressly dissociated the intensity of review from the margin of assessment.

More specifically, the Court clarified that even though the GC cannot substitute the Commission's economic assessment for its own, the former being institutionally responsible for making those assessments, it is:

apparent from now [emphasis added] well settled case-law that not only must the EU judicature establish, among other things, whether the evidence relied on is factually accurate, reliable and consistent, but also whether that evidence contains all the relevant information which must be taken into account in order to assess a complex situation and whether it is capable of substantiating the conclusion drawn from it.⁵⁴

In light of these principles, the Court examined whether the GC was correct to conclude that the measures had as their object the restriction of competition⁵⁵ and found that the GC had failed to fulfill its obligation to observe the "full review" standard.⁵⁶ The Court held that the GC's assessment was vitiated by a series of errors of law that taken together "indicated a *general failure* [emphasis added] of analysis" and revealed "*a lack of a full and detailed examination* [emphasis added] of the [submitted] arguments."⁵⁷

THE COURT HELD THAT THE GC'S ASSESSMENT WAS VITIATED BY A SERIES OF ERRORS OF LAW THAT TAKEN TOGETHER "INDICATED A GENERAL FAILURE OF ANALYSIS" AND REVEALED "A LACK OF A FULL AND DETAILED EXAMINATION OF THE [SUBMITTED] ARGUMENTS.

The Court found that the GC's characterization of the measures had been defective and that Article 101(1) had been misinterpreted and misapplied.⁵⁸ Most importantly, the Court noted that:

by simply reproducing on a number of occasions [...] the contents of the decision at issue, the General Court failed to review, [...], whether the evidence used by the Commission in the decision at issue enabled it correctly to conclude that the measures at issue, [...] displayed a sufficient degree of harm to competition [...], consequently whether that evidence constituted all relevant data which had to be taken into consideration for that purpose.⁵⁹

This clearly echoes the approach endorsed by the GC in the seminal *Airtours* judgment.⁶⁰

B. Implications on the Compatibility of EU Judicial Review With Article 6(1) ECHR

To the extent that the Court reiterates the principles previously set out in *Chalkor*, the Court's statements in *Cartes Bancaires*, in terms of content, are not ground-breaking. However, the unequivocal language the Court uses in asserting the GC's "full review" requirement, together with (i) the exemplarily rigorous scrutiny it exercises over the GC's actual assessment, and (ii) the reference to the "now well settled case-law," clearly signals the Court's willingness to deliver a strong message regarding the level of compatibility of the current standard of EU judicial review with the Article 6(1) ECHR requirements.

In view of the EU's forthcoming accession to the ECHR,⁶¹ the quest for compatibility of standards becomes imminent. To align judicial protection under Article 47 of the Charter to that afforded to Article 6(1) ECHR, the judicial body reviewing an administrative decision must have “full jurisdiction,” i.e., “the power to quash in all respects, on questions of fact and law, the decision of the body below.”⁶² The Court in *Cartes Bancaires* seeks to show that the EU Courts’ “full review” corresponds to the ECHR’s “full jurisdiction” requirement. In fact, it actively endorses the concept that “full review” is not just a mere theoretical contention, but reality.

THE COURT BALANCES THE NEED FOR AN EXHAUSTIVE REASSESSMENT OF THE FACTS AND THE COMMISSION’S “MARGIN OF ASSESSMENT” IN COMPLEX ECONOMIC MATTERS

The Court balances the need for an exhaustive reassessment of the facts and the Commission’s “margin of assessment” in complex economic matters.⁶³ The latter has traditionally benefitted from the more restrained review.⁶⁴ This judicial deference has evolved considerably over time and, in *Microsoft*, has even been extended to include technical matters.⁶⁵

The impetus towards a more intensive judicial review of Commission decisions originated from judgments in the field of merger control.⁶⁶ As of the landmark *KME* and *Chalkor* judgments⁶⁷ the ECJ seems to have established a trend of abstaining from the use of its traditional “manifest error of appraisal” language.⁶⁸ Whether this only served to pay lip service to the principles set out in *Menarini*, or marked the implicit reversal of the EU judiciary’s previous position vis-à-vis judicial review, remained unclear. Indeed in later judgments, like *Schindler*,⁶⁹ *Kone*,⁷⁰ and *Telefónica*,⁷¹ the Court appeared to be fairly easily satisfied with the GC’s full and unrestricted review, thereby still showing some degree of reminiscence to the abandoned manifest error mantra.

Lately, the amount of the case law on marginal review has been significantly reduced, possibly due to the gradual criminalization of EU competition law.⁷² In this regard, *Cartes Bancaires* and *MasterCard* are the latest examples of this trend, as they reinforce the methodological convergence between the ECHR case law and that of EU Courts: what ultimately matters is not the abstract description or statement on the part of the Court as to the type of control⁷³ (e.g., comprehensive or deferential, strong, or weak), but rather the way in which that review is actually exercised.⁷⁴

IV. CONCLUSIONS

Both *Cartes Bancaires* and *MasterCard* rulings have brought clarity on how two-sided markets are to be assessed in the future under Article 101.

First, *Cartes Bancaires* brings much awaited clarification of the notion of “by object” restrictions. The Court confirmed that the Commission needs to abandon its simplistic use of the “by object” restriction notion in cases that are not obviously harmful to competition and focus on the

BOTH CARTES BANCAIRES AND MASTERCARD RULINGS HAVE BROUGHT CLARITY ON HOW TWO-SIDED MARKETS ARE TO BE ASSESSED IN THE FUTURE UNDER ARTICLE 101.

actual effects of the conduct.

Second, *Cartes Bancaires* for the first time explicitly qualifies the two-sided nature of a system as part of the contextual analysis for assessing whether a conduct can be considered “sufficiently harmful” to be a restriction “by object.” As discussed above, this has important implications and increases predictability and legal certainty for undertakings operating as platforms in multi-sided markets.

Third, *MasterCard* sets an important precedent for EU competition law on how efficiencies are to be assessed in the context of Article 101(3). It not only clarifies the scope of the facts that are relevant to the competitive assessment, but also allows a broader range and type of (cross-market) efficiencies to be claimed, provided “appreciable objective advantages” in the market in which the restrictive effects occur.

Fourth, in both judgments the Court reiterates that, in reviewing Article 101 decisions, EU Courts need to exercise full and comprehensive judicial control and that the GC cannot invoke possible “complex economic assessments,” such as those often present in the analysis of “two-sided” markets, to avail itself of a limited review. This narrowed judicial deference reveals the Court’s intent to fully align the standard of judicial review to the “unlimited jurisdiction” standard required under Article 6(1) ECHR.

Finally, from a more general enforcement perspective, *Cartes Bancaires* and *MasterCard* align law with economic theory. Economic literature has convincingly shown that “[m]ulti-sided platforms are more complicated than single sided firms. Analyses or policy rules that ignore this complexity are prone to commit serious errors.”⁷⁵ Favoring a more contextual and economics-based analysis therefore leads to a sounder future legal and economic assessment of multi-sided markets. ▲

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² *Groupement des Cartes Bancaires (CB) v Commission*, C-67/13 P, EU:C:2014:2204, not yet reported.

³ *MasterCard and Others v Commission*, C-382/12 P, EU:C:2014:2201, not yet reported.

⁴ J.-Ch. Rochet & J. Tirole, *Two-Sided Markets: A Progress Report*, IDEI Working Paper, n. 275 (November 2005).

⁵ See Interim Report I - Payment Cards - Sector Inquiry under Article 17 Regulation 1/2003 on retail banking - 12 April 2006, 2006/04/12, p. 6, available at http://ec.europa.eu/competition/sectors/financial_services/inquiries/interim_report_1.pdf.

⁶ E.g., see S. Greenaway, *Competition between stock exchanges: findings from DG Competition’s investigation into trading in Dutch equities*, COMPETITION POLY NEWSLETTER, p. 69; European Commission Press Release IP/00/1164, *Commission Plans to Clear Certain Visa Provisions, Challenges Others* (Oct. 16, 2000). See also the Commission Decisions COMP/34579 – *MasterCard 1* [2007]; COMP/38606 *Groupement des Cartes Bancaires “CB”*[2007]; and the Commission investigation in COMP/40049 - *MasterCard II* [2013]. See also

Working document of the Commission—Applicability of Article 81 of the EC Treaty to multilateral interbank-payments in SEPA Direct Debit (Text with EEA relevance) 2009/10/30, *available at* http://ec.europa.eu/competition/sectors/financial_services/SEPA_working_document.pdf.

⁷ Commission Decision COMP/M.4731 - *Google/DoubleClick* [2008].

⁸ Mécanisme de Régulation de la Fonction Acquéreur.

⁹ Commission Decision COMP/AT.38606 – *Groupeement des Cartes Bancaires* “CB” [2007].

¹⁰ *CB v Commission*, T-491/07, EU:T:2012:633.

¹¹ See Opinion of Advocate General Wahl, *Groupeement des Cartes Bancaires (CB) v Commission*, C-67/13 P, EU:C:2014:1958.

¹² For companies, the characterization of a restriction “by object” in non-cartel situations has serious consequences. It shifts the burden of proof leaving Article 101(3) as the only avenue to escape prohibition. The efficiency defense of Article 101(3) is rarely invoked successfully in “by object” cases and as such the pressure to accept conditions on the arrangements in order to settle with the Commission and avoid an infringement decision has grown in recent years. Moreover, “by object” restrictions are now presumed to appreciably restrict competition and are automatically excluded from the safe harbor of the *De Minimis Notice* (Communication from the Commission—Notice on agreements of minor importance which do not appreciably restrict competition under Article 101(1) of the Treaty on the Functioning of the European Union, of 25.6.2014, C(2014) 4136 final, (Point 13)). See also *Expedia Inc. v Autorité de la concurrence and Others*, C-226/11, EU:C:2012:795.

¹³ See *Groupeement des Cartes Bancaires (CB) v Commission*, C-67/13 P, ¶58. See for a similar interpretation, opinion of Advocate General AG Trstenjak, *GlaxoSmithKline Services and Others v Commission and Others*, C-501/06 P, EU:C:2009:610, ¶101.

¹⁴ *Groupeement des Cartes Bancaires (CB) v Commission*, C-67/13 P, C-67/13 P, ¶50.

¹⁵ *Id.*, ¶¶52, 58, 69.

¹⁶ *Id.*, ¶51.

¹⁷ *Id.*, ¶¶53 and 78.

¹⁸ *Id.*, ¶¶53 and 78.

¹⁹ See, *Allianz Hungária Biztosító and Others*, C-32/11, EU:C:2013:160, ¶¶46-51; *Pierre Fabre Dermo-Cosmétique*, C-439/09, EU:C:2011:649, ¶35; *GlaxoSmithKline Services and Others v Commission and Others*, C-501/06 P, EU:C:2009:610, ¶58; and *Beef Industry Development and Barry Brothers*, C-209/07, EU:C:2008:643, ¶¶15 and 21.

²⁰ *Groupeement des Cartes Bancaires (CB) v Commission*, C-67/13 P, ¶¶65-71.

²¹ *Id.*, ¶75.

²² *Id.*, ¶77.

²³ *MasterCard and Others v Commission*, C-382/12 P, EU:C:2014:2201, ¶177.

²⁴ *Id.*, ¶165. See also Opinion of Advocate General Mengozzi, *MasterCard and Others v Commission*, C-382/12 P, EU:C:2014:4, ¶52 and relevant case-law cited in footnote 50.

²⁵ In the period from 01/05/2004 to 13/11/2014, the Commission found anticompetitive practices to restrict competition “by object” in the following cases (including Article 9 commitment decisions): COMP/39398 - *Visa MIF* [2014]; COMP/39612 - *Perindopril (Servier)* [2014]; COMP/39685 - *Fentanyl*

[2013]; COMP/39226 – Lundbeck [2013]; COMP/39839 - *Telefónica and Portugal Telecom* [2013]; COMP/39595 - *Continental/United/Lufthansa/Air Canada* [2013]; COMP/39736 - *Siemens/Areva* [2012]; COMP/39847 - *Ebooks* [2012]; COMP/39596 - *BA/AA/IB* [2010]; COMP/39510 - *Ordre National des Pharmaciens en France (ONP)* [2010]; COMP/38606 - *Groupement des cartes bancaires “CB”* [2007]; COMP/38698 – *CISAC* [2008]; COMP/38662 - *GDF/ENEL* [2004]; COMP/36623, COMP/36820, COMP/37275 - *SEP et autres/Peugeot SA* [2005]; COMP/38549 - *Barème d’honoraires de l’Ordre des Architectes belges* [2004]; COMP/37980 - *Souris – Topps* [2004]. The only decision in which the Commission judged the practice anticompetitive by its effects on competition was adopted in COMP/37860 - *Morgan Stanley/Visa International and Visa Europe* [2007]. In COMP/34579 – *Mastercard I* [2007], the Commission admitted that it could not reach a “definite conclusion” as to whether the alleged practice concerns a restriction by object (see recital 407 of the decision).

²⁶ Commission Decision COMP/39596 – *BA/AA/IB* [2010].

²⁷ Commission Decision COMP/AT.39595 – *Continental/United/Lufthansa/Air Canada* [2013].

²⁸ See Opinion of Advocate General Wahl, *Groupement des Cartes Bancaires (CB) v Commission*, C-67/13 P, EU:C:2014:1958, ¶¶47 et seq.; See also speech of Alexander Italianer, in *Competitor Agreements under EU Competition Law*, 40th Annual Conference on international Antitrust Law and Policy at Fordham, New York (26 September 2013): “[A]part from cases like price-fixing, output limitations and the like, the line between restrictions by object and those by effect is not always bright. Reading its more recent rulings one may wonder whether the Court, whilst finding a restriction by object, may not have gone rather far towards analysing the effects of the agreement when it looked at the market structure, the functioning of the market, the degree of concentration, the market power of the firms involved, etc.” Available at http://ec.europa.eu/competition/speeches/text/sp2013_07_en.pdf.

²⁹ See e.g., *Allianz Hungária Biztosító and Others*, C-32/11, EU:C:2013:160, ¶¶46-51

³⁰ The present section reflects the main findings of the recently published paper of one of the co-authors (together with Claire-Marie Carrega) in the December 16, 2014 issue of CPI Europe Column entitled ‘The application of Article 101(3) in the context of multi-sided markets following the MasterCard ruling’.

³¹ Communication from the Commission - Guidelines on the application of Article 101(3) TFEU (formerly Article 81(3) TEC), OJ C 101 of 27.4.2004.

³² *Id.*, ¶85.

³³ *Id.*, ¶43.

³⁴ Commission Decision of 23 May 2013 in Case COMP/39.595– *Continental/United/Lufthansa/Air Canada*.

³⁵ OFT, *Article 101(3) – A discussion of narrow versus broad definition of benefits* (Discussion note for OFT breakfast roundtable) 8 (2010).

³⁶ See for instance the judgment of 28 February 2002, *Compagnie générale maritime and others v Commission*, T-86/95, EU:T:2002:50, ¶343.

³⁷ Commission Decisions COMP/34.579 - *MasterCard*, COMP/36.518 - *EuroCommerce* and COMP/38.580 - *Commercial Cards*.

³⁸ *MasterCard and Others v Commission*, T-111/08, EU:T:2012:260.

³⁹ Opinion of Advocate General Mengozzi, *MasterCard and Others v Commission*, C-382/12 P,

EU:C:2014:42.

⁴⁰ *MasterCard and Others v Commission*, C-382/12 P, EU:C:2014:2201, ¶229. The applicants essentially claimed that the Commission should have balanced the restrictive effects that the MIF had on merchants against any efficiencies flowing from the MIF and, in particular, those benefitting cardholders (the avoidance of bearing a much higher cost if the MIF were removed or reduced).

⁴¹ *Id.*, ¶237.

⁴² *Id.*, ¶241.

⁴³ Accordingly, if the benefits put forward by the parties had met the “appreciable objective advantages” threshold, “all the advantages on both consumer markets in the MasterCard scheme, including therefore on the cardholders’ market, could, if necessary, have justified the MIF if, taken together, those advantages were of such a character as to compensate for the restrictive effects of those fees” (*id.*, ¶241).

⁴⁴ See *MasterCard and Others v Commission*, C-382/12 P, EU:C:2014:2201, ¶240: “the General Court was, in principle, required, when examining the first condition laid down in Article 81(3) EC, to take into account all the objective advantages flowing from the MIF, not only on the relevant market, namely the acquiring market, but also on the separate but connected issuing market.”

⁴⁵ *SIV and Others v Commission*, T-68/89, EU:T:1992:38, ¶¶319-320.

⁴⁶ Sometimes interchangeably referred to as “margin of appreciation,” “margin of discretion.” See H. Schweitzer, *Judicial Review in EU Competition Law*, RESEARCH HANDBOOK ON EU ANTITRUST LAW (D. Geradin & I. Lianos, eds.), footnote 4.

⁴⁷ See, *KME Germany and Others v Commission*, C-272/09 P, EU:C:2011:810, ¶103 and *Chalkor v Commission*, C-386/10 P, EU:C:2011:815, ¶63.

⁴⁸ *Groupement des Cartes Bancaires (CB) v Commission*, C-67/13 P, ¶¶41-47.

⁴⁹ *Id.*, ¶43.

⁵⁰ *Chalkor v Commission*, C-386/10 P, EU:C:2011:815.

⁵¹ *Groupement des Cartes Bancaires (CB) v Commission*, C-67/13 P, ¶44.

⁵² *Id.*, ¶45.

⁵³ *Groupement des Cartes Bancaires (CB) v Commission*, C-67/13 P, ¶155.

⁵⁴ *Id.*, ¶46.

⁵⁵ *Id.*, ¶47.

⁵⁶ *Id.*, ¶91.

⁵⁷ *Id.*, ¶89.

⁵⁸ *Id.*, ¶¶55, 59, and 71.

⁵⁹ *Id.*, ¶90.

⁶⁰ *Airtours plc v Commission*, T-342/99, EU:T:2002:146.

⁶¹ Article 52(3) of the Charter of Fundamental Rights of the European Union, (2010/C 83/02).

⁶² *Menarini Diagnostics S.R.L. v Italy*, Appl. no. 43509/08, [2011], ¶59; For an extensive analysis on the concept of “full jurisdiction” see A. Scordamaglia-Tousis, *EU Cartel Enforcement: Reconciling Effective Public Enforcement with Fundamental Rights*, WOLTERS KLUWER 109-110 (2013).

⁶³ As indicated by Judge N. Forwood, “‘complexity’ refers more to the nature of assessment that needs to be made, rather than its technical or evidential difficulty” in N. Forwood, *The Commission’s “More Economic*

Approach – Implications for the Role of the EU Courts, the Treatment of Economic Evidence and the Scope of Judicial Review, in EUROPEAN COMPETITION LAW ANNUAL 2009: THE EVALUATION OF EVIDENCE AND ITS JUDICIAL REVIEW IN COMPETITION CASES, p. 267 (Ehlermann & Marquis, eds. 2010).

⁶⁴ Namely, “whether the rules on procedure and on the statement of reasons have been complied with, whether the facts have been accurately stated and whether there has been a manifest error of appraisal or misuse of powers.” See for instance *Visa Europe and Visa International Service v Commission*, T-461/07 EU:T:2011:181, ¶70 and *Aalborg Portland and Others v Commission*, C-204/00 P, ¶279.

⁶⁵ *Microsoft v Commission*, T-201/04, EU:T:2007:289, ¶¶87-89.

⁶⁶ See, *Commission v Tetra Laval*, C-12/03 P, EU:C:2005:87; *Airtours plc v Commission*, T-342/99, EU:T:2002:146 and *Schneider Electric SA v Commission*, T-310/01, EU:T:2002:254.

⁶⁷ *KME Germany and Others v Commission*, C-272/09 P, EU:C:2011:810, ¶106 and *Chalkor v Commission*, C-386/10 P, EU:C:2011:815, ¶67.

⁶⁸ See for instance R. Wesseling & M. Van der Woude, *The lawfulness and Acceptability of Enforcement of European Cartel Law*, 35(4) WORLD COMPETITION 580 (2012).

⁶⁹ *Schindler Holding Ltd and Others v Commission*, C-501/11 P, EU:C:2013:522, ¶¶157-158 and 166.

⁷⁰ *Kone and Others v Commission*, C-510/11 P, EU:C:2013:696, ¶¶27, 43-44, 55-56, and 92-93.

⁷¹ *Telefónica and Telefónica de España v Commission*, C-295/12 P, EU:C:2014:2062, ¶59.

⁷² Opinion of Advocate General Mengozzi, *MasterCard and Others v Commission*, C-382/12 P, EU:C:2014:42, ¶119.

⁷³ *MasterCard and Others v Commission*, C-382/12 P, EU:C:2014:2201, ¶¶158-159.

⁷⁴ Opinion of Advocate General Mengozzi, *MasterCard and Others v Commission*, C-382/12 P, ¶125: “[...] abstract statements of the criteria defining the scope of the review that the GC intends to carry out is not in itself open to criticism, if it proves to be the case that that Court has in fact carried out a thorough review, both in law and in fact, in light of the evidence adduced in support of the pleas relied on before it.

⁷⁵ David S. Evans & Richard Schmalensee, *The Antitrust Analysis Of Multi-Sided Platform Businesses*, January 30, 2013, available at <http://rschmal.scripts.mit.edu/docs/Evans%20Schmalensee%20Multi-Sided%20Platforms%2030Jan2013.pdf>.

*Object Restrictions
and Two-sided
Markets in EU
Competition Law
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BY RENATO NAZZINI & ALI NIKPAY

Object Restrictions and Two-sided Markets in EU Competition Law after *Cartes Bancaires*

BY RENATO NAZZINI & ALI NIKPAY¹

On September 11, 2014, the Court of Justice overturned the judgment of the General Court upholding the European Commission's decision in *Groupement des Cartes Bancaires*. This paper contends that the Court of Justice's judgment is significant in two respects: First, it attempts to clarify apparent ambiguities and discrepancies in the case law on object restrictions and provides a more structured framework than previously existed for determining whether an agreement is restrictive in this way. However, the paper argues that in doing so the judgment does not fundamentally alter the law in this area as some have argued. Second, the paper contends that the judgment makes important findings as regards two-sided markets, clearly establishing the principle that the interaction between them must be taken into account regardless of whether the restriction under review applies only to one side of the market.

I. INTRODUCTION

On September 11, 2014, the Court of Justice overturned the judgment of the General Court upholding the European Commission's ("Commission") decision in *Groupement des Cartes Bancaires* ("Cartes Bancaires"). The judgment has been widely welcomed by practitioners for two main reasons. First, it is argued that it severely narrows the scope of application of the concept of restriction by object. Second, it is asserted that the judgment establishes that in cases involving two-sided markets, both sides must be taken into account in a determination as to whether Article 101(1) applies. This is the case even where, as in *Cartes Bancaires*, the apparent restriction takes place only on one (side of the) market.

This paper begins by summarizing the EU Courts' existing case law on object restrictions. It goes on to analyze the judgment in *Cartes Bancaires*. It argues that, while *Cartes Bancaires* makes important findings as regards two-sided markets, the judgment does not fundamentally alter the law for object cases. Rather the judgment attempts to clarify apparent ambiguities and discrepancies in the case law and provides a more structured framework than previously existed for determining whether an agreement is restrictive by object.

II. THE CONCEPT OF RESTRICTION BY OBJECT PRIOR TO *CARTES BANCAIRES*

Article 101(1) prohibits agreements that have as their object or effect the prevention, restriction, or distortion of competition. In line with the plain language of Article 101(1), the EU Courts have consistently held that "object" and "effect" are alternative tests. If an agreement is anticompetitive by object, there is no need to prove that it has restrictive effects.²

There is no definition in Article 101(1) for “object” restrictions. This required the EU Courts to establish the test that was to be applied through case law. The formula traditionally adopted by the EU Courts was that agreements which “by their very nature have the potential to restrict competition” were object restrictions.³ As such, object findings were traditionally limited to situations in which an “analysis of the clauses” of the agreement under review “reveal[ed] the effect on competition to be sufficiently deleterious.”⁴

What was meant by “sufficiently deleterious”? No clear definition was given by the EU Courts. It was left to the Commission to set out its understanding of the case law, which it did in its 2004 Guidelines on the application of Article 101(3).⁵ Therein the Commission argued that object restrictions were those that had “such a high potential of negative effects on competition that it is unnecessary for the purposes of applying Article [101(1)] to demonstrate any actual effects on the market.” The Guidelines went on to state that this “presumption is based on the serious nature of the restriction and on experience showing that restrictions of competition by object are likely to produce negative effects on the market.”⁶

Agreements that were almost always found to be “sufficiently deleterious” were those that had the obvious consequence of price-fixing, market-sharing, or collective exclusive dealing⁷ (more commonly known as “group boycotts”). The exchange of commercially sensitive information, particularly in the context of a cartel, was also highly likely to be caught by the object test.⁸ For vertical agreements, only those that impeded parallel trade within the European Union⁹ or enforced resale price maintenance (“RPM”)¹⁰ were likely to be considered restrictive by object.

Although somewhat form-based, the assessment as to whether or not an agreement was restrictive by object was not, however, limited to the arrangement’s wording or its provisions. The analysis also had to have regard to the agreement’s objective aims¹¹ and the legal and economic context in which the agreement was implemented.¹² As such, agreements that clearly appeared severely to restrict competition were, occasionally, found not to be restrictive by object on their facts. For instance, in *Erauw-Jacquery*,¹³ the Court of Justice held that an agreement prohibiting a licensee from exporting, directly or indirectly, certain varieties of cereal seeds protected by plant breeders’ rights did not infringe Article 101(1) given the costs and risks involved in developing seed varieties.¹⁴

ALTHOUGH SOMEWHAT FORM-BASED, THE ASSESSMENT AS TO WHETHER OR NOT AN AGREEMENT WAS RESTRICTIVE BY OBJECT WAS NOT, HOWEVER, LIMITED TO THE ARRANGEMENT’S WORDING OR ITS PROVISIONS.

The EU Courts also held that it might be necessary to consider the actual conduct and behavior of the parties on the market.¹⁵ The subjective intention of the parties was relevant but was not determinative.¹⁶ An agreement could be restrictive by object even if the parties to it were able to show that restricting competition was not their aim, or that they had other laudable motives.¹⁷ Conversely, the Commission and the EU Courts could not find that a particular agreement had as its object a restriction of competition merely because the aim of the parties was to restrict competition.¹⁸

This approach of course raised a question as to the extent and depth to which it was necessary to analyze the particular facts of a case before coming to a conclusion as to whether an agreement was restrictive by object. For reasons set out elsewhere,¹⁹ we believe that an analysis of the case law reveals that the EU Courts have not traditionally required the Commission to undertake a detailed analysis of the facts to prove that “obvious” cases (e.g. price-fixing, market-sharing, RPM, etc.) were restrictive by object. In our view, cases such as *Erauw-Jacquery* were distinguishable on their facts and did not undermine the basic position set out in the bulk of the Court of Justice’s jurisprudence.

The facts were, however, more important in cases which were “less obviously” harmful but yet still potentially restrictive by object.²⁰ In such cases a more detailed assessment of the agreements in questions than would have occurred in “obvious” cases was required under the case law. This is perhaps best summarized by the Commission Guidelines on Article 101(3) which state that “an examination of the facts underlying the agreement and the specific circumstances in which it operates may be required before it can be concluded whether a particular restriction constitutes a restriction of competition by object.”²¹

HOWEVER, THIS DID NOT MEAN THAT
THE EFFECTS OF THE AGREEMENT HAD
TO BE TAKEN INTO ACCOUNT.

However, this did not mean that the effects of the agreement had to be taken into account. In fact the Guidelines stressed, “there is no need to take account of ... concrete effects. In other words, for the purpose of applying [Article 101(1)] no actual anti-competitive effects need to be demonstrated.”²²

Three recent cases—*T-Mobile Netherlands*, *E.ON Ruhrgas*, and *Allianz Hungária*—however, created uncertainty as to the status of the law and the extent of analysis that was required for an object finding.

In *T-Mobile* the Court of Justice held that for:

a concerted practice to be regarded as having an anti-competitive object, it is sufficient that it has the potential to have a negative impact on competition. In other words, the concerted practice must simply be capable in an individual case, having regard to the specific legal and economic context, of resulting in the prevention, restriction or distortion of competition within the [internal] market.²³

This paragraph, on which the Commission and national competition authorities (“NCAs”) have relied heavily in recent years, was clearly open to interpretation. On the one hand it could be argued that it significantly increased the scope of application of the object concept, since many types of agreements are, on their face, “capable” of restricting competition; on the other hand, it could be asserted that the judgment narrowed the object box by establishing an additional requirement to be fulfilled for finding that an agreement is restrictive of competition by object. Under this reading, *T-Mobile* required the Commission and NCAs to show, albeit to a low standard, some likelihood that the agreement would have an anticompetitive effect (or rather that the agreement was capable of having restrictive effects on competition).

While on its face *T-Mobile* can be read in both ways, we have previously argued that the better view is that paragraph 31 of *T-Mobile* did not impose an extra obligation on the Commission.²⁴ There are several reasons for this. First, paragraph 29 of *T-Mobile* describes restrictions by object as those that are “by their very nature, [...] injurious to the proper functioning of competition.”²⁵ It is hard, if not impossible, as a matter of logic to reconcile this finding with a need to go further and show that such a restriction is “capable” of harming competition (the argument would be circular). Second, the Court of Justice explicitly held in paragraph 30 of the judgment that there is no need to show effects where it is demonstrated that an agreement has an anticompetitive object (contrary to the claim by the referring Dutch court).²⁶ As such, in our view paragraph 31 of *T-Mobile* is no more than a restatement of the long-standing position that, when dealing with object restrictions, there is no need to demonstrate any actual or potential effects.²⁷ However, as noted above, the language of the judgment is ambiguous and open to interpretation.

Another recent judgment that has caused confusion is *E. On Ruhrgas*.²⁸ In this case, the General Court partially set aside the Commission’s finding that an agreement between the German gas incumbent Ruhrgas and the French gas incumbent GDF, which stipulated that the latter would not enter the German market, constituted a restriction of competition by object. The General Court found that at the material time (i.e. before the liberalization of the European gas markets) there was no potential competition between Ruhrgas and GDF in Germany as Ruhrgas had a lawful *de facto* territorial monopoly there (together with some other German suppliers) as part of the German pre-liberalization market organization.²⁹ This has led some commentators to argue that an object finding requires the Commission to undertake a detailed counterfactual/potential effects analysis.

In our view, this is not the correct interpretation of the judgment. The better view is that the requirement to demonstrate that the parties were at least potential competitors was simply part of the analysis of whether a market-sharing agreement was “by its very nature” restrictive of competition in its legal and economic context. If, due to the organization of a market, there is no potential for competition, there is by implication no competition to restrict.

IF, DUE TO THE ORGANIZATION OF A MARKET, THERE IS NO POTENTIAL FOR COMPETITION, THERE IS BY IMPLICATION NO COMPETITION TO RESTRICT.

Finally, and perhaps most confusingly, there is the Court of Justice’s ruling in *Allianz Hungária*.³⁰ Following a request for a preliminary ruling, the Court of Justice had to analyze whether bilateral agreements between an insurance company and car repairers (under which the hourly rate repairers could charge depended, *inter alia*, on how many insurance contracts the repairer has brokered for the insurance company) restricted competition by object.

In its judgment, the Court of Justice began in the traditional way by stating that where it had been demonstrated that an agreement had an anticompetitive object, there was no need to prove that it had anticompetitive effects.³¹ Consistent with this, the Court of Justice went on to recall that restrictions by object

were those that “by their very nature” were injurious to competition³² and reiterated the traditional criteria to be relied on when assessing whether an agreement had an anticompetitive object.

The Court of Justice then went on to refer to *T-Mobile*³³ and held that in order:

for the agreement to be regarded as having an anti-competitive object it is sufficient that it has the potential to have a negative impact on competition, that is to say, that it be capable in an individual case of resulting in the prevention, restriction or distortion of competition within the internal market. Whether and to what extent, in fact, such an effect results can only be of relevance for determining the amount of any fine and assessing any claim for damages.³⁴

The Court of Justice then held that for an object finding it would “be necessary to determine whether [the agreements in question], taking account of the economic and legal context of which they form part...are sufficiently injurious to competition on the car insurance market as to amount to a restriction of competition by object.”³⁵

Up to this point the judgment is broadly consistent with the existing case law. However, at paragraph 47 the Court of Justice appeared to go further. It held that the referring court had to determine whether, given the particular features of the market in question, its “proper functioning...is likely to be significantly disrupted by the agreements at issue.” While still possible to read this paragraph as requiring no more than an analysis of the agreement in its legal and economic context, it could be argued that this part of the judgment came close to requiring at least some effect analysis to be undertaken.

More significantly, and controversially, the Court then held, at paragraph 48, that the agreements in question:

would also amount to a restriction of competition by object in the event that the referring court found that it is likely that, having regard to the economic context, competition on that market would be eliminated or seriously weakened following the conclusion of those agreements. In order to determine the likelihood of such a result, [the referring] court should in particular take into consideration the structure of that market, the existence of alternative distribution channels and their respective importance and the market power of the companies concerned.

IN OUR VIEW, THE FACTORS AND CRITERIA ON WHICH THE COURT OF JUSTICE SET OUT THIS PARAGRAPH RISKED BLURRING THE BOUNDARIES BETWEEN RESTRICTIONS BY OBJECT AND BY EFFECT.

In our view, the factors and criteria on which the Court of Justice set out this paragraph risked blurring the boundaries between restrictions by object and by effect. In particular the Court of Justice appeared to require an assessment to be made of the likelihood that the agreement in question would

eliminate or seriously weaken competition; in other words, it looked for causality between the agreement and likely negative effects on completion (rather than merely assessing the economic context—we will return to this below).

This becomes even clearer when looking at the factors that, in the judgment, are noted as being relevant. The Court referred to the market structure, the existence of alternative distribution channels, and, critically, the market power of the companies concerned. These are, of course, the very factors that would be relied on when analyzing the potential restrictive effects of an agreement on competition. Consequently, it could be argued that in *Allianz Hungária* the Court of Justice seemed to require a potential effects analysis to be conducted in object cases.

It would, however, seem unlikely that this would have been the intention of the Court; once anticompetitive effects are established, there is no need to prove that the agreement has an anticompetitive object. As such, both as a matter of logic and as a matter of existing law, this conclusion seems an untenable one to reach.

Another way of interpreting paragraph 48 is to see it as an explanation by the Court that there is a third type of restriction, one that sits between object and effect. Under this reading a full effects analysis is not required if it is clear from a summary analysis that, as a result of the agreement, competition would be eliminated or seriously weakened. This test would be similar to the “abridged” rule of reason analysis in U.S. federal antitrust law; the agreement is not prohibited *per se* but, equally, no full market analysis is required.

However, this way of reading the judgment is problematic. First, and most obviously, Article 101(1) makes reference only to object and effect; there is no intermediate category between the two in the TFEU. Second, it would significantly blur the line between object and effect cases, with the result of making the law less certain and lowering the burden of proof for certain restrictions that should, in principle, be examined under the effect test. Third, there is nothing in the pre-existing case law to support this development.

In our view, a better reading of paragraph 48 is that it was an attempt, albeit a poorly drafted one, by the Court of Justice to enunciate the test for “less obvious” object restrictions and explain how the *T-Mobile* “capability” test is to be applied in practice.

A BETTER READING OF PARAGRAPH 48 IS THAT IT WAS AN ATTEMPT, ALBEIT A POORLY DRAFTED ONE, BY THE COURT OF JUSTICE TO ENUNCIATE THE TEST FOR “LESS OBVIOUS” OBJECT RESTRICTIONS

If this interpretation is correct, the judgment by the Court in *Cartes Bancaires* was a further attempt to clarify the confusion in this area of the law. This attempt may well have been prompted by the critical Opinion of Advocate General Wahl, who rightly pointed out how “[c]ertain rulings seem to have made it difficult to draw the necessary distinction between the examination of the anti-competitive object and the analysis of the effects on competition of agreements between undertakings,” as “[i]n a number of cases, consideration of [the economic and legal] context is similar to a genuine examination of the potential effects of the measures at issue.”³⁶

III. THE CARTES BANCAIRES CASE

In its decision of October 17, 2007 (2), the Commission concluded that the Groupement des Cartes Bancaires had infringed Article 101 of the Treaty.³⁷

The Groupement des Cartes Bancaires (“the Groupement”) managed a card payment system that accounted for over 70 percent of card payments in France at the time of the decision. The Groupement had agreed on a series of fees to be paid by some member banks when issuing cards under certain conditions. A key measure was the Mécanisme Régulateur de la Fonction Acquéreur (“MERFA”), a formula that determined the fee to be paid for each card issued where a bank was not, according to the formula, sufficiently active in concluding contracts with merchants (“acquiring merchants”) or installing automated teller machines (“ATMs”). The other measures were: (i) a membership fee per card, (ii) an additional membership fee, and (iii) a “wake-up” fee per card issued over and above the maximum number of cards stipulated by the Groupement.³⁸

According to the Commission, despite formally applying equally to all Groupement members, the fee measures were carefully designed to hinder the ability of, in particular, new entrants to issue cards at prices that would be lower than that of the large, incumbent banks. By increasing the cost of the cards issued by new entrants, the measures had in practice the effect of keeping the price of payment cards artificially high to the benefit of the major French banks. Consumers were therefore deprived of cheaper cards and a wider range of products.³⁹

During the administrative proceedings, the Groupement argued that the purpose of the measures was twofold: (i) to encourage those members of the Groupement that are issuers rather than acquirers to develop their acquiring activities; this reflected the two-sided nature of the activities in question and (ii) to give financial recognition to the efforts of the “founding members.”⁴⁰

The Commission rejected these arguments. In its view, the way the parties claimed the MERFA operated was at odds with other interbank charges applicable within the Groupement: some of the interchange fees paid on each transaction ran counter to the MERFA by penalizing acquiring and rewarding card issuing, and some of the other measures notified by the Groupement together with the MERFA—the additional membership fee and the dormant-members wake-up mechanism—penalized banks that had issued “too few” cards in the past.⁴¹

CRITICALLY, MANY OF THE DOCUMENTS OBTAINED DURING THE ON-SITE INSPECTIONS SHOWED (ACCORDING TO THE DECISION) THAT THE AIM OF THE MEASURES WAS TO PREVENT COMPETITION FROM NEW ENTRANTS ISSUING CARDS AT PRICES LOWER THAN THOSE OF THE LARGE FRENCH BANKS.

Critically, many of the documents obtained during the on-site inspections showed (according to the Decision) that the aim of the measures was to prevent competition from new entrants issuing cards at prices lower than those of the large French banks.⁴² In conclusion, the Commission found that the arrangements under review were restrictive of competition by object.⁴³

The General Court upheld the Commission's decision. It found, *inter alia*, that it was apparent from the formulas used in the measures in question that they hindered new entry on the market for the issuing of payment cards in France⁴⁴ and that the Commission had relied properly on the internal documents of the parties.⁴⁵ The General Court went on to say that Article 101(1) did not provide an exhaustive list of prohibited practices and that the concept of infringement by object "should not be given a strict interpretation."⁴⁶

The General Court also rejected the argument that the analysis of the need to balance issuing and acquiring activities had to be carried out under Article 101(1). It held that such an argument failed because the relevant market was the issuing market and not the payment system market, implying that factors concerning a different, but related, market do not need to be taken into account under Article 101(1).⁴⁷ The Groupement appealed to the Court of Justice, in part on the issue of whether the agreement was restrictive by object.

The Court of Justice held, *inter alia*, that the General Court had incorrectly concluded that the measures had as their object the restriction of competition under Article 101(1). It held that:

[h]aving acknowledged that the formulas for those measures sought to establish a certain ratio between the issuing and acquisition activities of the members of the Grouping, the General Court was entitled at the most to infer from this that those measures had as their object the imposition of a financial contribution on the members of the Grouping which benefit from the efforts of other members for the purposes of developing the acquisition activities of the system.⁴⁸

The Court of Justice further held that "[s]uch an object cannot be regarded as being, by its very nature, harmful to the proper functioning of normal competition," particularly as the General Court had found that combatting free-riding in the system was a legitimate objective.⁴⁹

Furthermore, the Court of Justice, following the opinion of Advocate General Wahl,⁵⁰ held that the General Court had wrongly concluded that the concept of a restriction by object should not be interpreted restrictively. The concept could only be applied to certain types of coordination between undertakings that revealed "a sufficient degree of harm" to competition such that their effects did not need to be examined.⁵¹

The Court of Justice also held that the General Court had been wrong to conclude that an analysis of the requirement of balance between issuing and acquiring activities could not be carried out in the context of Article 101(1) simply because the purported restriction took place in the market for issuing only. The Court of Justice concluded that the lower court had confused two issues: (i) that of the definition of the relevant market, and (ii) that of the context to be taken into account to ascertain whether the content of an agreement reveals the existence of a restriction by object. Since the General Court had found issuing and acquiring activities to be essential for the operation of a card payment system it could not ignore this simply because the act of acquiring did not occur in the issuing market.⁵²

THE COURT OF JUSTICE CONCLUDED THAT THE LOWER COURT HAD CONFUSED TWO ISSUES

IV. THE OBJECT TEST IN *CARTES BANCAIRES* AND ITS IMPLICATIONS FOR TWO-SIDED MARKETS

The judgment has been widely welcomed by practitioners. The consensus view appears to be that this is a “landmark ruling” that makes crucial points about two-sided markets and, more importantly, seriously narrows the object box. With respect to the latter, it is argued that the Commission must now “abandon its simplistic use of the by object restriction notion in cases that are not obviously harmful to competition and focus on the actual effects of the conducts.”⁵⁴

We see some merit in this viewpoint. We agree that the judgment makes important findings as regards two-sided markets. In this regard, the Court was very clear in stressing that the overall economic and legal

IN THIS REGARD, THE COURT WAS VERY CLEAR IN STRESSING THAT THE OVERALL ECONOMIC AND LEGAL “CONTEXT” WAS NOT THE SAME AS THE RELEVANT MARKET

“context” was not the same as the relevant market.⁵⁵ In effect the Court held that the economic and legal context could include factors that took place outside the relevant market.

On the facts of the *Cartes Bancaires* case, one of the relevant aspects overlooked by the General Court was that the restriction under scrutiny had an impact not only in the relevant market where the restriction took place (the market for the issuing of payments cards to consumers) but also on the related market for acquiring services. Both sides of the market had to be taken into account.

However, we do not believe that the judgment fundamentally alters the law as regards object restrictions. Rather the judgment is an attempt to restate—in a clearer, more detailed way than in the past—the test that has been a consistent feature of much of the EU Courts’ existing case law. As such, we see *Cartes Bancaires* as an attempt by the Court to address the confusion generated by recent judgments in this area, in particular as regards (i) paragraph 48 of *Allianz Hungária* (which, as discussed above, could be read as permitting a finding of anticompetitive object to be made following a truncated effects analysis) and (ii) the “capability” test in paragraph 31 of *T-Mobile* (which many believe significantly widened the object box).

As regards *Allianz Hungária*, while it is true that the Court of Justice cites the judgment on numerous occasions in *Cartes Bancaires*, it is striking that nowhere in the document does the Court rely on paragraph 48. As such, we believe that *Allianz Hungária* can no longer be interpreted as authority for the proposition that an agreement which, on its face, is *not* obviously restrictive, may yet be found to be restrictive by object on the basis of a truncated effects analysis.

As regards the capability test in *T-Mobile*, in paragraph 57 of *Cartes Bancaires* the Court held that the “essential legal criterion for ascertaining whether coordination between undertakings involves such a restriction

THE COURT OF JUSTICE CLEARLY STATES THAT THE CONCEPT OF RESTRICTION BY OBJECT IS A NARROW ONE

of competition ‘by object’ is the finding that such coordination reveals in itself a sufficient degree of harm to a competition.” This test plainly makes no reference to

capability. Linked to this, the Court of Justice clearly states that the concept of restriction by object is a narrow

one⁵⁷ and cannot be applied in cases “which are in no way established to be, by their very nature, harmful to the proper functioning of normal competition.”³⁸

In order to avoid any doubt as to its views, the Court also spelled out the policy rationale for its conclusion; it held that a restrictive interpretation of the object category is needed to reduce the risk of false positives. Taken together, in our view, this means that it is no longer possible to interpret paragraph 31 of *T-Mobile* as significantly widening the object box; put differently, *Cartes Bancaires* has clarified that an agreement is not restrictive by object merely because it is capable of restricting competition.

It is important to note, however, that *Cartes Bancaires* does not say that the object category is closed and that it applies only to those restrictions that have, previously, been found to be restrictive in this way. This raises an important question: If the object category must be interpreted restrictively, but is not a closed one, and if the object test does not permit any analysis of effects, what then is the legal framework under which it is to be determined whether an agreement is restrictive by object?

As noted above, the Court of Justice held that the “essential” legal criterion for determining whether an agreement is restrictive by object is whether it “reveals in itself a sufficient degree of harm to competition.”⁵⁹

We believe this sets out a cumulative, two-step test for object restrictions. First, the agreement under scrutiny must entail an obvious restriction of competition. Indeed, the agreement under review must “reveal in itself” or be “by its nature”⁶⁰ a restriction of competition. Second, the restriction must entail “a sufficient degree of harm”⁶¹ to competition.” In this regard the Court of Justice held that:

WE BELIEVE THIS SETS OUT A CUMULATIVE, TWO-STEP TEST FOR OBJECT RESTRICTIONS.

although the General Court [had] set out the reasons why the measures at issue...are capable of restricting competition...it in no way explained — contrary to the requirements of the case-law...**in what respect that restriction of competition reveals a sufficient degree of harm** in order to be characterised as a restriction by object.

The obviousness part of the test is exclusively focused on the nature of the limitation placed on the commercial freedom of action of the parties and does not look at likely or actual effects of the agreement on competition. In particular, the analysis will have to be carried out on the basis of all relevant factors, including, in particular: (i) experience and existing case law, (ii) the content and wording of the provisions of the agreement, and (iii) the agreement’s objectives.⁶² Consistent with the existing case law (and rejecting by omission the Advocate General’s advice), the judgment in *Cartes Bancaires* means that some weight can be placed on the parties’ intention (as revealed for example by internal documents), although it is neither a necessary nor a decisive factor.⁶³

Looking at the facts in *Cartes Bancaires*, the Court of Justice found that, contrary to the position in *Beef Industry Development Society and Barry Brothers* (“BIDS”), the wording of the agreement was not obviously

restrictive of competition.⁶⁴ In *BIDS* the parties' aim had clearly been to change "appreciably, the structure of the market through a mechanism intended to encourage the withdrawal of competitors."⁶⁵ However, in *Cartes Bancaires* the Court of Justice found that the aim of the agreement under review had been to impose "a financial contribution on the members of the Grouping which benefit from the efforts of other members for the purposes of developing the acquisition activities of the system," an activity that is not clearly restrictive of competition.⁶⁶

As regards the sufficiency part of the test, it is easier to explain what it is not (than what it is). First, the thrust of the *Cartes Bancaires* judgment itself, and vast bulk of the existing case law, means that any analysis

THE THRUST OF THE *CARTES BANCAIRES* JUDGMENT ITSELF, AND VAST BULK OF THE EXISTING CASE LAW, MEANS THAT ANY ANALYSIS CONDUCTED CANNOT INCLUDE CONSIDERATION OF THE MARKET POWER OF THE PARTIES OR THE LIKELY/ACTUAL EFFECTS OF THE RESTRICTION ON THE MARKET

conducted cannot include consideration of the market power of the parties or the likely/actual effects of the restriction on the market⁶⁷ (as seemed to be suggested in paragraph 48 of *Allianz Hungária*). Put differently, the test does not require the Commission to show that the restriction is so harmful as to be likely to result in higher prices or lower output.⁶⁸ Second, it is not necessary to find that consumers may be deprived of the advantages of effective competition.⁶⁹

Third, the judgment explicitly held that legitimate business justifications could not be taken into consideration as part of the assessment as to whether an agreement is restrictive by object.⁷⁰ In other words, contrary to what some commentators seem to infer, it is not relevant to look at whether, *prima facie*, there are possible legitimate reasons or justifications for the restriction; this can only be done at a later stage, in particular when assessing whether the conditions under Article 101(3) are met.

Unfortunately, as noted above, it is much harder to work out from the judgment how the EU Courts will apply the sufficiency part of the test in practice. What seems clear is that the Court of Justice in *Cartes Bancaires* considered the situation in *BIDS* to meet the sufficiency part of the test; it did not, however, seem to consider the exclusion of new entrants as being sufficiently serious.

V. CONCLUSION

Cartes Bancaires is a significant judgment. It makes important findings as regards two-sided markets, clearly establishing the principle that the interaction between them must be taken into account regardless of whether the restriction under review applies only to side of the market.

It also clarifies important aspects of the existing law on the object test. In doing so it draws a clearer line between object and effect than was apparent from some of the language in recent judgments. It also limits the ability of those who wish to bring effect cases under the object test. In particular, the Court of Justice has set out the following principles: (1) the object category must be interpreted restrictively,⁷¹ (2) the likely or actual effects of the agreement are not relevant to the object test,⁷² and (3) the essential legal criterion for

ascertaining whether coordination between undertakings involves a restriction by object “is the finding that such coordination reveals in itself a sufficient degree of harm to competition.”⁷³

In our view, the third principle is in line with settled case law and can be formulated as a two pronged test: the restriction must both be obvious and serious.

WHILE IMPORTANT AS A RESTATEMENT AND CLARIFICATION OF THE OBJECT TEST UNDER ARTICLE 101(1), IN PRACTICE WE DO NOT BELIEVE THAT THE *CARTES BANCAIRES* CASE WILL HAVE SIGNIFICANT IMPLICATIONS OF OBJECT CASES.

While important as a restatement and clarification of the object test under Article 101(1), in practice we do not believe that the *Cartes Bancaires* case will have significant implications of object cases. There are two main reasons for this.

First, it is evident that the test in *Cartes Bancaires* is not of great practical relevance to classic “hardcore” agreements, including the secret exchange of future price information. These will continue to fall easily into the object category. Indeed the Court of Justice was clear that:

collusive behaviour, such as that leading to horizontal price-fixing by cartels [which] may be considered so likely to have negative effects, in particular on the price, quantity or quality of the goods and services, that it may be considered redundant, for the purposes of applying Article 81(1) EC, to prove that they have actual effects on the market. Experience shows that such behaviour leads to falls in production and price increases, resulting in poor allocation of resources to the detriment, in particular, of consumers.⁷⁴

While the Court did not refer specifically to hardcore vertical cases, we do not believe that *Cartes Bancaires* in any way waters down the position as regards these types of restrictions. In fact, the opposite might be true: *Cartes Bancaires* would appear to make it harder for such cases to be taken outside the object box. It does this by removing the possibility that may have existed (i) under *T-Mobile* for the parties to argue that, on the facts, their agreement was not “capable” of restriction competition and (ii) under *Allianz Hungária* that the Court should apply a truncated effects analysis to such agreements (rather than treating them as “obvious” restrictions of competition).

Second, as should be clear from our analysis, we believe that the universe of agreements falling within the object box has always been smaller than many argued. Of the current cases that are public, very few are likely to be affected in any significant degree by the judgment.⁷⁵ ▲

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² See, inter alia, Case 56/65, *Société Technique Minière (L.T.M.) v Maschinenbau Ulm GmbH (M.B.U.)*, [1966] ECR 00337, p. 249 (hereinafter, “*Société Technique Minière*”). See also Joined Cases 56 and 58/64, *Établissements Consten S.à.R.L. and Grundig-Verkaufs-GmbH v Commission*, [1966] ECR 00429, p. 342.

³ Case C-209/07, *Beef Industry Development Society and Barry Brothers (Carrigmore) Meats*, [2008] ECR

I-08637, ¶17 (hereinafter “BIDS”); Case C-8/08 *T-Mobile Netherlands and Others*, [2009] ECR I-4529, ¶29 (hereinafter “*T-Mobile Netherlands*”); Case C-226/11 *Expedia v Autorité de la concurrence and Others*, not yet reported, ¶36; Commission’s Guidelines on the applicability of Article 101 TFEU to horizontal co-operation agreements, 2011, OJ (C 11/01) ¶24 (hereinafter, “Commission’s Horizontal Guidelines”); Commission’s Guidelines on the application of Article 101(3) of the TFEU, 2004, OJ (C 101/08), ¶21, (hereinafter, “Commission’s Guidelines”).

⁴ *Société Technique Minière*, *supra* note 2, at 249.

⁵ Commission’s Guidelines, *supra* note 3.

⁶ *Id.*

⁷ See e.g. Commission Decision of 26 October 1999 in Case IV/33.884 - *Nederlandse Federative Vereniging voor de Groothandel op Elektrotechnisch Gebied and Technische Unie (FEG and TU)*, 2000 OJ (L39/1).

⁸ See e.g. Joined cases C-204/00 P, C-205/00 P, C-211/00 P, C-213/00 P, C-217/00 P and C-219/00 P, *Aalborg Portland A/S, Irish Cement Ltd, Ciments français SA, Italcementi - Fabbriche Riunite Cemento SpA, Buzzi Unicem SpA and Cementir - Cementerie del Tirreno SpA (Cementeries CBR) v Commission*, [2004] ECR I-00123.

⁹ See Joined Cases 56 and 58/64, *Établissements Consten S.à.R.L. and Grundig-Verkaufs-GmbH v Commission*, [1966] ECR 00429; Case 19/77 *Miller International Schallplatten GmbH v Commission*, [1978] ECR 131; Joined Cases C-501/06 P, C-513/06 P, C-515/06 P and C-519/06, P *GlaxoSmithKline Services Unlimited v Commission*, [2009] ECR I-09291, ¶59.

¹⁰ Case 243/83 *SA Binon & Cie v SA Agence et messageries de la presse*, [1985] ECR 02015, ¶44.

¹¹ Case C-32/11, *Allianz Hungária Biztosító Zrt. and Others v Gazdasági Versenyhivatal*, not yet reported, ¶36 (hereinafter “*Allianz Hungária*”); Joined Cases 29/83 and 30/83 *Compagnie royale asturienne des mines SA (CRAM) and Rheinzink GmbH v Commission*, [1984] ECR 1679, ¶26, and Case C-551/03 P, *General Motors v Commission*, [2006] ECR I-3173, ¶66.

¹² See Joined Cases C-501/06 P, C-513/06 P, C-515/06 P and C-519/06, P *GlaxoSmithKline Services Unlimited v Commission*, [2009] ECR I-09291, ¶58; Joined Cases C-403/08 and C-429/08 *Football Association Premier League Ltd and Others v QC Leisure and Others and Karen Murphy v Media Protection Services Ltd*, [2011] ECR I-09083, ¶136; and Case C-439/09, *Pierre Fabre Dermo-Cosmétique SAS v Président de l’Autorité de la concurrence and Ministre de l’Économie, de l’Industrie et de l’Emploi*, [2011] ECR I-09419, ¶35.

¹³ Case 258/78 *L.C. Nungesser KG and Kurt Eisele v Commission*, [1982] ECR 02015.

¹⁴ Case 27/87 *SPRL Louis Erauw-Jacquery v La Hesbignonne SC*, [1988] ECR 01919, ¶¶10ff.

¹⁵ See, Commission’s Guidelines, *supra* note 3, ¶22. See also Joined Cases 29/83 and 30/83, *Compagnie Royale Asturienne des Mines SA (CRAM) and Rheinzink GmbH v Commission*, [1984] ECR 01679, ¶26, and Joined Cases 96/82 and others, *NV IAZ International Belgium and others (ANSEAUNAVEWA) v Commission*, [1983] ECR 3369, ¶¶23ff.

¹⁶ See e.g. Joined Cases C-501/06 P, C-513/06 P, C-515/06 P and C-519/06, *GlaxoSmithKline Services Unlimited v Commission*, [2009] ECR I-09291, ¶58; Case C-8/08, *T-Mobile Netherlands BV, KPN Mobile NV, Orange Nederland NV and Vodafone Libertel NV v Raad van bestuur van de Nederlandse Mededingingsautoriteit*, [2009], I-04529, ¶27; *BIDS*, *supra* note 3, ¶¶15ff; Commission’s Guidelines, *supra* note 3, ¶¶21ff; Commission’s Horizontal Guidelines, *supra* note 3, ¶25.

- 17 See e.g. Joined Cases 96/82 and others, *NV IAZ International Belgium and Others (ANSEAUNAVEWA) v Commission*, [1983] ECR 3369, ¶¶23ff.
- 18 Case T-168/01, *GlaxoSmithKline Services Unlimited v Commission*, [2006] ECR II-2969, ¶119.
- 19 J. Faull, L. Kjolbe, H. Leupold, & A. Nikpay, *Article 101*, THE EU LAW OF COMPETITION, 3rd Ed. 238 (Faull & Nikpay eds. 2014).
- 20 See for example joined Cases 29/83 and 30/83, *Compagnie Royale Asturienne des Mines SA (CRAM) and Rheinzink GmbH v Commission*, [1984] ECR 01679, ¶26, and Joined Cases 96/82 and others, *NV IAZ International Belgium and others (ANSEAUNAVEWA) v Commission*, [1983] ECR 3369, ¶¶23ff.
- 21 Commission's Guidelines, *supra* note 3, at ¶22.
- 22 *Id.* ¶20
- 23 *T-Mobile Netherlands*, *supra* note 3, ¶31.
- 24 *Faull, et al.*, *supra* note 19 at 239 - 240.
- 25 *T-Mobile Netherlands*, *supra* note 3, ¶29.
- 26 *Id.* ¶30.
- 27 Even though, as has been shown, *T-Mobile* does not confer an “incapability defense” as a limiting factor for treating obvious restrictions of competition as restrictions by object, there is a linked notion that may play a role for “Category 3” agreements. An agreement that has the “capability of resulting in a restriction of competition” may be restrictive by object even if, on its face, it does not appear to have an anticompetitive object.
- 28 *Case T-360/09 E.On Ruhrgas AG and E.On AG v Commission*, *not yet reported*.
- 29 *Id.* ¶¶98ff.
- 30 *Allianz Hungária*, *supra* note 11.
- 31 *Id.* ¶34.
- 32 *Id.* ¶35.
- 33 *T-Mobile Netherlands*, *supra* note 3, ¶31.
- 34 *Allianz Hungária*, *supra* note 11, ¶38.
- 35 *Id.* ¶46.
- 36 Opinion of Advocate General Wahl delivered on 27 March 2014 in Case C-67/13 P, *Groupement des cartes bancaires (“CB”) v Commission*, ¶¶46 and 47 (hereinafter “Opinion of Advocate General Wahl”).
- 37 Commission's Decision of 17 October 2007, in Case COMP/D1/38.606 *Groupement des Cartes Bancaires “CB”*, OJ [2009] C183/12 (published on 5.8.2009) (hereinafter “Commission's Decision of 17 October 2007”).
- 38 *Id.* ¶¶137 - 154.
- 39 *Id.* ¶¶236 - 250.
- 40 *Id.* ¶¶199 (in the context of the Article 101(1) analysis) and 384 - 388 (in the context of the Article 101(3) analysis).
- 41 *Id.* ¶¶223 - 234.
- 42 Commission's Decision of 17 October 2007, *supra* note 37 at ¶235.
- 43 *Id.* ¶¶193 - 251.
- 44 Case T-491/07, *Groupement des cartes bancaires “CB” v Commission*, *not yet reported*, ¶¶126 and 132

(hereinafter “*Groupement des cartes bancaires*, not yet reported”).

45 *Id.* ¶¶123 ff and 170ff.

46 *Id.* ¶124.

47 *Id.* ¶105. At the following para the Court noted, however, that the Commission had considered potential benefits accruing on the acquiring market within the framework of Article 101(3).

48 *Id.* ¶75.

49 *Id.* ¶75ff. See also ¶81 of the Opinion of Advocate General Wahl, *supra* note 36, where it stated that “it is not apparent from the outset that the measures at issue are harmful to competition,” and ¶¶92 and 122ff.

50 Opinion of Advocate General Wahl, *supra* note 36, ¶¶52ff and, in particular, ¶¶58, 59, 68 and 74.

51 *Groupement des cartes bancaires*, not yet reported, *supra* note 44, ¶58.

52 *Id.* ¶¶76 AND 77.

53 For an excellent summary of this view, see Frédéric Pradelles’s note at <http://www.lw.com/thoughtLeadership/LW-European-Justice-Court-Groupement-Cartes-Bancaires>. See also, *ex multis*, Matthew O’Regan, *The Court of Justice of the EU provides further clarity on when an agreement has the object of restricting competition (Groupement des cartes bancaires)*, 69491 E-COMPETITONS (October 2014); and Hans Vedder, *The EU Court of Justice clarifies the object-effect dichotomy and deals with two-sided markets (Cartes Bancaires-MasterCard)*, 69013 E-COMPETITIONS, (September 2014).

54 *Id.* Frédéric Pradelles.

55 *Groupement des cartes bancaires*, not yet reported, *supra* note 44, ¶¶76 to 79.

56 *Id.* ¶57.

57 *Id.* ¶58.

58 *Id.* ¶58.

59 *Id.* ¶57.

60 *Id.* ¶78.

61 *Id.* ¶57; see also *Allianz Hungária*, *supra* note 3, ¶¶34 and 46.

62 See *BIDS*, *supra* note 3, ¶21.

63 *Groupement des cartes bancaires*, not yet reported, *supra* note 44, ¶54.

64 *Id.* ¶¶60ff.

65 *Id.* ¶¶84 and 85, distinguishing *BIDS*; and *BIDS*, *supra* note 3, ¶31.

66 *Id.* ¶75.

67 *BIDS*, *supra* note 3, ¶16 and the case law cited there.

68 *Groupement des cartes bancaires*, not yet reported, *supra* note 43, ¶¶80 and 81.

69 See Joined Cases C-501/06 P, C-513/06 P, C-515/06 P and C-519/06 P, *GlaxoSmithKline Services U Unlimited v Commission*, [2009] ECR I-09291, ¶¶62 and 63.

70 *Groupement des cartes bancaires*, not yet reported, *supra* note 44, ¶70; and ¶¶121ff of the Opinion of Advocate General Wahl, *supra* note 36. See also *BIDS*, *supra* note 2, ¶21.

71 *Groupement des cartes bancaires*, not yet reported, *supra* note 44, ¶58.

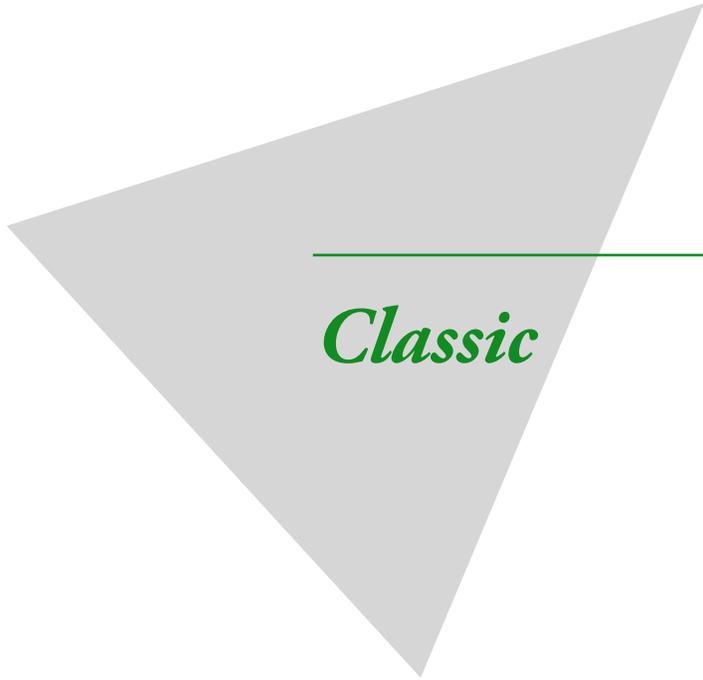
72 *Id.* ¶¶51 and 58.

73 *Id.* ¶57.

74 *Id.* ¶51. See also, to that effect, in particular, judgment in case 123/83, *Bureau national interprofessionnel*

du cognac v Guy Clair, [1985] ECR 00391, ¶22.

⁷⁵ On this topic, see for example Sven Gallasch, *The Court of Justice of the EU invites to rethink the approach to pay for delay settlements in its recent case law (Groupement des Cartes Bancaires)*, 69490 E-COMPETITIONS (October 2014).



Classic

*An Instant Classic:
Rochet & Tirole,
Platform
Competition in
Two-Sided Markets*

BY RICHARD SCHMALENSEE

An Instant Classic: Rochet & Tirole, Platform Competition in Two-Sided Markets

BY RICHARD SCHMALENSEE¹

I. INTRODUCTION

The press release announcing that Jean Tirole had been awarded the 2014 Nobel Prize in Economic Sciences noted that he had “made important theoretical research contributions in a number of areas.”² One of his most important contributions was the discovery and pioneering analysis of multi-sided platforms (“MSPs”) in his 2003 paper with Jean-Charles Rochet, *Platform Competition in Two-Sided Markets*.³ According to Google Scholar, this paper has been cited over 1800 times, fourth among Jean’s many papers. The Rochet & Tirole (“RT”) paper has spawned an enormous literature in a very short time—over 200 papers by the end of 2012,⁴ and the economics of multi-sided platforms is now a standard component of graduate courses in industrial organization. The RT paper is the first post-2000 academic paper to be deemed a classic by Competition Policy International, an honor it richly deserves.

What made this paper an instant classic is not some technical breakthrough, but rather its economic insights. In Sections 1 and 8, RT define MSPs and, through the examples in Section 1 and the “mini case studies” in Section 7, they show that these businesses are both common and economically important. The rest of the paper demonstrates that MSPs share a number of features that set them apart from the single-sided businesses that have dominated economic theory since Adam Smith. I am sure I am not the only industrial organization economist who had a Homer Simpson “D’oh!” moment upon first encountering the RT paper. I had previously studied two MSPs—computer operating systems and payment systems—and had even done some analysis of a monopoly payment system model closely related to the one in the RT paper,⁵ without recognizing that these businesses and many others were members of a different genus than the firms described in standard textbooks.

WHAT MADE THIS PAPER AN INSTANT CLASSIC IS NOT SOME TECHNICAL BREAKTHROUGH, BUT RATHER ITS ECONOMIC INSIGHTS.

RT describe two-sided MSPs as very distinctive sorts of businesses, “characterized by the presence of two distinct sides whose ultimate benefit stems from interacting through a common platform,” and they note that these businesses have “network externalities”—that is, platform users from one customer group or “side” are affected, positively or negatively, by platform users from the other side.⁶ This describes a payments system that facilitates interactions between merchants and consumers; it does not describe a pharmaceutical manufacturer or a steel mill. RT further note that in MSPs, “the volume of transactions on and the profit of a platform depend not only on the total price charged to the parties to the transaction, but also on its decomposition” and stress at several points two-sided platforms’ concern with “getting both sides on board.”⁷ Pharmaceutical manufacturers and steel mills usually have little trouble getting input suppliers “on board” if they are willing to pay competitive prices for the inputs they need, but payment systems need to get their prices to both merchants and consumers right if they are to attract a profitable mix of both.

Section II describes the formal analysis in the RT paper and relates it to some of the main papers in the subsequent literature. Section III outlines a few of the key implications for competition policy of the RT paper and the MSP literature that it launched.

II. THE ROCHET-TIROLE ANALYSIS

In Section 2 of their paper, RT model a monopoly platform with two sides, labeled buyers (**B**) and sellers (**S**). The platform is assumed to add value by facilitating transactions between buyers and sellers, with the number of transactions given by

$$T(P^B, P^S) = D^B(P^B)D^S(P^S). \quad (1)$$

Here P^B and P^S are the per-transaction prices charged by the platform to buyers and sellers, respectively, and D^B and D^S are the downward sloping functions that determine number of buyers and sellers, respectively, who are on board the platform. RT refer to D^B and D^S as “quasi-demand functions” because the actual demand for transactions depends on their product and thus on decisions on both sides of the market.⁸ Given any value of P^B , the lower is P^S the more sellers choose to be on board this platform seeking buyers, the more transactions then occur, and, it can be shown, the more valuable each of these transactions is to buyers. Similarly, the number of buyers on board this platform is determined by P^B , and more buyers lead to more transactions and more value for sellers.

The network externality here is clear: sellers are better off when more buyers are on board, and buyers are better off when more sellers are on board. It is also clear that a platform’s profit is affected by the mix of buyers and sellers, not just by the total level of participation. For any given total level of participation, $D^B + D^S$, transaction volume is maximized when $D^B = D^S$. Unless the two quasi-demand functions are identical, however, this is not likely to be the profit-maximizing mix. Given a constant per-transaction cost, C , the monopoly’s profit is given by

THE NETWORK EXTERNALITY HERE IS CLEAR: SELLERS ARE BETTER OFF WHEN MORE BUYERS ARE ON BOARD, AND BUYERS ARE BETTER OFF WHEN MORE SELLERS ARE ON BOARD.

$$\Pi = (P^B + P^S - C) T(P^B, P^S). \quad (2)$$

RT show that the profit-maximizing value of the quantity in parentheses, the total per-transaction markup, is given by a classic Lerner formula involving the sum of the price elasticities of the two quasi-demand functions. They also show that because the platform cares about balanced participation by the two sides, its optimal prices are *directly* proportional to the corresponding quasi-demand elasticities—not inversely proportional as would be the case for an ordinary, one-sided monopoly selling two products. While both prices are necessarily positive in this model, one may be much higher than the other.

In this model, buyers and sellers only pay when a transaction occurs, and the level of participation of each side depends only on the per-transaction price it is charged. More generally, one can think of this platform as charging for usage only. In another canonical MSP model due to Mark Armstrong, the platform charges only

for *participation*—for being on board, not for usage—and its costs depend on participation on each side.⁹ An example would be a heterosexual singles bar that has a cover charge but does not levy a per-conversation (usage) charge. In the Armstrong model the level of participation on each side depends on both the price charged to that side and (positively) on the level of participation of the other side. The optimal price to either side can be below the corresponding marginal participation cost. Thus, as is possible in the RT model and—as RT stress in Section 1—as is often observed in reality, pricing may be highly skewed, so that most or all of the profit may be earned from only one side of the platform.¹⁰

As RT also note, real MSPs often charge for both participation and usage. For instance, American Express charges consumers an annual membership (participation) fee and, through its rewards program, a negative usage fee. In a later paper, Rochet & Tirole present a general model with both participation and usage fees, and Weyl has provided a detailed analysis of models in which customers may value both participation and usage, and both fees may be charged.¹¹

Despite the presence of network effects, most MSPs are not monopolies, and RT devote Sections

DESPITE THE PRESENCE OF
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3-6 to modeling markets with two competing platforms. This analysis is mathematically complex, but the intuition behind the main result (Proposition 3, p. 1004) is

straightforward. It turns on the distinction between a situation in which customers can be members of only one platform (“single-homing”) and a situation in which they can be members of two or more platforms (“multi-homing”). In the case of smart phone operating systems, for instance, most consumers single-home at any one time, while many developers multi-home by writing apps for both Android and Apple’s iOS. Competition for single-homing customers is a winner-take-all struggle for all their business, while competition for multi-homing customers is competition on the margin for a larger share of their business. RT show that in their model of competition between profit-maximizing platforms, single-homing by customers on one side of the platforms tends—all else equal—to intensify price competition on that side, yielding a price structure more favorable to customers on that side.¹²

Section 4 considers the impact of “marquee” and captive buyers on the outcome of competition between for-profit platforms. A marquee buyer is defined as one whose presence makes the platform more attractive to sellers and thus shifts the sellers’ quasi-demand curve out. On the other hand, the presence of a captive buyer, insensitive to price, shifts the buyers’ quasi-demand curve out. For a broad class of quasi-demand functions, the presence of a marquee buyer leads to an increase in the platform’s optimal price to sellers, P^S , and a decrease in the optimal price to buyers, P^B . Because the platform is more attractive to sellers, it is optimal to raise the price they are charged. This reduces the de facto marginal cost of providing transactions to buyers, $C-P^S$, so it is optimal to reduce the price to them. Similarly, the presence of a captive buyer leads to an increase in P^B and a decrease in P^S .

In a later paper, RT described these results as instances of “a simple ‘seesaw principle’: a factor that is conducive to a high price on one side, to the extent that is conducive to a high price on one side, to the extent

that it raises the platform's margin on that side, tends to call for a low price on the other side as attracting members on that other side becomes more profitable.”¹³ While this principle has a great deal of intuitive appeal, Weyl has shown that it is not a general feature of all models of MSPs.¹⁴

III. SOME IMPLICATIONS FOR COMPETITION POLICY

In the RT monopoly model, both prices are always positive, and there are no side-specific marginal costs to which either could be compared. Nonetheless, as they note in their introductory section and support with examples and the mini case studies in Section 7, “platforms often treat one side as a profit center and the other as a loss leader or, at best, as financially neutral.”¹⁵ This is in stark contrast with ordinary, one-sided profit-maximizing (i.e., non-predatory) firms that never set price below marginal cost and rarely continue to sell at a loss to any customer group. It complicates the antitrust economics of MSPs.¹⁶

PLATFORMS OFTEN TREAT ONE SIDE AS A PROFIT CENTER AND THE OTHER AS A LOSS LEADER OR, AT BEST, AS FINANCIALLY NEUTRAL.

Consider, for instance, a shopping mall that provides free parking for its customers. It would be impossible correctly to evaluate a claim of predatory pricing by a nearby parking lot owner without recognizing that the mall is an MSP. It needs to attract both shoppers and stores, and, like most malls, it provides parking to its customers at a loss and earns its money from participating stores. Similarly, it would be impossible correctly to assess the welfare effects of ordering the mall to charge for pricing like the nearby parking lot without considering the impact on stores as well as on shoppers. A parking fee would directly reduce the number of customers shopping at the mall, and this would make the mall less attractive to stores. Those with long-term leases would lose profits, while others might leave. This, in turn, would make the mall even less attractive to customers, and so on.

The key point is that any sound analysis of welfare or injury—or almost anything else—relating to an MSP needs to consider all affected customer groups, since actions that affect one group will generally also affect the others via the network externalities that link them. Thus in assessing market power, price on one side alone is usually completely uninformative. It would make no sense to conclude that a mall lacks market power because it has to “sell” parking below cost or that it has a lot of market power because it is able to charge stores more than comparable rents downtown, where parking is scarce.

THE KEY POINT IS THAT ANY SOUND ANALYSIS OF WELFARE OR INJURY—OR ALMOST ANYTHING ELSE—RELATING TO AN MSP NEEDS TO CONSIDER ALL AFFECTED CUSTOMER GROUPS

Similarly, in merger analysis it is important to consider impacts on all customer groups. This can be hard, but it isn't always. It may be sensible to look only at store rents in the case of a mall merger, for instance, since parking prices will likely remain zero. It is important to recognize, though, that the standard quantitative tools of merger analysis can't be used mechanically when multi-sidedness is important. The traditional critical loss analysis plainly doesn't apply when one price is less than marginal cost, for instance, and available merger simulations model only one-sided firms.

There is something of a paradox here. Adapting standard quantitative tools, like the UPP measure, to handle MSPs generally produces something that is very complex and data-intensive, since connections between the platforms' sides must be described quantitatively. On the other hand, recognizing that a business is an MSP often yields very useful qualitative insights immediately. Good theory raises questions that inform empirical analysis, and the economic theory of MSPs that Rochet & Tirole pioneered is very good theory indeed. ▲

¹ Howard W. Johnson Professor of Management and Economics Emeritus, Massachusetts Institute of Technology. It is a particular pleasure to write this introduction so soon after Jean Tirole's Nobel Prize because he first studied industrial organization at MIT with Paul Joskow and me; he was a colleague of ours from 1984 until his return to France in 1992; and we have remained in touch ever since, in part through his regular visits to MIT.

² Available at http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2014/press.html.

³ Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 J. EUR. ECON. ASSOC. 990-1029 (2003) and reprinted in this issue of *Competition Policy International*. The phrase "two-sided market" in that paper's title is somewhat unfortunate, since it suggests that "two-sidedness" is an inherent feature of some markets rather than a characteristic of some business models. For instance, Amazon.com began as a reseller, but it now also serves as a mall or marketplace, a two-sided platform where other sellers can deal with buyers. For an interesting analysis of a firm's choice between buying and reselling—a one-sided business model—and facilitating interactions between suppliers and customers—a two-sided model—see A. Hagiu & J. Wright, *Marketplace or Reseller*, MGMT. SCI. forthcoming.

⁴ See the Appendix to David S. Evans & Richard Schmalensee, *The Antitrust Analysis of Multi-Sided Platform Businesses*, University of Chicago, Institute for Law and Economics Working Paper 623, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2185373. This paper without the Appendix will appear in OXFORD HANDBOOK OF INTERNATIONAL ANTITRUST ECONOMICS (Roger D. Blair & D. Daniel Sokol, eds., forthcoming).

⁵ See, for instance, D.S. Evans, A.L. Nichols, & R. Schmalensee, *An Analysis of the Government's Economic Case in U.S. v. Microsoft*, 46 ANTITRUST BULL. 163-251 (2001) and R. Schmalensee, *Payment Systems and Interchange Fees*, 50 J. INDUS. ECON. 103-122 (2002).

⁶ RT, *supra* note 3 at 990. These have come to be called *indirect* network externalities, to distinguish them from the ordinary or direct network externalities that make participation in some group (fax machine users, for example, or men in a heterosexual singles bar) more or less attractive as the group becomes larger.

⁷ *Id.* at 1018.

⁸ In Schmalensee (2002), *supra* note 5, I called these functions "partial demands."

⁹ Mark Armstrong, *Competition in Two-Sided Markets*, 37 RAND J. ECON. 668-691 (2006). I use the term "participation" here rather than "membership," which is more common in the literature, since the latter seems to imply a durable, formal connection that need not exist.

¹⁰ For a general discussion of skewed pricing in the RT and Armstrong monopoly models, see Richard Schmalensee, *Why is Platform Pricing Generally Highly Skewed?* 10 REV. NETWORK ECON. ARTICLE I (2011).

¹¹ Jean-Charles Rochet & Jean Tirole, *Two-Sided Markets: A Progress Report*, 37 RAND J. ECON. 645-667 (2006), and E. Glen Weyl, *A Price Theory of Two-Sided Platforms*, 100 AMER. ECON. REV. 1642-1672 (2010).

RT consider competing platforms with both membership and usage costs in Section 6, but they allow the platforms to charge only for usage.

¹² In Section 3.4, RT model competition between two member-owned cooperative MSPs, like MasterCard and Visa before their IPOs in 2006 and 2008, respectively. As in most of the theoretical literature on payment systems, RT conclude that competition will generally not yield the socially optimal price structure—even when it is sufficiently intense to eliminate any excess profit.

¹³ Rochet & Tirole, *supra* note 11 at 659.

¹⁴ Weyl, *supra* note 11 at 1659-1661. In particular, it is not a property of the Armstrong model (*supra* note 9).

¹⁵ RT, *supra* note 3 at 991.

¹⁶ For a more general discussion of the antitrust economics of MSPs, *see* Evans and Schmalensee, *supra* note 4.

¹⁷ *See*, for instance, Pauline Affeldt, Lapo Filistrucchi, & Tobias J. Klein, *Upward Pricing Pressure in Two-Sided Markets*, 123 *Econ. J.* F505-F523 (2013).

*Platform
Competition in
Two-Sided Markets*

*BY JEAN CHARLES ROCHET & JEAN
TIRO*

Platform Competition in Two-Sided Markets¹

JEAN-CHARLES ROCHET & JEAN TIROLE²

Many if not most markets with network externalities are two-sided. To succeed, platforms in industries such as software, portals and media, payment systems and the Internet, must “get both sides of the market on board.” Accordingly, platforms devote much attention to their business model, that is, to how they court each side while making money overall. This paper builds a model of platform competition with two-sided markets. It unveils the determinants of price allocation and end-user surplus for different governance structures (profit-maximizing platforms and not-for-profit joint undertakings), and compares the outcomes with those under an integrated monopolist and a Ramsey planner. (JEL: L5, L82, L86, L96)

I. INTRODUCTION

Buyers of video game consoles want games to play on; game developers pick platforms that are or will be popular among gamers. Cardholders value credit or debit cards only to the extent that these are accepted by the merchants they patronize; affiliated merchants benefit from a widespread diffusion of cards among consumers. More generally, many if not most markets with network externalities are characterized by the presence of two distinct sides whose ultimate benefit stems from interacting through a common platform. Platform owners or sponsors in these industries must address the celebrated “chicken-and-egg problem” and be careful to “get both sides on board.” Despite much theoretical progress made in the last two decades on the economics of network externalities and widespread strategy discussions of the chicken-and-egg problem, two-sided markets have received scant attention. The purpose of this paper is to start filling this gap.

The recognition that many markets are multisided leads to new and interesting positive and normative questions. Under multisidedness, platforms must choose a price structure and not only a price level for their service. For example, video game platforms such as Sony, Sega and Nintendo make money on game developers through per-unit royalties on games and fixed fees for development kits and treat the gamers side as a loss leader. Interestingly, operating system platforms for the PC and handheld devices have adopted the opposite business model and aim at making money on consumers. The choice of a business model seems to be key to the success of a platform and receives much corporate attention. Table 1 provides a few illustrations³ of the two-sided markets and shows that platforms often treat one side as a profit center and the other as a loss leader, or, at best, as financially neutral. A number of these illustrations are discussed in “mini case studies” in Section 7. And Table 2 lists a few important segments of the new economy that will be searching for a proper business model in the next few years. Such conventional wisdom about business models found in the trade press and summarized in Table 1 is of course subject to criticism. To reason in terms of profit centers, costs are often “intuitively,” but arbitrarily allocated to either side of the market. Yet, the conventional wisdom points at some more fundamental logic related to prices and surpluses on both sides of the market. A major objective of our paper is to unveil this logic and the determinants of the choice of a business model.

From both positive and normative viewpoints, two-sided markets differ from the textbook treatment of multiproduct oligopoly or monopoly. The interaction between the two sides gives rise to strong complementarities, but the corresponding externalities are not internalized by end users, unlike in the

Table 1: Illustrations of Existing Business Models

Product	Loss leader/break-even segment/ subsidized segment	Profit-making segment/subsidizing segment
<i>Software</i>		
Video games	Consumers (consoles)	Software developers
Streaming media	Consumers	Servers
Browsers	Users	Web servers
Operating systems (Windows; Palm, Pocket PC)	Application developers (development tools, support, functionality, . . .)	Clients
Text processing	Reader/viewer	Writer
<i>Portals and media</i>		
Portals	“Eyeballs”	Advertisers
Newspapers	Readers	Advertisers
(Charge-free) TV networks	Viewers	Advertisers
<i>Payment systems</i>		
Credit and differed debit cards (Visa, MasterCard, Amex . . .)	“Eyeballs”	Advertisers
Newspapers	Readers	Advertisers
(Charge-free) TV networks	Viewers	Advertisers
<i>Others</i>		
Social gatherings	Celebrities in social happenings	Other participants
Shopping malls	Consumers (free parking, cheap gas)	Shops
Discount coupon books (Want advertiser)	Consumers	Merchants
Legacy (Internet)	Web sites	Dial-up consumers
Real estate	Buyers	Sellers

multiproduct literature (the same consumer buys the razor and the razor blade). In this sense, our theory is a cross between network economics, which emphasizes such externalities, and the literature on (monopoly or competitive) multiproduct pricing, which stresses cross-elasticities. For example, socially optimal “Ramsey” prices are not driven solely by superelasticity formulae but also reflect each side’s contribution to the other side’s surplus.

Some new questions raised by two-sided markets are more specific to the existence of competition between platforms. In a number of markets, a fraction of end users on one or the two sides connect to several platforms. Using the Internet terminology, we will say that they “multihome.” For example, many merchants accept both American Express and Visa; furthermore, some consumers have both Amex and Visa cards in their pockets. Many consumers have the Internet Explorer and the Netscape browsers installed on their PC, and a number of Web sites are configured optimally for both browsers. Readers may subscribe to multiple newspapers, B2B exchange members may buy or sell their wares on several exchanges, and real estate sellers and buyers may use the services of multiple real estate agencies. Competitive prices on one market then depend on the extent of multihoming on the other side of the market. For example, when Visa reduces the (transaction-proportional) charge paid by the merchants,⁴ merchants become more tempted to turn down the more costly Amex card as long as a large fraction of Amex customers also owns a Visa card. More generally, multihoming on one side intensifies price competition on the other side as platforms use low prices in an attempt to “steer” end users on the latter side toward an exclusive relationship.⁵

This paper studies how the price allocation between the two sides of the market is affected by a) platform governance (for-profit vs. not-for-profit), b) end users’ cost of multihoming, c) platform differentiation, d) platforms’ ability to use volume-based pricing, e) the presence of same-side. From both positive and normative viewpoints, two-sided markets differ from the textbook treatment of multiproduct oligopoly or monopoly. The interaction between the two sides gives rise to strong complementarities, but the corresponding externalities are not internalized by end users, unlike in the multiproduct literature (the same consumer buys the razor and the razor blade). In this sense, our theory is a cross between network economics, which emphasizes such externalities, and the literature on (monopoly or competitive) multiproduct pricing, which stresses cross-elasticities. For example, socially optimal “Ramsey” prices are not driven solely by superelasticity formulae but also reflect each side’s contribution to the other side’s surplus.

The paper is organized as follows. Section 2 describes the simplest version of the model, in which end users incur no fixed cost and platform pricing is linear on both sides of the market, and analyzes the (profit maximizer and Ramsey planner) monopoly benchmarks. Section 3 derives equilibrium behavior when two (for-profit or not-for-profit) platforms compete. Section 4 obtains some comparative statics in order to help predict the choice of business model. Section 5 compares the price structures in the case of linear demands. Section 6 generalizes the model and results in order to allow for fixed user costs and nonlinear platform pricing. Section 7 summarizes the main results and provides seven “mini case studies” to illustrate how our theory may shed light on existing and future business models. Last, Section 8 concludes with some general considerations about two-sided markets.

As we discussed, our work puts network economics and multiproduct pricing together. From the early work of Rohlfs (1974) to the recent theoretical advances and applications to antitrust through the pioneering work of Katz and Shapiro (1985, 1986) as well as Farrell and Saloner (1985, 1986), a large body of literature has developed on network industries. To make progress, however, this literature has ignored multisidedness and the price allocation question. In contrast, the competitive multiproduct pricing literature (e.g., Baumol, Panzar, and Willig 1982, Wilson 1993) has carefully described the interdependency of pricing decisions but it has not considered the affiliation externalities that lie at the core of the network economics literature. In contrast with the buyer of a razor, who internalizes the impact of his purchase on the demand and surplus attached to razor blades, our end-users do not internalize the impact of their purchase on the other side of the market.

Our paper is most closely related to the recent theoretical literature on chicken-and-egg problems.⁶ This literature however assumes either that there is a monopoly platform (Baye and Morgan 2001, Rochet and Tirole 2002, Schmalensee 2002) or that platforms are fully interconnected (Laffont, Marcus, Rey, Tirole 2003) and so end-users enjoy the same level of connectivity regardless of the platform they select. Parker and Van Alstyne (2000) study monopoly pricing in a situation in which the demand for one good depends (linearly) on its price and on the quantity of the other good sold. They characterize the price structure as a function of the network externality coefficients. They then look at the incentive of a producer of a good to enter a (complementary or substitute) market with another incumbent producer. With complements, entry losses may be profitable because entry puts pressure on price and boosts the profit of the core business. Caillaud and Jullien (2003) study competition among intermediaries. In their model, platforms act as matchmakers and can use sophisticated pricing (registration fees, and possibly transaction fees provided the intermediaries observe transactions). Indeed, one of their contributions is to show that dominant firms are better off charging transactions rather than registrations when deterring entry. They also show that competition is more intense when platforms cannot

Table 2: Prospective Applications

Platform	Two sides	Instruments of cost allocation or cross-subsidization
<i>Software</i>		
B2B	Buyers/sellers	Design of auctions, information flows
Internet backbone services	Consumers/websites	Termination (settlement) charges
Pools and standards	Relevant sides	Level of royalties, inclusiveness of pools
Software as a service (.Net vs. Java)	Consumers/application developers	Development tools and other efforts to create an applications development environment, backward compatibility, pricing

deter multihoming. Their contribution is complementary to ours. For example, it assumes homogeneous populations on either side, and thus abstracts from the elasticity-related issues studied in our paper.

Last, in a model related to that of Caillaud and Jullien (2003), Jullien (2001) shows that an entrant represents a much stronger competitive threat on an incumbent platform when third-degree price discrimination is feasible. The ability to “divide and conquer” forces profit down, so much so that the incumbent may prefer platform compatibility.

II. MONOPOLY PLATFORM BENCHMARK

The two-sided markets described heretofore differ in some respects, and we therefore should not aim at capturing all specificities of all industries. Our strategy will be to include a number of key ingredients common to our illustrations in a basic model, and then to generalize our analysis in order to extend its relevance to various two-sided markets. For the moment, we assume that end users incur no fixed usage cost and that platform pricing is linear. This basic model is a good representation of the credit card market; the reader may want to keep this in mind, although it will be clear that the insights have much broader generality.

Economic value is created by “interactions” or “transactions” between pairs of end users, buyers (superscript B) and sellers (superscript S). Buyers are heterogenous in that their gross surpluses b^B associated with a transaction differ. Similarly, sellers’ gross surplus b^S from a transaction differ. Such transactions are mediated by a platform. The platform’s marginal cost of a transaction is denoted by $c \geq 0$.

As an illustration, consider the case of payment cards. The buyer wants to purchase a bundle of goods or services from the merchant at a certain price p . In our vocabulary, a “transaction” takes place if and only if the buyer pays by card instead of using another payment instrument (say, cash). Benefits b^B and b^S correspond to differences in utility of buyers and sellers when they pay by card rather than cash. Under the No Surcharge Rule (very often imposed by payment card networks)⁷ the merchant is not able to charge different retail prices for card and cash payments. Therefore the distributions of b^B and b^S are independent of the prices chosen by platforms and merchants, and can be taken as exogenous.

In the absence of fixed usage costs and fixed fees, the buyers’ (sellers’) demand depends only on the price p^B (respectively, p^S) charged by the monopoly platform. There are network externalities in that the surplus of a buyer with gross per transaction surplus b^B , $(b^B - p^B)N^S$, depends on the number of sellers N^S , but the buyers’ “quasi-demand function”:⁸

$$N^B = \Pr(b^B \geq p^B) = D^B(p^B)$$

is independent of the number of sellers. Similarly, let

$$N^S = \Pr(b^S \geq p^S) = D^S(p^S)$$

denote the sellers' quasi-demand for platform services. Consider a (buyer, seller) pair. Without loss of generality we can assume that each such pair corresponds to one potential transaction.

In contrast with search models à la Baye and Morgan (2001) or Caillaud and Jullien (2003), we take as given the matching process between buyers and sellers, and focus on the proportion of such matches that effectively results in a “transaction.”⁹ Assuming for simplicity the independence between b^B and b^S , the proportion (or volume) of transactions is equal to the product $D^B(p^B)D^S(p^S)$.¹⁰

We consider in turn the case of a private monopoly, and that of a public monopoly maximizing social welfare subject to budget balance.

A. *Private Monopoly*

A private monopoly chooses prices so as to maximize total profit:

$$\pi = (p^B + p^S - c)D^B(p^B)D^S(p^S).$$

Assuming that D^B and D^S are log concave, it is easy to see that π is also log concave (jointly in (p^B, p^S)). Its maximum is characterized by the first-order conditions:

$$\frac{\partial(\log \pi)}{\partial p^B} = \frac{1}{p^B + p^S - c} + \frac{(D^B)'}{D^B} = 0,$$

$$\frac{\partial(\log \pi)}{\partial p^S} = \frac{1}{p^B + p^S - c} + \frac{(D^S)'}{D^S} = 0.$$

In particular:

$$(D^B)'D^S = D^B(D^S)'.$$

This condition characterizes the values of p^B and p^S that maximize volume for a given total price \mathbf{p} : The volume impact of a small (absolute) variation of prices has to be the same on both sides. If we introduce the elasticities of quasi-demands:

$$\eta^B = -\frac{p^B(D^B)'}{D^B} \quad \text{and} \quad \eta^S = -\frac{p^S(D^S)'}{D^S},$$

the private monopoly prices can be characterized by a two-sided formula that is reminiscent of Lerner's formula:

$$p^B + p^S - c = \frac{p^B}{\eta^B} = \frac{p^S}{\eta^S}. \tag{1}$$

In fact, the total price $\mathbf{p} = p^B + p^S$ chosen by the private monopoly is given by the classical Lerner formula:

$$\frac{p-c}{p} = \frac{1}{\eta}, \quad \text{or} \quad p = \frac{\eta}{\eta-1}c, \quad (2)$$

where $\eta = \eta^B + \eta^S$, the total volume elasticity, is assumed to exceed 1. What is new in formula (1) is the way in which this total price is allocated between the two sides of the market:

$$p^B = \frac{\eta^B}{\eta}p = \frac{\eta^B}{\eta-1}c, \quad (3)$$

and

$$p^S = \frac{\eta^S}{\eta}p = \frac{\eta^S}{\eta-1}c. \quad (4)$$

Proposition 1

A monopoly platform's total price, $p = p^B + p^S$, is given by the standard Lerner formula for elasticity equal to the sum of the two elasticities, $\eta = \eta^B + \eta^S$:

$$\frac{p-c}{p} = \frac{1}{\eta}. \quad (2)$$

(ii) The price structure is given by the ratio of elasticities (and not inverse elasticities):

$$\frac{p^B}{\eta^B} = \frac{p^S}{\eta^S}. \quad (5)$$

B. Ramsey Pricing

We consider now the case of a Ramsey monopolist maximizing welfare subject to budget balance, and derive the Ramsey formulae in our context.¹¹ The net surpluses on each side for an average transaction are given by standard formulae:

$$V^k(p^k) = \int_{p^k}^{+\infty} D^k(t) dt$$

for $k \in \{B, S\}$.

Under budget balance, social welfare is highest when the sum of both sides' net surpluses:

$$W = V^S(p^S)D^B(p^B) + V^B(p^B)D^S(p^S),$$

is maximized subject to the constraint:

$$p^B + p^S = c.$$

The first-order, “cost allocation” condition is:

$$\frac{\partial W}{\partial p^B} = \frac{\partial W}{\partial p^S}.$$

This gives:

$$V^S(D^B)' - D^B DS = -DSDB + VB(DS)'.$$

After simplification, we obtain a characterization of Ramsey prices:

Proposition 2

Ramsey prices embody the average surpluses created on the other side of the market and are characterized by two conditions:

$$p^B + p^S = c. \quad (\text{budget balance}) \quad (6)$$

and

$$\frac{p^B}{\eta^B} \left[\frac{V^B}{D^B} \right] = \frac{p^S}{\eta^S} \left[\frac{V^S}{D^S} \right] \quad (\text{cost allocation}) \quad (7)$$

Condition (7) characterizes the price structure that maximizes social surplus for a given total price \mathbf{p} . Returning to the formula yielding the private monopolist’s price structure,

$$\frac{p^B}{\eta^B} = \frac{p^S}{\eta^S}, \quad (1)'$$

the additional terms in Formula (7) (the bracketed terms) reflect the average surpluses per transaction for buyers and sellers. (Later, when we compare price structures across governance forms, we will compare prices for a given price level. That is, we will say that two governance forms generate the same price structure if they give rise to the same prices for a given price level target $\mathbf{p} = \mathbf{p}^B + \mathbf{p}^S$. Of course different governance forms generate different price levels.)

III. COMPETING PLATFORMS

A. Modeling

We now assume that two platforms compete for the markets (we will also look at the case in which both platforms are jointly owned, in order to compare the outcome under platform competition with those obtained in Section 2 in the private monopoly and Ramsey cases).

1. End Users’ Benefits

As earlier, buyers and sellers are heterogenous: their benefits from transacting vary across the two populations and are private information. These benefits are denoted b_i^B for the buyer (when the transaction takes place on platform i) and b_i^S for the seller, and are drawn from continuous distributions.¹² The proportional fees charged

by platform i are p_i^B for buyers and p_i^S for sellers. A buyer with gross surplus b_i^B from transacting on platform i is willing to use that platform provided that

$$b_i^B \geq p_i^B$$

However, the buyer prefers to transact on platform j if $b_j^B - p_j^B > b_i^B - p_i^B$. Similarly, a seller with type b^S is willing to trade on platform i provided that $b^S \geq p_i^S$, and prefers to trade on platform j if $p_j^S < p_i^S$.

Notice that a transaction can occur only if the two sides have at least one platform in common; that is, there exists at least one platform on which both are willing to trade. If both multihome (are affiliated with both platforms), the choice of platform is a priori indeterminate. In accordance with our illustrations, we assume that, whenever a seller is affiliated with the two platforms, the buyer chooses the one on which the transaction takes place.¹³

2. Transaction Volumes

The buyers' behavior generates "quasi-demand functions":

$$D_i^B = D_i^B(p_i^B) = \Pr(b_i^B - p_i^B > 0), \quad (8)$$

and

$$d_i^B(p_1^B, p_2^B) = \Pr[b_i^B - p_i^B > \max(0, b_j^B - p_j^B)]. \quad (9)$$

D_i^B is the proportion of buyers who are willing to use platform i when the seller is affiliated only with platform i . Similarly, d_i^B is the proportion of buyers who are willing to trade on platform i when the seller multihomes. By construction, these functions satisfy the following properties:

$$d_i^B \leq D_i^B \leq d_1^B + d_2^B. \quad (10)$$

We assume that the distribution of (b_1^B, b_2^B) is symmetric, which implies that demand functions are also symmetric: $D_1^B(p^B) = D_2^B(p^B) \equiv \hat{D}^B(p^B)$ and $d_1^B(p_1^B, p_2^B) \equiv d_2^B(p_2^B, p_1^B)$. When prices are equal $p_1^B = p_2^B = p^B$, we will use the simplified notation:

$$d^B(p^B) \equiv d_1^B(p^B, p^B).$$

We focus for the moment on symmetric prices: $p_1^B = p_2^B = p^B$ and $p_1^S = p_2^S = p^S$. A seller of type b^S affiliates with both platforms when $b^S \geq p^S$ and none otherwise. The transaction volumes on each platform are thus equal to

$$Q = d^B(p^B)D^S(p^S).$$

The sellers' net surplus is, as earlier,

$$V^S(p^S) = \int_{p^S}^{+\infty} D^S(t) dt, \quad (11)$$

while the buyers' net surplus is

$$V^B(p_1^B, p_2^B) = \int_{p_1^B}^{+\infty} d_1^B(t_1, p_2^B) dt_1 + \int_{p_2^B}^{+\infty} d_2^B(t_2) dt_2$$

$$= \int_{p_2^B}^{+\infty} d_2^B(p_1^B, t_2) dt_2 + \int_{p_1^B}^{+\infty} D_1^B(t_1) dt_1.$$

3. Joint Ownership Benchmarks

The private monopoly and Ramsey benchmarks studied in Section 2 correspond to the situation in which both platforms are under joint ownership and charge identical prices.

For instance,

$$D^B(p^B) = 2d^B(p^B)$$

where

$$d^B(p^B) = d_1^B(p^B, p^B) = d_2^B(p^B, p^B).$$

4. Governance

We assume that the two platforms are controlled by competing entities, either profit-maximizing firms (Section 3.3) or not-for-profit associations (Section 3.4). Important examples of such associations can be found in the payment card industry (Visa and MasterCard). In such associations, prices for buyers and sellers are determined by competition (both intra and inter platforms) on downstream markets (issuing banks on the buyers' side, and acquire on the sellers' side).

B. Transaction Volumes for Asymmetric Prices

In order to analyze competition, we need to determine transaction volumes on each platform for arbitrary prices, thus extending formula (11) to nonsymmetric prices. Suppose that Platform 1 is cheaper for sellers: $p_1^S < p_2^S$. A seller of type b^S has three possibilities:¹⁴ no trade, affiliation with Platform 1 only, affiliation with both platforms. The first possibility is optimal whenever $b^S \leq p_1^S$. The choice between the other two possibilities involves a trade-off between a lower volume (when affiliated with Platform 1 only) and an obligation to trade on the most expensive platform (when affiliated with both platforms). The corresponding expected net surpluses of a seller of type b^S are respectively $(b^S - p_1^S)D_1^B(p_1^B)$ and $(b^S - p_1^S)d_1^B(p_1^B, p_2^B) + (b^S - p_2^S)d_2^B(p_1^B, p_2^B)$. The seller chooses to multihome when b^S is large enough, more precisely when

$$b^S > \hat{b}_{12} \equiv \frac{p_2^S d_2^B - p_1^S (D_1^B - d_1^B)}{d_2^B - (D_1^B - d_1^B)}. \quad (12)$$

We can now summarize sellers' optimal decisions:

- sellers with low types ($b^S \leq p_1^S$) do not trade,
- sellers with high types ($b^S \leq \hat{b}_{12}$) trade on both platforms,
- sellers with intermediate types ($p_1^S < b^S < \hat{b}_{12}$) trade only on the less expensive platform (here, Platform 1).

By undercutting the rival platform, each platform thus induces some sellers (those with intermediate types) to stop multihoming, a strategy known as "steering." The formulae for $p_1^S > p_2^S$ are obtained by permutation of indices. When p_1^S and p_2^S converge to the same price p^S , \hat{b}_{12} and \hat{b}_{21} both converge also to p^S , which establishes continuity of the formulae giving \hat{b}_{12} and \hat{b}_{21} .

Let us denote by $\sigma_i (i = 1, 2)$ the following indices:

$$\sigma_i = \frac{d_1^B + d_2^B - D_j^B}{d_i^B} \quad i, j = 1, 2; \quad i \neq j.$$

Given property (10), σ belongs to the interval $[0, 1]$. It measures the “loyalty” of consumers of platform i , i.e. the proportion of them who stop trading when platform i ceases to be available. We call σ_i the “singlehoming” index of Platform i . It is equal to 0 when buyer demand faced by the seller is independent of whether the seller is affiliated with Platform i ($d_1^B + d_2^B - D_j^B$). It is equal to 1 when all Platform i buyers are lost when the seller stops affiliating with that platform ($D_j^B = d_j^B$). For a symmetric price configuration (with $D_1^B = D_2^B = \hat{D}^B$), we have

$$\sigma_1 = \sigma_2 = \sigma = 2 - \frac{\hat{D}^B}{d^B}.$$

Starting from a symmetric price structure, suppose platform 1 decreases p_1^S by a small amount ε . This increases demand for Platform 1 in two ways: The platform attracts new merchants ($p_1^S - \varepsilon \leq b_1^S < p_1^S$) and “steers” former multihoming merchants ($p_1^S < b_1^S < \hat{b}_{12}$). Given that $\frac{\partial \hat{b}_{12}}{\partial b_1^S} = 1 - (1/\sigma_2)$, the effectiveness of steering depends on σ_2 : it is nil when $\sigma_2 = 1$ and infinite when $\sigma_2 = 0$.

We are now in a position to determine the volume of transactions on each platform as a function of prices p_i^B and p_i^S . We restrict ourselves to the case $p_1^S \leq p_2^S$ (the case $p_2^S < p_1^S$ is obtained by symmetry). Let us denote by D^S the sellers’ “quasi-demand function”:

$$D^S(p^S) = \Pr(b^S > p^S).$$

From the affiliation decisions derived previously, a proportion $D^S(\hat{b}_{12})$ of sellers multihome, while a proportion $D^S(p_1^S) - D^S(\hat{b}_{12})$ are affiliated only with Platform 1. Assuming that the probability of a meeting between a buyer and a seller is independent of their types, the total expected volumes of transactions on the platforms are:

$$Q^1 = d_1^B(p_1^B, p_2^B)D^S(\hat{b}_{12}) + D_1^B(p_1^B)\{D^S(\hat{b}_{12})\}, \quad (13)$$

for Platform 1, and:

$$Q_2 = d_2^B(p_1^B, p_2^B)D^S(\hat{b}_{12}), \quad (14)$$

for Platform 2, where \hat{b}_{12} is given by formula (12). As already noticed, these formulae are continuous across the “diagonal” $p_1^S = p_2^S$:

$$\lim_{\substack{p_1^S \rightarrow p^S \\ p_2^S \rightarrow p^S}} Q_1 = d_1^B(p_1^B, p_2^B)D^S(p^S).$$

C. Competition between Proprietary Platforms

Proprietary platforms choose prices so as to maximize profit. Consider, for example, Platform 1's profit:

$$\pi_1 = (p_1^B + p_1^S - c)Q_1 \quad (15)$$

As in the case of a monopolist, this maximization can be decomposed into the choice of a price level, $p_1 = p_1^B + p_1^S$, and that of a price structure given a price level. The first-order conditions are:

$$Q_1 + (p_1^B + p_1^S - c) \frac{\partial Q_1}{\partial p_1^B} = Q_1 + (p_1^B + p_1^S - c) \frac{\partial Q_1}{\partial p_1^S} = 0$$

or

$$\frac{\partial Q_1}{\partial p_1^S} = \frac{\partial Q_1}{\partial p_1^B} = -\frac{Q_1}{p_1^B + p_1^S - c}. \quad (16)$$

The following analysis is complex, as it must handle a potential lack of smoothness of the objective function. It can be skipped in a first reading. The end result (Proposition 3) is remarkably simple, though.

Recall the expressions of volumes on both systems, when, say, $p_1^S \leq p_2^S$:

$$Q_1 = d_1^B(p_1^B, p_2^B)D^S(\hat{b}_{12}) + D_1^B(p_1^B)\{D^S(\hat{b}_{12})\}, \quad (13)$$

$$Q_2 = d_2^B(p_1^B, p_2^B)D^S(\hat{b}_{12}), \quad (14)$$

where

$$\hat{b}_{12} \equiv \frac{p_2^S d_2^B - p_1^S (D_1^B - d_1^B)}{d_2^B - (D_1^B - d_1^B)}. \quad (12)$$

We focus on symmetric equilibria ($p_i^S \equiv p^S, p_i^B \equiv p^B$), for which volumes have simpler expressions:

$$Q_i = d_i^B(p^B, p^B)D^S(p^S).$$

While

$$\frac{\partial Q_1}{\partial p_1^B} = \frac{\partial d_1^B}{\partial p_1^B}(p^B, p^B)D^S(p^S), \quad (17)$$

the first derivative in formula (17) is not necessarily well defined since volumes have a different expression according to whether $p_1^S < p_2^S$ or $p_1^S > p_2^S$:

$$Q_1 = d^B(p^B)D^S(\hat{b}_{12}) + \hat{D}_B(p^B)\{D^S(p_1^S) - D^S(\hat{b}_{12})\}$$

when $p_1^S < p_2^S$, and $Q_1 = d^B(b^B)D^S(\hat{b}_{21})$ when $p_1^S > p_2^S$.
 Interestingly, Q_1 turns out to be differentiable¹⁵ even at $p_1^S = p_2^S$. Indeed, at symmetric prices:

$$\frac{\partial Q_1}{\partial p_1^S} = (D^S)' \frac{(d^B)^2}{2d^B - \hat{D}^B}. \quad (18)$$

Using (16), (17), and (18) we obtain a simple form for the first-order condition for a symmetric equilibrium:

$$\frac{\partial Q_1}{\partial p_1^S} D^S = (D^S)' \frac{(d^B)^2}{2d^B - \hat{D}^B},$$

or:

$$\left(\frac{2d^B - \hat{D}^B}{d^B} \right) \left(-\frac{\partial d_i^B / \partial p_i^B}{d^B} \right) = -\frac{(D^S)'}{D^S}.$$

The first term on the left-hand side of this latter formula is the singlehoming index σ defined earlier, which measures the proportion of “unique customers.” The second term is the ratio of the own-brand elasticity of demand for buyers

$$\eta_o^B = -\frac{p^B \partial d_i^B / \partial p_i^B}{d^B}$$

over the buyers' price p^B . Finally, the last term is the ratio of the elasticity of sellers' demand over sellers' price. Thus we can state:

Proposition 3

A symmetric equilibrium of the competition between proprietary platforms is characterized by:

$$p^B + p^S - c = \frac{p^B}{\eta_o^B} = \frac{p^S}{(\eta^S/\sigma)}.$$

The formulae are thus the same as in the monopoly platform case, except that a) on the buyer side, the demand elasticity η^B is replaced by the (higher) own-brand elasticity η_o^B and b) on the seller side, the demand elasticity η^S is replaced by the equivalent of an own-brand elasticity η^S/σ . When all buyers singlehome ($\sigma = 1$), σ the own-brand elasticity and the demand elasticity coincide. But as multihoming becomes more widespread (decreases), the possibility of steering increases the own-brand elasticity η^S/σ .

D. Competition Between Associations

When platforms are run by not-for-profit cooperatives owned by members (operators on the buyer and seller sides), prices paid by the end users are set by the members and not by the platforms. Platforms however have an important say in the price structure, especially if competition among members is intense on both sides of the market. In our model, an association's only strategic decision is the choice of access charges between members. Neglecting platform costs, the zero-profit condition implies that these access “charges” exactly offset each other as one side receives the charge paid by the other side. For example in the payment card industry the access

charge is called the interchange fee and is paid by acquirers (the sellers' banks) to issuers (the buyers' banks).¹⁶ This section studies the access charge chosen by competing associations and compares the corresponding prices for final users (buyers and sellers) with those resulting from competition between profit-maximizing systems. While the section is currently most relevant to the payment card industry, its potential applicability is much broader. For example, reflecting recent concerns about unequal access to B2B exchanges, some have suggested that these exchanges be run as nonprofit associations. Furthermore, and as will be observed in Section 7.2, networks of interconnected networks (e.g., communication networks) are economically similar to nonprofit platforms.

The members compete on two downstream markets, the buyer and the seller downstream markets. Given access charge a_i on platform i , the net marginal costs for a member of platform i of serving a buyer and a seller, respectively, are $c^B - a_i$ and $c^S + a_i$, where c^B and c^S represent the gross marginal costs incurred by the members on each side of the market. We make the simplifying assumption that intraplatform competition results in constant equilibrium margins charged by members on downstream markets: m^B on the buyers' side and m^S on the sellers' side. Equilibrium prices are thus given by:

$$p_i^B = c^B - a_i + m^B, \quad p_i^S = c^S + a_i + m^S.$$

This assumption is for example satisfied if (a) members belong to a single association and are differentiated in a direction orthogonal to that of platform differentiation;¹⁷ and (b) members on a given platform are little differentiated. Intense intraplatform competition then results in Hotelling competition between members taking as given (as a first-order approximation) the number of end users on the platform (which is basically determined by the platforms' access charges given that the members' markups are small).¹⁸ Under this simplifying assumption, the profits of all members of an association are proportional to the volume of transactions on the association's platform. The interests of all members are thus completely aligned. Regardless of its exact structure the association selects the access charge so as to maximize its volume. Furthermore the total price on each system is constant:

$$p_i^B + p_i^S = c + m, \tag{19}$$

where $m = m^B + m^S$ is the total margin on downstream markets and $c = c^B + c^S$.

Last, in order to be able to compare the association with the cases of a monopolist and of competing proprietary platforms, we must assume that the quasi-demand functions are the same. That is, the members are only selling the varieties of each platform that the proprietary platforms were selling. Because we kept quasi-demand functions quite general, there is no difficulty in assuming this is indeed the case.

The outcome of the competition between the two associations is characterized by two price vectors (p_i^B, p_i^S) , $i=1, 2$, such that: for all i , (p_i^B, p_i^S) maximizes the volume Q_i on system i subject to (19), taking as given the price vector (p_j^B, p_j^S) on the other system.

The first-order conditions for a symmetric equilibrium are given by (20)

$$p^B + p^S = c + m$$

(condition on total price) and the equivalent of condition (5):

$$\frac{\partial Q_i}{\partial p_i^B} = \frac{\partial Q_i}{\partial p_i^S}, \quad (21)$$

(same impact on volume of a marginal price increase on each side of the market).

The analysis of the price structure is therefore identical to that for proprietary platforms. The price level is lower for associations with healthy competition among their members but may exceed the proprietary platforms price level if double marginalization is strong.

Proposition 4

A symmetric equilibrium of the competition between associations is characterized by

$$p^B + p^S = c + m$$

and

$$\frac{p^B}{\sigma \eta_o^B} = \frac{p^S}{\eta^S}. \quad (22)$$

Comparing now Propositions 2 and 4, we see that even when downstream markets are perfectly competitive (the margin m converges to zero) and so the price level is socially optimal, competition between not-for-profit associations need not generate an efficient outcome. Indeed, the condition for an efficient price structure (given in Proposition 2) is:

$$\frac{p^B}{\eta^B} \left[\frac{V^B}{D^B} \right] = \frac{p^S}{\eta^S} \left[\frac{V^S}{d^S} \right], \quad (7)$$

while the condition characterizing competition between associations is different:

$$\frac{p^B}{\sigma \eta_o^B} = \frac{p^S}{\eta^S}. \quad (22)$$

This is natural, as (a) the associations do not internalize the end-users' surpluses, and (b) the associations aim at steering sellers (which is reflected by the presence of σ and stealing buyers (as indicated by the presence of η_o^B) away from the rival association, while market share considerations play no role in a Ramsey program. It is therefore perhaps remarkable that the two conditions coincide in the special case of linear demands, which we explore in detail in Section 5.

IV. DETERMINANTS OF BUSINESS MODEL

Let θ be a parameter that affects the volume of transactions on the platforms. In this section, we consider the impact of a small variation in θ on user prices p^B and p^S , depending on industry structure (monopoly or duopoly) and on the platforms' governance structure (for-profits or associations). We concentrate on three

important determinants of industry conduct and performance:

Marquee buyers: In the first application, θ represents a (small) uniform shift in sellers' surpluses, due to the presence of marquee buyers on the other side of the market. As a result, the sellers' demand function becomes:

$$D^S(p^S, \theta) = D^S(p^S - \theta).$$

Installed Bases/Captive Buyers: In the second application, θ represents the small) mass of buyers who are loyal to their platform, independently of prices. Such buyers, say, are tied by long-term contracts. As a result, the buyers' demand functions become:

$$d_i^B(p_1^B, p_2^B, \theta) = d_i^B(p_1^B, p_2^B) + \theta,$$

$$D^B(p^B, \theta) = D^B(p^B) + \theta,$$

$$\hat{D}^B(p^B, \theta) = \hat{D}^B(p^B) + \theta.$$

Multihoming: In the third application, θ represents an exogenous increase in the singlehoming index of buyers. Assume for example that \mathbf{d}^B does not depend on θ , while \mathbf{d}^B decreases in θ . Then $\sigma(p^B, \theta) = 2 - [D^B(p^B, \theta) / d^B(p^B)]$ increasing in θ , while η_o^B does not depend on θ .¹⁹

Proposition 5 analyzes the impact of small variations of θ on the prices \mathbf{p}^B and \mathbf{p}^S .

Proposition 5

- (1) In the case of a monopoly platform (for-profit or association) and with log concave demand functions, the seller price increases when there are marquee buyers and decreases when there are captive buyers. The buyer price moves in the opposite direction.
- (2) The same result holds under competition between associations, except that the comparative statics with respect to captive buyers requires a regularity condition.
- (3) In the case of competing associations, an increase in the multihoming index of buyers (keeping demand elasticities constant) leads to an increase in the buyer price and a decrease in the seller price. Intuitively, marquee buyers make the platform more attractive for the sellers. The platform then raises its price \mathbf{p}^S to sellers, which reduces the de facto marginal cost, $\mathbf{c} - \mathbf{p}^S$, of provision of the service to the buyers. The buyer price therefore falls. The intuition is similar in the case of captive buyers. Captive buyers allow the platform to raise the price \mathbf{p}^B to buyers, thus reducing the de facto marginal cost $\mathbf{c} - \mathbf{p}^S$ of serving sellers. A regularity condition however is required here in the case of platform competition, which creates a countervailing steering effect: Each platform's buyer membership is then "more unique" to the platform, and so it is more costly for a seller to forgo the platform. Last, an increase in multihoming makes steering more attractive and puts a downward pressure on the seller price.

V. LINEAR DEMANDS

We illustrate the results obtained so far in a variant of the Hotelling model, where a buyer's preferences for platforms are represented by his location x on a line. Buyers are uniformly distributed on a line of length $(\Delta + 2\delta)$. Platforms 1 and 2 are symmetrically located at a distance $\Delta/2$ of the origin of the line ($x = -(\Delta/2)$ for Platform 1 and $x = \Delta/2$ for Platform 2). The number Δ parametrizes the degree of substitutability between platforms. Buyers have also access to outside options, represented conventionally by two other symmetric platforms (denoted 1' and 2'), located further away from the origin ($x = -(\Delta/2) - \delta$ and $x = (\Delta/2) + \delta$) and charging the same, exogenous, price p_o . The number δ will serve us as a measure of the weight of "unique consumers." When using a platform located at distance d , buyers incur a quadratic transportation cost $\frac{1}{2}d^2$, (the transportation cost parameter is normalized to 1 without loss of generality).

Proposition 6 (proved in the Appendix) exhibits three main implications of the linear case. First, the price structure is the same regardless of whether the industry is served by a private monopoly, competing proprietary platforms or competing associations. Second, if demand is linear on the seller side as well, then this common price structure is Ramsey optimal. Taken together, these results show that without detailed information about the demand structure, one should not expect clear comparisons of price structures across governance mechanisms. Nor are policy interventions to alter the price structure (as opposed to the price level) likely to be solidly grounded. Third, Proposition 6 provides sufficient conditions for the second-order conditions to be satisfied in the linear demand case.

Proposition 6

Suppose that the buyers' quasi-demand is described by an Hotelling model, with uniform distribution and outside options with distance Δ between the two platforms and distance δ between each platform and its nearest outside option, and that the market is not covered (not all potential buyers buy).

- The buyer singlehoming index is equal to:

$$\sigma = \Delta/(\Delta + \delta), \quad (1)$$

and decreases when the platforms become more substitutable.

- The platforms' ability to steer (undercut in order to discourage sellers from multihoming) decreases with the buyer singlehoming index.
- On the buyer side, total elasticity is equal to own-brand elasticity times the singlehoming index:

$$\eta^B = \eta_o^B \sigma.$$

(2) The price structure is the same under a monopoly platform, competing proprietary platforms and competing associations. It satisfies

$$\frac{p^B}{\eta^B} = \frac{p^S}{\eta^S}.$$

(3) If furthermore seller demand is linear, then the price structure in the three environments is Ramsey optimal.

(4) The price vectors given in formulae (31) and (32) satisfy the second order conditions for an equilibrium if and only if δ/Δ is smaller than

$$(1 + \sqrt{5})/2.$$

VI. GENERALIZATION TO FIXED USER FEES AND USAGE COSTS

In many of the examples presented in the Introduction, fixed costs, either fixed fees charged by the platforms or fixed usage costs, play an important role. In order to demonstrate the robustness of our results to the introduction of fixed costs, we now adapt our model accordingly. To simplify the analysis, we assume that buyers singlehome (for example, consumers read a single newspaper or connect to a single portal). Second, we focus on the symmetric equilibrium. There is a sizeable literature on tipping in the presence of user fixed costs and we have little to add to this literature. Last, we first look at the case in which there is no direct exchange of money between the two sides of the market, as is the case for advertising in newspapers, TVs, and portals; we will later show how to extend the analysis to cases, such as videogames, exhibiting direct monetary transactions between end-users.

Platforms incur fixed costs C^B and C^S per buyer and seller, as well as marginal cost c per transaction between them (presumably $c=0$ for advertising). Let platform i charge fixed fees A_i^B and A_i^S and variable charges $a_i^B N_i^S$ and $a_i^S N_i^B$ to buyers and sellers, where N_i^B and N_i^S are the numbers of buyers (eyeballs) and sellers (advertisers) connected to platform i . A buyer with (possibly negative) average benefit b_i^B of receiving an ad and with fixed usage cost γ_i^B (also possibly negative) has net utility

$$U_i^B = (b_i^B - a_i^B)N_i^S - A_i^B - \gamma_i^B.$$

Similarly, a seller with average benefit b^S of reaching a consumer and with fixed cost γ^S of designing an ad for this newspaper has net utility:

$$U_i^S = (b^S - a_i^S)N_i^B - A_i^S - \gamma^S.$$

The buyers are heterogenous over parameters (b_i^B, γ_i^B) and sellers are heterogenous over parameters

The strategic choices for the platforms are the per “transaction” (eyeball viewing an ad) markups:

$$p_i^B \equiv a_i^B + \frac{(A_i^B - C^B)}{N_i^S} \quad \text{and} \quad p_i^S \equiv a_i^S + \frac{(A_i^S - C^S)}{N_i^B}.$$

Assuming that readers buy a single newspaper, the number of copies sold by newspaper i is given by

$$N_i^B = \Pr(U_i^B > \max(0, U_j^B)),$$

which is equal to some function d_i^B of prices (p_1^B, p_2^B) and numbers of ads (N_1^S, N_2^S) of the two newspapers

$$N_i^B = d_i^B(p_1^B, N_1^S; p_2^B, N_2^S) \equiv \Pr((b_i^B - p_i^B)N_i^S - C^B - \gamma_i^B > \max(0, (b_j^B - p_j^B)N_j^S - C^B - \gamma_j^B))$$

$$\geq \max[0, (b_j^B - p_j^B)N_j^S - C^B - \gamma_j^B]. \quad (23)$$

N_i^S is itself a function of p_i^S and N_i^B :

$$N_i^S = D^S(p_i^S, N_i^B) = \Pr((b^S - p_i^S)N_i^B > \gamma^S). \quad (24)$$

These formulas are valid provided fixed costs for buyers are high enough so that no buyer buys the two newspapers (no multihoming for buyers). Substituting (24) into (23), and solving for (N_1^B, N_2^B) , one obtains demand functions for the buyers:

$$N_i^B = n_i^B(p_1^B, p_1^S; p_2^B, p_2^S).$$

Let us define the own- and cross-elasticities for buyer demand:

$$\eta_o^B \equiv -\frac{\partial n_i^B}{\partial p_i^B} \frac{p_i^B}{n_i^B} \quad \text{and} \quad \eta_S^B \equiv -\frac{\partial n_i^B}{\partial p_i^S} \frac{p_i^S}{n_i^B}.$$

On the seller side, we define the own-price elasticity and the network elasticity:

$$\eta^S \equiv -\frac{\partial D^S}{\partial p^S} \frac{p^S}{D^S} \quad \text{and} \quad \eta_N^S \equiv \frac{\partial D^S}{\partial N^B} \frac{N^B}{D^S}.$$

With this notation, the formulae for transaction volumes and platform profit look remarkably similar to the ones obtained earlier. Platform i maximizes:

$$\pi_i = (p_i^B + p_i^S - c)N_i^B N_i^S.$$

Simple computations yield:

Proposition 7

A symmetric equilibrium is characterized by prices (p^B, p^S) satisfying:

$$p^B + p^S - c = \frac{p^B}{\eta_o^B(1 + \eta_N^S)} = \frac{p^S}{\eta^S + \eta_S^B(1 + \eta_N^S)}.$$

While we simplified the model by assuming singlehoming ($\sigma = 1$), the presence of fixed costs implies that network externalities impact not only end-user surpluses, but also demands. For example, on the buyer side, the own price elasticity η_o^B is multiplied by a factor greater than 1 to account for the fact that when a platform reduces its buyer price, more buyers connect to the platform, inducing more sellers to connect and further increasing buyer demand. And similarly on the seller side.

In more structured applications, the formulae in Proposition 7 may simplify. For example, in the advertising example, it is reasonable to assume that sellers incur no fixed usage cost ($\gamma^S \equiv 0$), since the advertising campaign has already been prepared for other media. In this case formula (24) shows that D^S does not depend on N^B , so that $\eta_N^S = 0$, and

$$p^B + p^S - c = \frac{p^B}{\eta_o^B} = \frac{p^S}{\eta^S + \eta_S^B}.$$

Last, let us turn to the (videogame or operating system) case in which the transaction between the seller and buyer involves a price charged by the seller to the buyer.

Additional complications arise because of this monetary transaction between buyers and sellers. The equilibrium price of this transaction is then determined by competitive forces in the market for videogames or software applications and depends on the pricing policies of platforms. To illustrate how to extend the model to reflect this, we assume that sellers have market power and no marginal cost and that buyers differ only in the fixed cost of learning how to install and use an operating system or a console (and in the identity of their preferred applications). They receive gross surplus \underline{v} for a fraction α of the applications (where the corresponding applications are drawn in i.i.d. fashion among consumers) and $\bar{v} > \underline{v}$ for a fraction $(1 - \alpha)$. When α is large (so that $(1 - \alpha)\bar{v} > \underline{v}$), it is efficient for the platforms to induce developers to charge the low price $p = \underline{v}$, so that buyers buy all games and receive a net marginal surplus $b^B = (1 - \alpha)\bar{v} > \underline{v}$. Then we can assume w.l.o.g. that $a^S = 0$, so that $b^S = \underline{v}$. Using the same notation as above, the net utilities of a typical buyer and a typical seller are

$$U_i^B = b^B N_i^S - A_i^B - \gamma_i^B,$$

$$U_i^S = b^S N_i^B - A_i^S - \gamma_i^S.$$

Denoting again by p_i^B and p_i^S the per transaction mark-ups:

$$p_i^B = \frac{A_i^B - C^B}{N_i^S} \quad \text{and} \quad p_i^S = \frac{A_i^S - C^S}{N_i^B},$$

and d_i^B, D^S the associated demand functions, we obtain the same formulae as in Proposition 7.

VII. SUMMARY AND MINI CASE STUDIES

Let us now summarize the paper's key insights. The main contribution has been to derive simple formulae governing the price structure in two-sided markets, and this for a wide array of governance structures (private monopoly, Ramsey planner, competition between for-profit or nonprofit platforms). But we also obtained more specific insights. On the public policy side:

- 1) The Ramsey price structure does not correspond to a "fair cost allocation." Rather, like private business models, it aims at getting both sides on board.
- 2) The main conceptual difference between private and Ramsey price structures is that the latter takes into account the average net surplus created on the other side of the market when attracting an end user on one side. Yet, private business models do not exhibit any obvious price structure bias (indeed, in the special case of linear demands, all private price structures are Ramsey optimal price structures).

On the business model front, we obtained:

- 3) Monopoly and competitive platforms design their price structure so as to get both sides on board.
- 4) An increase in multihoming on the buyer side facilitates steering on the seller side and results in a price structure more favorable to sellers.
- 5) The presence of marquee buyers (buyers generating a high surplus on the seller side) raises the seller price and (in the absence of price discrimination on the buyer side) lowers the buyer price.
- 6) Captive buyers tilt the price structure to the benefit of sellers. We now develop seven “mini case studies” meant to emphasize the attention paid by platforms to the pricing structure. A rigorous validation of testable implications 3) through 6) lies beyond the scope of this paper, and we hope that future research will perform the econometric studies needed to confirm or infirm these hypotheses in specific industries. We only offer some casual empiricism; this preliminary evidence seems quite encouraging of the theory.

A. *Credit and Debit Cards*

The payment industry offers a nice illustration of implications 3) through 6). Historically, the business model for credit and differed debit cards has been to attract cardholders and induce them to use their cards. Visa and MasterCard are not-for-profit associations owned by over 6,000 bank (and nonbank) members. The associations centrally set interchange fees to be paid by acquirers (the merchants’ banks) to issuers (the cardholders’ banks). These interchange fees are proportional to transaction volume. A higher interchange fee is, via the competition among issuers, partly or fully passed through to consumers in the form of lower card fees and higher card benefits, which encourages card ownership and usage; and via competition among acquirers, partly or fully passed through to merchants, who pay a higher merchant discount (the percentage of the sale price that the merchant must pay the acquirer), which discourages merchant acceptance. The associations’ choice of interchange fees have typically favored cardholders over merchants who kept accepting the card despite the high level of the merchant discounts (implication 3).²⁰

American Express, a for-profit closed system, works on the same business model, with an even higher degree of cross-subsidization. Traditionally, it has charged a much higher merchant discount.²¹ It could afford to do so because the Amex clientele—in particular the corporate card clientele—was perceived as very attractive by merchants (implication 5). The gap between Amex’s and the associations’ merchant discounts has narrowed in the 1990s as more and more Amex customers got also a Visa card or MasterCard. Such “multihoming” by a fraction of cardholders made it less costly for merchants to turn down Amex cards (implication 4).

The online debit card market in the United States has adopted an entirely different business model. Rather than courting consumers, it has wooed merchants through a low interchange fee. One key difference with credit and differed debit cards is that consumers indeed do not need to be courted (they already have

in their pocket an ATM card, that they can use as an online debit card; so in a sense they are “captive”), while merchants, to perform online debit, must install costly pinpads (which most of them have not yet done).²² This emphasizes the relevance of implications 3 and 6).

B. Internet

In the Internet, the instrument of cross-subsidization is the termination or settlement charge (or lack thereof) between backbones. The termination charge for off-Net traffic between two backbones is, as its name indicates, the price paid by the originating backbone to the terminating backbone for terminating the traffic handed over. It can be shown²³ that it is optimal to charge the “off-Net cost” to end users for marginal incoming and outgoing traffic. That is, backbones should charge as if the traffic were off-Net, even though a fraction of the traffic is actually on-Net. The charge for incoming (outgoing) traffic decreases (increases) one-for-one with the termination charge. This implies that a high termination charge is indirectly borne by end users, like websites, whose volume of outgoing traffic far exceeds the volume of incoming traffic, and benefits end users, such as dial-up customers, who mostly receive traffic (downloads).

An Internet in which backbones exchange traffic at a uniform volume-proportional termination charge is similar to the case of a single not-for-profit platform. This analogy can be best depicted by envisioning backbones exchanging traffic at public peering points.²⁴ An “association” running these public peering points and keeping track of bilateral termination charges would be similar to a credit-card association recording traffic between acquirers and issuers, with the termination charge the counterpart of the interchange fee. A network of interconnected networks therefore resembles a single not-for profit platform.

The Internet is still mostly run by pre-deregulation legacy arrangements, according to which the backbones charge nothing to each other for terminating traffic. This business model is currently being reexamined and it is quite possible that, as is the case for regular telephony, positive termination charges will be levied in the future. The legacy arrangements may well have made sense in an epoch in which the posting of content on the Web had to be encouraged. A key question now is whether a change in industry conditions motivates a move toward paying settlements.

C. Portals and Media

The business model of (nonpay) TV, and to a large extent, newspapers has been to use viewers and readers as a loss leader, who attract advertizers. This business model has been adopted with a vengeance by Internet portals, which have supplied cheap or free Internet access as well as free content (share quotes, news, e-mail, etc.) to consumers. The profit center has been advertising revenue, including both fixed charges for banner placement and proportional referral fees.²⁵

Interestingly the portal industry is considering whether to stick to this business model or move to for-fee content. For example, Yahoo! is now starting to charge fees for services such as real-time share-quote services or

auction services. A number of content sites have appeared that charge substantial fees for on-line content.²⁶

D. Video Games

Our last four case studies are drawn from the software industry. The video game market is a typical two-sided one. A platform cannot sell the console without games to play on and cannot attract game developers without the prospect of an installed base of consumers. In its thirty years of existence, the video game industry has had four leading platforms, Atari, Nintendo and Sega, and finally Sony. The business model that has emerged uses consoles as the loss leader and draws platform profit from applications development. To be certain, history has repeatedly shown that technically impressive platforms (e.g., Mattel in 1981, Panasonic in 1993, and Sega in 1985 and after 1995) fail when few quality games are written for them. But attracting game developers is only a necessary condition. In fact, the business model currently employed by Nintendo, Sega and Sony is to charge software developers a fixed fee together with a per-unit royalty on the games they produce.²⁷ Microsoft released in the fall of 2001 the Xbox in competition with Sony's dominant PlayStation 2. Interestingly, Microsoft manufactures the Xbox console and uses it as a loss leader. While courting the developers²⁸ by using the familiar X86 chip and Windows platform and by not charging for the Xbox Prototype kit, Microsoft has stated that it intends to draw revenue from royalties.

Although the industry's business model involves drawing revenue from developers, platforms can only go so far in taxing the latter. A key factor in Sony's PlayStation's victory over the Sega Saturn and Nintendo 64 was that Sony offered a development platform and software application that was much cheaper (about \$10,000 per seat) and much easier to use (as it was PC based) than its two rivals'.²⁹

E. Streaming-Media Technology

Streaming-media platforms incorporate encoding, compression, scripting and delivery technologies to allow the delivery of streaming content, facilitate content creation and permit interactivity; for example, it is central to conferencing and Webcast. The current competition is among the RealNetworks, Microsoft, and Apple platforms.

The streaming-media industry is still in its infancy and it is probably too early to point at "the" business model. The current business mostly, but not exclusively, subsidizes the client side. RealNetworks and Apple offer two clients: a basic, free client and a better, nonfree one. RealNetworks, the current leader charges significant amounts on the server side for RealServer Plus and its upgrades (see Cowell 2001 for details). Apple in contrast is currently free on the server side, but has the disadvantage on running only on Macs. Microsoft's Windows Media is free (bundled with the operating systems).

F. Operating Systems

Both sides in the Microsoft browser case agreed that a key competitive advantage of Windows over competing operating systems is its large installed base of applications. Windows' business model is basically the opposite of that of videogame platforms. Windows makes money on users and as a first approximation does not make

or lose money on applications developers.³⁰ It fixes the Applications Programming Interfaces three or four years in advance (a costly strategy) and invests heavily in developer support. This strategy proved profitable in its contest with Apple and IBM's OS/2. Apple has no integrated developers system tools allowing developers to test their programs; the latter had to buy an IBM workstation and a compiler. IBM viewed developer kits as a profit center.³¹ While other factors undoubtedly played a role in the competition among the three platforms, observers usually agree that Microsoft's choice of business model helped Windows establish dominance.

G. Text Processing

A key issue confronting purchasers of text processing software is whether they will be able to "communicate" with people who don't make the same choice. Commercial software vendors have in this respect converged on the following business model: They offer a downgraded version of the paying software as "freeware." This free version allows "nonusers" to open, view, and print, but not edit documents prepared with the paying software, and copy information from those documents to other applications. Examples of such free viewers are Word Viewer, PDF Viewer, and Scientific Viewer.³²

VIII. FINAL THOUGHTS ABOUT TWO-SIDED MARKETS

Our premise is that many (probably most) markets with network externalities are two- (or multiple-) sided markets. A market with network externalities is a two-sided market if platforms can effectively cross-subsidize between different categories of end users that are parties to a transaction. That is, the volume of transactions on and the profit of a platform depend not only on the total price charged to the parties to the transaction, but also on its decomposition. There are two reasons why platforms may be unable to perform such cross-subsidization:

a. Both sides of the market coordinate their purchases.

A debit card platform negotiating with a government for the handling of interagency financial transactions, an Internet operator offering an Intranet solution to a company, or a streaming-media platform offering streaming audio and video to a firm primarily for internal use all deal with a single party. A subsidization of the client side by the server side for example does not affect the total price of the software service and, *ceteris paribus*, does not affect the demand for the platform.³³

b. Pass-through and neutrality.

Even when end users on the two sides of the market act independently, monetary transfers between them may undo the redistributive impact and prevent any cross-subsidization. The value-added tax is an epitome of the possibility of neutrality. First-year economic students are taught that it really does not matter whether the seller or the buyer pays the tax. In the end, prices adjust so that any tax paid by the seller is passed through to the consumer. If such neutrality holds, then the markets discussed above should be treated as one-sided markets, that is markets in which only the total per transaction price charged by the platform matters and not

its decomposition between end users.³⁴

Yet thinking of the markets discussed in this paper as one-sided markets just runs counter to evidence. First, the platform owners in all these industries devote much attention to their price-allocation business model: Is it more important to woo one side or the other? The quest for “getting both sides on board” makes no sense in a world in which only the total price for the end user interaction, and not its decomposition, matters. And the trade press would not contain so many descriptions of “chicken-and-egg” problems. Second, the end users themselves are also very sensitive to the allocation of cost between them, indicating that some actual redistribution is taking place. Merchants vocally object to increases in interchange fees, and website operators will do so if settlement charges are introduced in the Internet. End users would not react in this way if charges were passed through. There are three broad reasons why neutrality does not hold in practice:

a. Transaction costs.

“Transaction costs” refer to a broad range of frictions that make it costly for one side of the market to pass through a redistribution of charges to the other side. Often, these transaction costs are associated with small stakes for individual transactions (which can become substantial when applied to a large number of transactions). The cost of thinking about including the pass-through, writing it into a contract, advertizing it to the other side and enforcing the covenant may then be prohibitive. For example, contractual relationships between a supplier, a buyer and their banks may not specify on which payment system the settlement of the transaction will occur.

A second type of transaction cost has to do with the absence of a lowcost billing system. Suppose that an academic downloads a PDF file of another academic’s paper. The micropayments that would be required for pass-through would probably require a costly third-party billing system to be developed cooperatively by Internet backbones and service providers.³⁵

A third transaction cost is the impossibility of monitoring and recording the actual transaction or interaction. In the portal and media example, neutrality would imply that when the platform (portal, TV network, newspaper) raises the price of advertizing, this price increase translates into a smaller amount of money given by the advertizer to the consumer for “listening to the ad.” But “listening” is not easily measurable (except for the monitoring of clicks in the Internet, and even then it is impossible to measure whether the consumer pays genuine attention³⁶). In practice therefore, the viewer/reader receives no compensation from the advertizer and neutrality does not obtain.

b. Volume-insensitive costs.

Neutrality also fails when at least one side of the market incurs costs that a) are influenced by the platform and b) are not proportional to the number of transactions on the platform. For

example, while software developers incur some costs, such as the pergame royalties paid by game developers, that are proportional to sales, many costs are insensitive and affected by the platform: The fixed development cost is influenced by platform through software design, and so is the fixed charge for the development kit. On the user side, getting familiar with the software design, and so is the fixed charge for the development kit. On the user side, getting familiar with the buyer ought to be treated by the seller as a sunk cost when choosing the price to offer to the potentially interested buyer.

c. Platform-determined constraints on pass-through.

The platform may also take steps that limit the extent of pass-through. A case in point is the nodiscrimination- rule adopted by credit card associations (Visa, MasterCard) and for-profits (Amex).³⁸ Merchants do not pass the merchant discount through only to cardholders. So there is only a partial pass-through between the two sides.

These reasons, which have been embodied in our model, explain why markets with network externalities are predominantly two-sided markets.

APPENDIX

PROOF OF PROPOSITION 5

1. Monopoly.

Total volume is given by

$$Q = D^B(p^B, \theta) D^S(p^S, \theta).$$

We assume that D^B and D^S are (strictly) log concave with respect to prices, so that the first-order conditions are sufficient for the maximization of volume under a constant margin (case of an association) and for the maximization of profit (case of a for-profit monopoly).

2. Monopoly Association.

The buyer price p^B induced by an association is characterized by

$$\varphi(p^B, \theta) = \lambda^B(p^B, \theta) - \lambda^S(c + m - p^B, \theta) = 0,$$

where $\lambda^B(p^B, \theta) = -(D^B(p^B, \theta))' / (D^B(p^B, \theta))$ and $\lambda^S(p^S, \theta) = -(D^S(p^S, \theta))' / (D^S(p^S, \theta))$ denote the “sensitivities” of demands and $c+m$ is the (fixed) total price. We can apply the implicit function theorem to φ , given that

$\partial\varphi/\partial p^B > 0$. This is because the strict log concavity of demands implies that sensitivities are increasing. Thus p^B is differentiable in θ and $dp^B/d\theta$ has the same sign as $-(\partial\varphi/\partial\theta)$.

We just have to compute $(\partial\varphi/\partial\theta)$ in our two examples:

Marquee buyers:

$$\varphi(p^B, \theta) = \lambda^B(p^B) - \lambda^S(c + m - \theta - p^B)$$

$$\frac{\partial\varphi}{\partial\theta} = (\lambda^S)' > 0 \quad (\text{since } D^S \text{ is log concave!})$$

Thus $(\partial\varphi/\partial\theta)$ is negative.

$$\varphi(p^B, \theta) = \frac{-(D^B)'}{D^B + \theta} - \lambda^S(c + m - p^B)$$

$$\frac{\partial\varphi}{\partial\theta} = \frac{(D^B)'}{(D^B + \theta)^2} < 0.$$

Captive buyers:

$$\varphi(p^B, \theta) = \frac{-(D^B)'}{D^B + \theta} - \lambda^S(c + m - p^B)$$

$$\frac{\partial\varphi}{\partial\theta} = \frac{(D^B)'}{(D^B + \theta)^2} < 0.$$

And so $(\partial\varphi/\partial\theta)$ is positive.

a. For-Profit Monopoly.

The maximum of the (log) profit is characterized by two conditions:

$$\begin{cases} \lambda^B(p^B, \theta) - \frac{1}{p^B + p^S - c} = 0 \\ \lambda^S(p^S, \theta) - \frac{1}{p^B + p^S - c} = 0 \end{cases}$$

Denoting by $\varphi(p, \theta)$ the (vector) function on the left-hand side, we can apply the implicit function theorem (this time in \mathbb{R}^2) given that the Jacobian $D\varphi/Dp$ is nonsingular (by the strict concavity of log π the determinant of $D\varphi/Dp$ is positive). Thus we obtain:

$$\frac{dp}{d\theta} = - \left(\frac{D\varphi}{Dp} \right)^{-1} \frac{\partial\varphi}{\partial\theta},$$

where

$$\left(\frac{D\varphi}{Dp} \right)^{-1} = \frac{2}{\det \frac{D\varphi}{Dp}} \begin{bmatrix} \frac{\partial\lambda^S}{\partial p^S} + \frac{1}{(p-c)^2} & -\frac{1}{(p-c)^2} \\ -\frac{1}{(p-c)^2} & \frac{\partial\lambda^B}{\partial p^B} + \frac{1}{(p-c)^2} \end{bmatrix}$$

and

$$\frac{\partial \varphi}{\partial \theta} = \begin{pmatrix} \frac{\partial \lambda^B}{\partial \theta} \\ \frac{\partial \lambda^S}{\partial \theta} \end{pmatrix}.$$

Marquee Buyers:

$$\begin{matrix} \partial \lambda^B / \partial \theta = 0, \partial \lambda^S / \partial \theta < 0 \\ \left(\begin{matrix} \frac{dp^B}{d\theta} \\ \frac{dp^S}{d\theta} \end{matrix} \right) \det \frac{D\varphi}{Dp} \end{matrix} \begin{bmatrix} -\frac{1}{(p-c)^2} \\ \frac{\partial \lambda^B}{\partial p^B} + \frac{1}{(p-c)^2} \end{bmatrix}$$

Thus $dp^B/d\theta > 0$ $dp^S/d\theta > 0$.

Captive Buyers:

$\partial \lambda^B / \partial \theta > 0, \partial \lambda^S / \partial \theta = 0$, and so:

$$\begin{matrix} \left(\begin{matrix} \frac{dp^B}{d\theta} \\ \frac{dp^S}{d\theta} \end{matrix} \right) \det \frac{D\varphi}{Dp} \end{matrix} \begin{bmatrix} \frac{\partial \lambda^S}{\partial p^S} + \frac{1}{(p-c)^2} \\ -\frac{1}{(p-c)^2} \end{bmatrix}.$$

Thus $dp^B/d\theta > 0$ and $dp^S/d\theta < 0$.

b. Competing Associations.

In the case of associations, the equilibrium buyer price is characterized by:

$$\lambda_0^B(p^B, \theta) \sigma(p^B, \theta) - \lambda^S(c + m - p^B, \theta) = 0,$$

where

$$\lambda_0^B(p^B, \theta) = -\frac{\frac{\partial d_1^B}{\partial p_1^B}}{d_1^B}(p^B, p^B, \theta)$$

is the “own-price sensitivity” of buyer demand and

$$\sigma(p^B, \theta) = 2 - \frac{\hat{D}^B(p^B, \theta)}{d^B(p^B, \theta)}.$$

In order to determine the monotonicity properties of p^B with respect to θ , we apply the implicit

function theorem to the left-hand side of the above equation:

$$\psi(p^B, \theta) = \lambda_0^B(p^B, \theta)\sigma(p^B, \theta) - \lambda^S(c + m - p^B, \theta).$$

However we need additional assumptions to ensure that $\partial\psi / \partial p^B > 0$ so that $p^B(\theta)$ is indeed (locally) unique and differentiable, for two reasons:

- Possible nonexistence of equilibrium, due to the fact that the volume on system \mathbf{i} is not necessarily quasiconcave with respect to (p_i^B, p_i^S) . The proof of Proposition 6 will observe that the candidate for equilibrium (i.e., the solution of $\psi = 0$) may sometimes be destabilized by “double deviations” of the form $(p^B + \varepsilon, p^S - \varepsilon)$.
- The possible presence of strategic complementarities that may generate a multiplicity of equilibria.

We will assume away these difficulties and postulate that $\partial\psi / \partial p^B > 0$ (regularity condition).³⁷ In this case, $p^B(\theta)$ is (locally) unique, differentiable, and $dp^B/d\theta$ has the same sign as $-(\partial\psi/\partial\theta)$. We then just have to determine the sign $\partial\psi/\partial\theta$.

Marquee Buyers:

$$\psi(p^B, \theta) = \lambda_0^B(p^B)\sigma(p^B) - \lambda^S(c + m - \theta - p^B)$$

$$\frac{\partial\psi}{\partial\theta} = (\lambda^S)' > 0.$$

Captive Buyers:

$$\psi(p^B, \theta) = \left(\frac{-\partial d_1^B}{\partial p_1^B} \right) \left(2 - \frac{D^B + \theta}{d^B + \theta} \right) - \lambda^S(c + m - p^B)$$

$$\frac{\partial\psi}{\partial\theta} = -\frac{\lambda_0^B\sigma}{d^B + \sigma} - \frac{d^B - D^B}{(d^B + \theta)^2}\lambda_0^B = \frac{-\lambda_0^B}{d^B + \theta} \left[\sigma + \frac{d^B - D^B}{d^B + \theta} \right] < 0$$

An increase in the number of captive buyers has two opposite effects. First, and as in the monopoly case, the captive customers reduce the elasticity of buyer demand, calling for a higher buyer price. Second, captive customers make steering more attractive, which pushes toward a higher seller price. The first effect dominates the second.

c. Increase in Singlehoming.

Again, we focus on competing associations. The buyer price at equilibrium is determined by:

$$\psi(p^B, \theta) = \lambda_0^B(p^B)\sigma^B(p^B, \theta) - \lambda^S(c + m - p^B) = 0$$

By the same reasoning as above, $\partial\sigma^B/\partial\theta > 0$ implies $\partial\psi/\partial\theta > 0$ and $dp^B/d\theta > 0$.

PROOF OF PROPOSITION 6

a. *Price Structure.*

Letting $T = p_o + \delta(\Delta + \delta)/2$, the quasi-demands are given by:³⁸

$$d_1^B(p_1^B, p_2^B) = \frac{p_2^B - p_1^B}{\Delta} + \frac{T - p_1^B}{\delta}, \tag{25}$$

and

$$D_1^B(p_1^B) = (T - p_1^B) \left(\frac{1}{\delta} + \frac{1}{\Delta + \delta} \right). \tag{26}$$

The expressions of d_2^B and D_2^B are obtained by symmetry. Due to the linearity of these expressions, several simplifications appear. For example, the singlehoming index is price independent:

$$\sigma = 2 - \frac{D_1^B(p^B)}{d_1^B(p^B, p^B)} = \frac{\Delta}{\Delta + \delta}.$$

Similarly the expression of the marginal seller (who is indifferent between multihoming and singlehoming with the cheapest platform), does not depend on buyers' prices. For example, when $p_1^S \leq p_2^S$, formula (12) gives:

$$\hat{b}_{12} = p_2^S \frac{d_2^B}{d_1^B + d_2^B - D_1^B} + p_1^S \frac{d_1^B - D_1^B}{d_1^B + d_2^B - D_1^B}.$$

Hence (for $p_1^B = p_2^B = p^B$):

$$\hat{b}_{12} = p_2^S + \frac{\delta}{\Delta} (p_2^S - p_1^S).$$

and so \hat{b}_{12} does not depend on p^B . Furthermore, steering is particularly powerful (in that undercutting induces many sellers to stop multihoming) when most consumers multihome, that is when σ is low.

Another simplification that appears when buyers' quasi-demand is linear is that the ratio of total elasticity to own-brand elasticity is equal to the single homing index σ :

$$\frac{\eta^B}{\eta_o^B} = \frac{\frac{\partial d_1^B}{\partial p_1^B} + \frac{\partial d_1^B}{\partial p_2^B}}{\frac{\partial d_1^B}{\partial p_1^B}} = \frac{\frac{1}{\delta}}{\frac{1}{\Delta} + \frac{1}{\delta}} = \frac{\Delta}{\Delta + \delta} = \sigma.$$

This property implies that the price structure under platform competition (between for-profits or between associations) is the same as under a monopoly platform:

$$\frac{p^B}{\eta^B} = \frac{p^S}{\eta^S}.$$

Consider for example a decrease in Δ . As the platforms become more substitutable, buyer multihoming increases (σ falls); this induces platforms to steer, resulting in low prices on the seller side. However, competition also becomes more intense on the buyer side, resulting in lower buyer prices (p^B falls) and thereby in a higher opportunity cost ($c - p^B$) of servicing sellers. For linear demand on the buyer side, these two effects offset.

Last, let us compare the common price structure with that of the Ramsey optimum. A useful property of linear demands is that the revenue (price times quantity) is equal to twice the product of the net surplus and the elasticity of demand. This property implies that if seller's quasi-demand is linear as well, (7) is equivalent to (5), and so the common price structure is Ramsey optimal.

b. Second-Order Conditions.

In the Hotelling model:

$$\begin{aligned}\pi_i &= (p_i^B + p_i^S - c)Q_i; \\ \frac{\partial \pi_i}{\partial p_i^B} &= Q_i + (p_i^B + p_i^S - c) \frac{\partial Q_i}{\partial p_i^B}; \\ \frac{\partial \pi_i}{\partial p_i^S} &= Q_i + (p_i^B + p_i^S - c) \frac{\partial Q_i}{\partial p_i^S}; \\ \frac{\partial^2 \pi_i}{(\partial p_i^B)^2} &= 2 \frac{\partial Q_i}{\partial p_i^B}; & \frac{\partial^2 \pi_i}{(\partial p_i^S)^2} &= 2 \frac{\partial Q_i}{\partial p_i^S}; \\ \frac{\partial^2 \pi_i}{\partial p_i^B \partial p_i^S} &= \frac{\partial Q_i}{\partial p_i^B} + \frac{\partial Q_i}{\partial p_i^S} + (p_i^B + p_i^S - c) \frac{\partial^2 Q_i}{\partial p_i^B \partial p_i^S}.\end{aligned}$$

At a symmetric equilibrium of the game between competing proprietary platforms, we have

$$\frac{\partial Q_i}{\partial p_i^B} = \frac{\partial Q_i}{\partial p_i^S} = -(p - c) \frac{(\Delta + \delta)^2}{\Delta^2 \delta} \equiv \alpha < 0.$$

Therefore the second-order condition is satisfied whenever the Hessian determinant of π_i is nonnegative:

$$H = \frac{\partial^2 \pi_i}{(\partial p_i^B)^2} \cdot \frac{\partial^2 \pi_i}{(\partial p_i^S)^2} - \left(\frac{\partial^2 \pi_i}{\partial p_i^B \partial p_i^S} \right)^2$$

$$H = 4\alpha^2 - (2\alpha + \beta)^2 = -\beta(4\alpha + \beta).$$

where

$$\beta \equiv (p_i^B + p_i^S - c) \frac{\partial^2 Q_i}{\partial p_i^B \partial p_i^S}$$

has a different expression in the two regions:

$$\beta_1 = (p - c) \frac{\Delta^2 + \delta\Delta - \delta^2}{\Delta^2 \delta} \quad p_1^S < p_2^S,$$

$$\beta_2 = (p - c) \frac{(\Delta + \delta)^2}{\Delta^2 \delta} \quad p_1^S < p_2^S.$$

The second-order condition is always satisfied in the second region, since $\beta_2 = -\alpha > 0$ so that $H = 3\alpha^2 > 0$. In the first region, it is easy to see that $\beta_1 + 4\alpha$ is always negative. Thus the second-order condition is satisfied if and only if $\beta_1 \geq 0$ which is equivalent to

$$\delta^2 - \delta\Delta - \Delta^2 \leq 0$$

or

$$\frac{\delta}{\Delta} \leq \frac{1 + \sqrt{5}}{2}.$$

When this condition is not satisfied, there is no symmetric equilibrium in pure strategies. The only candidate equilibrium (p^B, p^S) can be destabilized by a “double-deviation,” where one of the platforms (say Platform 1) increases p_1^B by ε and simultaneously decreases p_1^S by the same amount. The first order increase in profit is zero (as guaranteed by the first-order conditions) but the second-order increase is positive:

$$\Delta\pi_1 \sim \left[\frac{\partial^2 \pi_1}{(\partial p_1^B)^2} + \frac{\partial^2 \pi_1}{(\partial p_1^S)^2} - 2 \frac{\partial^2 \pi_1}{\partial p_1^B \partial p_1^S} \right] \varepsilon^2 = -2\beta_1 \varepsilon^2 > 0$$

Finally, equilibrium prices can be obtained explicitly if we assume that the sellers’ quasi-demand is also linear:

$$D^S(p^S) = A - p^S. \quad (27)$$

The volume on Platform 1 when $p_1^S \leq p_2^S$ is:

$$Q_1 = \left(\frac{p_2^B - p_1^B}{\Delta} + \frac{T - p_1^B}{\delta} \right) \left[A - p_2^S - \frac{\delta}{\Delta} (p_2^S - p_1^S) \right] \quad (28)$$

$$+\left(\frac{1}{\delta} + \frac{1}{\Delta + \delta}\right)(T - p_1^B)(p_2^B - p_1^S)\left(1 + \frac{\delta}{\Delta}\right).$$

When $p_1^S > p_2^S$, the expression is simpler:

$$Q_1 = \left[A - p_1^S - \frac{\delta}{\Delta}(p_1^S - p_2^S) \right] \left[\frac{p_2^B - p_1^B}{\Delta} + \frac{T - p_1^B}{\delta} \right]. \quad (29)$$

In Proposition 2 we have shown that a symmetric equilibrium between competing associations must satisfy condition (22):

$$\frac{p^B}{\sigma\eta_o^B} = \frac{p^S}{\eta^S}. \quad (22)$$

Using formulae (25), (26), and (27) and after simplifications, this condition becomes:

$$p^B - p^S = T - A. \quad (30)$$

Recall that this condition is necessarily satisfied in a symmetric equilibrium between competing platforms, independently of their governance structure. However the value of the total price is different:

$$p^B + p^S = c + m$$

for associations, and

$$p^B + p^S - c = \frac{\Delta}{\Delta + \delta}(T - p^B) = \frac{\Delta}{\Delta + \delta}(A - p^S)$$

for proprietary platforms. The resulting equilibrium prices are:

$$p_A^B = 1/2(c + m + T - A), \quad p_A^S = 1/2(c + m - T + A), \quad (31)$$

for associations, and

$$p_P^B = \frac{c - A + T \left(1 + \frac{\Delta}{\Delta + \delta}\right)}{2 + \frac{\Delta}{\Delta + \delta}}, \quad p_P^S = \frac{c - T + A \left(1 + \frac{\Delta}{\Delta + \delta}\right)}{2 + \frac{\Delta}{\Delta + \delta}}, \quad (32)$$

for proprietary systems. ▲

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² Jean-Charles Rochet is currently the SFI Professor of Banking in the Banking and Finance Institute at Zürich University. Jean Tirole is Chairman of the Board of the Jean-Jacques Laffont Foundation at the Toulouse

School of Economics, and Scientific Director of the Industrial Economics Institute (IDEI) in Toulouse. In 2014, Jean Tirole was awarded the Nobel Memorial Prize in Economic Sciences.

³ There are of course other illustrations, for example scientific journals, that must match readers and authors. Interestingly, the *Bell Journal of Economics* for a number of years after it was launched was sent for free to anyone who requested it. There is currently much discussion of how the business model for scientific journals will evolve with electronic publishing. The list of social gatherings examples of cross-subsidization could be extended to include dating or marital agencies which may charge only one side of the market.

A couple of explanations regarding markets that will not be discussed in Section 7: Social gatherings: celebrities often do not pay or are paid to come to social happenings as they attract other participants (who may then be charged a hefty fee); similarly, in some conferences, star speakers are paid while others pay. Real estate: In many countries buyers are not charged for visiting real estate properties and thus marginal visits are heavily subsidized. To be certain, the sale price reflected the real estate agency fee, but this does not imply that the arrangement is neutral (see Section 8). Shopping malls: shoppers are subsidized. They don't pay for parking; in France they can also buy gasoline at a substantial discount. Discount coupon books: These are given away to consumers. Intermediaries charge merchants for the service. Browsers: The picture given in Table 1 is a bit simplistic. In particular, Netscape initially made about one third of its revenue on the client side before giving the software away. But Netscape always viewed the software running on top of the operating system on the web servers as a major source of profit.

⁴ The mechanism through which this reduction operates is indirect and is described in section 7.

⁵ The occurrence of steering is easiest to visualize in those illustrations in which platforms charge per-end-user-transaction fees: The seller of a house or a B2B supplier may only list the house or the wares on the cheapest platform. In industries in which platforms do not charge per-end-user-transaction fees, steering is more subtle as it operates through effort substitution. For example, a software platform offering better software development kits, support, and application programming interfaces not only encourages the development of applications optimized to this platform, but is also likely to induce application developers to devote less attention to rival platforms. A portal or TV network's cut in advertising rates induces advertisers to advertise more on their medium and to substitute away from other media. A shopping mall's cut in rental prices or improved layout may induce a shop to increase its size or appeal and lead the latter to neglect or abandon its outlets in rival shopping malls, and so forth.

⁶ The policy implications of two-sidedness are discussed in Evans (2003). The reader will find further illustrations of two-sided markets and an interesting analysis thereof in Armstrong (2002). Rysman (2000) is the first empirical paper to estimate network effects in a two-sided context, namely the market for Yellow Pages. It is also related to the earlier literature on competition between intermediaries: Stahl (1988) and Yanelle (1997).

⁷ Even in the countries where the No Surcharge Rule is not imposed, as in the UK, it turns out that merchants seldom charge different prices for card and cash payments. We discuss in Section 8 the possible reasons for this fact, and more generally for the non-neutrality of the price structure in two-sided markets.

⁸ The word "quasi-demand function" is used to reflect the fact that, in a two-sided market, actual demand depends on the decisions of both types of users (buyers and sellers in our terminology). In our specification, this demand is simply the product of the quasi-demands of buyers and sellers

⁹ In the payment card example, a "transaction" between a cardholder and a merchant means that the payment is by card rather than by cash.

¹⁰ This multiplicative formula was first used by Schmalensee (2002). Most of our results can be extended to the more general case where \mathbf{b}^B and \mathbf{b}^S are not independent, in which case the transaction volume \mathbf{Q} has a more general expression $\mathbf{Q}(p^B, p^S) = \text{pr}(\mathbf{b}^B \geq p^B, \mathbf{b}^S \geq p^S)$.

¹¹ A similar formula is derived in Laffont et al. (2003) in a model in which network externalities are reaped through platform interconnection.

¹² For simplicity, we assume that the seller's gross surplus does not depend on the platform where the transaction takes place. Furthermore, when performing the welfare analysis, we equate these benefits with the social values of the service brought about by the platforms. However, sellers may exert externalities on each other. For example, a seller's acceptance of a payment card may affect rival sellers. The welfare analysis (but not the positive one) must be amended correspondingly. For more on this, *see* Rochet and Tirole (2002).

¹³ This assumption is satisfied by most of our illustrations: a cardholder selects the card when the merchant accepts multiple cards, the reader or viewer selects the newspaper, portal or TV network, the videogame user selects the platform if the game is written for several consoles, etc. Notice that this assumption introduces a slight asymmetry between the two sides of the market.

¹⁴ Affiliation with Platform 2 only is clearly dominated.

¹⁵ The left- and right-derivatives of Q_1 with respect to p_1^S at $p_1^S = p_2^S = p^S$ (implying $\hat{b}_{12} = \hat{b}_{21} = p^S$) are:

$$\left(\frac{\partial Q_1}{\partial p_1^S} \right)_L = (D^S)' \frac{\partial \hat{b}_{21}}{\partial p_1^S} [d^B - \hat{D}^B] + (D^S)' D^B,$$

and

$$\left(\frac{\partial Q_1}{\partial p_1^S} \right)_R = (D^S)' \frac{\partial \hat{b}_{21}}{\partial p_1^S} d^B.$$

Moreover

$$\frac{\partial \hat{b}_{12}}{\partial p_1^S} = -\frac{\hat{D}^B - d^B}{2d^B - \hat{D}^B}, \quad \text{and} \quad \frac{\partial \hat{b}_{21}}{\partial p_1^S} = \frac{d^B}{2d^B - \hat{D}^B}.$$

And so

$$\left(\frac{\partial Q_1}{\partial p_1^S} \right)_L = (D^S)' \left[\frac{(\hat{D}^B - d^B)^2}{2d^B - \hat{D}^B} + \hat{D}^B \right] = (D^S)' \frac{(d^B)^2}{2d^B - \hat{D}^B}$$

$$\left(\frac{\partial Q_1}{\partial p_1^S} \right)_R = (D^S)' \frac{(d^B)^2}{2d^B - \hat{D}^B}.$$

Thus Q_1 is differentiable with respect to p_1^S .

¹⁶ The determination of access charges within associations has so far only been studied in the context of the payment card industry and under the assumption of a monopoly platform [Rochet and Tirole (2002), Schmalensee (2002)].

¹⁷ Mathematically, in a generalized Hotelling framework, the "transportation cost" for an end-user when selecting a (platform, member) pair is the sum of the transportation cost to the platform and that to the member.

¹⁸ If members have dual membership instead (e.g., they are both affiliated with Visa and MasterCard, or they provide support or write applications for two cooperatively designed operating systems or videogame platforms), then requirement (b) is unnecessary in that margins are constant even if member differentiation is not small relative to platform differentiation: *See* Hausman, Leonard, and Tirole (2003). But one must then inquire into the associations' governance structure. Our treatment carries over as long as governance leads each association to maximize its volume.

¹⁹ This is, for example, the case in the Hotelling specification presented in Section 5, when the marginal

transportation cost of buyers increases only for distances in the noncompetitive hinterland of the rival platform, so that d_i^B is unaffected while D^B decreases.

²⁰ Looking forward, it is likely that merchant card acceptance will become more elastic with the (ongoing) advent of online debit and the (future) introduction of Web platforms.

²¹ And thus implicitly a much higher “interchange fee.” For Amex, the interchange fee is only implicit, since the company is vertically integrated and performs the three roles of issuer, system and acquirer.

²² The online offerings were first made by regional ATM networks. A number of these networks have now been consolidated and converted into a for-profit platform (Concord ESF).

²³ See Laffont et al. (2003) and Jeon, Laffont, and Tirole (2003) for derivations of this result in different environments.

²⁴ Even though, in practice, they mainly exchange their traffic at bilateral peering points.

²⁵ See Elfenbein and Lerner (2001) for a thorough analysis of contracts in recent Internet Portal Alliances.

²⁶ See, e.g., the Economist (April 14, 2001, p. 65) for more details.

²⁷ Initially, Nintendo placed a chip in its console. The console would not work unless an authenticating chip was present in the game cartridge. Encryption techniques allow platform manufacturers to meter game sales.

²⁸ In September 2000, 157 developers were working on Xbox games. The Xbox is launched with 26 games. Interestingly, Electronic Arts (the maker of Fifa, SimCity, and James Bond) was able to impose special conditions on Microsoft.

²⁹ See Cringely (2001) for more detail. Sony sold its console below cost and made the money back on game royalties.

³⁰ We are unaware of “hard data” on this and just report the industry’s conventional wisdom. Nor do we have any hard data for handheld computer operating systems. Handheld computers operating systems, dominated by Palm’s platform (75 percent market share in the United States) and Microsoft’s Pocket PC software, have adopted a business model that is similar to Windows for PC operating systems. Palm and Microsoft apparently charge about 10 percent of the hardware’s wholesale price (\$5 to \$15) to hardware manufacturers. Both provide standard user interfaces and central support and development tools for developers of third-party software. For more detail, see <http://www5.zdnet.com/zdnn/stories/news/0,4586,2714210,00.html?chkpt-zdhpnews01>.

³¹ Software developer kits were sold at about \$600.

³² For Scientific Word, a mathematics software program adding a user interface and various other functions on to LATEX.

³³ Mobile and fixed telephone services, for which most users are both callers and receivers, cannot be treated as one-sided markets. A high termination charge raises the marginal cost of calls and lowers the marginal cost of call receptions. In other words, the termination charge is an instrument of cross-subsidization similar to the interchange fee in credit card markets. Telephone users are on both sides of the market for different communications only. For a given communication, end users are on a single side and (unless they are engaged in a repeated relationship) their consumption behaviors depend on their own price (calling price for the caller, receiving price for the receiver). As a consequence, the choice of termination charge is not neutral. See Jeon et al. (2003) for more detail.

³⁴ “Neutrality” refers to the pass-through property and a priori bears no connotation with respect to the well-being of end users and platforms and to social welfare. While neutrality reduces the number of instruments at the disposal of a given platform, it is not clear whether it helps or hurts the platforms in their rivalry. Similarly, neutrality a priori may be good or bad for end users and social welfare.

³⁵ See Laffont et al. (2003) for a demonstration that termination charges are neutral in the Internet in the

absence of the frictions considered in this section.

³⁶ Such ways of charging consumers have been considered. For example, a startup called CyberGold devised a way to pay viewers of ads on the Web provided they peruse the Web ad to its last page. Advertisers were concerned about both moral hazard (clicking through ads without being really interested) and adverse selection (clickers would not be the high-demand consumers): See B. Ziegler's "Are Advertisers Ready to Pay Viewers," Wall Street Journal (November 14, 1996).

³⁷ Similarly, end users seem to be averse to being "nickelled and dimed" by Internet portals (perhaps because they have a hard time thinking through the total amounts at stake) and flat fees are still quite popular in that industry.

³⁸ In the United States, the associations' no-discrimination-rule takes a weaker form. Namely, merchants are not allowed to impose surcharges on card payments; but they can offer discounts for cash purchases! That very few do is an interesting fact, that is probably related to the transaction costs category. In Rochet and Tirole (2002), we abstract from such transaction costs and show that the level of the interchange fee is irrelevant if the no-discrimination rule is lifted.

³⁹ This regularity condition is satisfied when $\partial \lambda_o^B / \partial p^B$ and $\partial \sigma / \partial p^B$ are positive.

⁴⁰ The expressions of quasi-demands are easily deduced from the locations of marginal buyers:

- x_1 is indifferent between 1 and 1': $p_1^B + \frac{1}{2}(x_1 + (\Delta/2))^2 = p_o + \frac{1}{2}(x_1 + (\Delta/2) + \delta)^2$, which

$$x_1 = \frac{p_1^B - p_o}{\delta} - \frac{\Delta + \delta}{2};$$

- x_2 is indifferent between 1 and 2: $p_1^B + \frac{1}{2}(x_2 + (\Delta/2))^2 = p_2^B + \frac{1}{2}(x_2 + (\Delta/2))^2$, which

$$x_2 = \frac{p_2^B - p_1^B}{\Delta};$$

- x_3 is indifferent between 1 and 2': $p_1^B + \frac{1}{2}(x_3 + (\Delta/2))^2 = p_o + \frac{1}{2}(x_3 - (\Delta/2) - \delta)^2$

$$x_3 = \frac{p_o - p_1^B}{\Delta + \delta} + \delta/2.$$

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