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I. Introduction

Imagine you are at the grocery-store checkout line and it is time to pay. You enter your credit card in the terminal, assuming that your payment will be routed over the network operated by the brand on your card (typically Visa or Mastercard). But you learn after the fact that the grocery store has chosen instead to route it over China Union Pay.

Most of us would be uncomfortable ceding to the merchant the authority to route transactions over the cheapest network, without considering our concerns about security, reliability, and other card features (including rewards). Yet that is already the case for many point-of-sale transactions made with debit cards—the result of a 2011 regulation implemented by the Federal Reserve. Consumers can, however, often still force the transaction to run over their preferred network by pushing the “credit” button.

But new rules under consideration by the Federal Reserve would extend merchants’ ability to determine how debit transactions are routed to online transactions, while also making it more difficult for consumers to control who gets to handle their personal data and process their transactions.¹ Perhaps more worryingly, a new bill (the “Credit Card Competition Act”) introduced by Sen. Richard Durbin (D-Ill.) would, in the name of “competition,” impose similar routing requirements on credit cards, while ignoring important differences in the competitive framework of debit and credit cards.²

Since they emerged more than 50 years ago, payment-card networks have come to play an increasingly important role in our lives, both directly and indirectly. Directly, they facilitate hundreds of

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¹ *Debit Card Interchange Fees and Routing*, FR 26189 (2021), available at: <https://www.govinfo.gov/content/pkg/FR-2021-05-13/pdf/2021-10013.pdf>.

² CREDIT CARD COMPETITION ACT OF 2022, S. 4674, 117th Cong. § 2 (2022), available at: <https://www.congress.gov/117/bills/s4674/BILLS-117s4674is.pdf>.

billions of transactions every year, representing tens of trillions of dollars in value.³ Indirectly, they have contributed to a near-complete shift from paper-based to electronic value exchange and accounting in the United States and many other countries. This has, in turn, resulted in enormous efficiency improvements and wider social benefits, such as the development of online commerce, greater ease of travel, and reduced tax avoidance.⁴

The shift from paper to electronic value exchange has been driven almost entirely by voluntary decisions made by businesses and consumers. Despite such clear evidence of market success, over the past three decades, governments have increasingly sought to correct alleged “market failures” in payment-card markets. The main tool governments have used is price controls on interchange-fee rates. More recently, however, several governments—including the United States, the European Union, and Australia—have sought to reduce rates further still by regulating the manner in which payments are “routed” (i.e., the way that messages pertaining to a transaction are sent between the merchant and the issuing bank). This has important implications for consumer protection, fraud prevention, and financial inclusion.

In previous studies, we have shown that regulation of interchange fees typically has slowed the shift to more innovative, quicker, more convenient payment systems, while also reducing other benefits and particularly harming poorer consumers and smaller merchants.⁵

Prohibitions on exclusivity in routing have similar effects as direct price controls. But imposed routing requirements will have additional effects that go beyond those of price controls and would result in various harms to consumers and the economy. This study seeks to delve deeper into the problem, focusing primarily on the justifications for and effects of regulations that affect the way in which transactions are routed. While “routing” may seem arcane, it is fundamental to the effectiveness of payment networks. Understanding the likely consequences of such regulation is thus important. That is the purpose of this paper.

We begin, in Section II, by describing the technological and economic elements of payment-card routing. Supporters of forced routing requirements contend that they will promote more efficient competition in consumers’ payment-card usage. But we show that this superficial argument ignores the basic economic realities of payment-card networks, as well as the fundamentally different na-

³ *Global Network Card Results in 2021*, NILSON REPORT ISSUE 1224, <https://nilsonreport.com/mention/1672/1link>.

⁴ See the appendix to this paper and references therein.

⁵ See Todd J. Zywicki, *The Economics of Payment Card Interchange Fees and the Limits of Regulation*, ICLE FINANCIAL REGULATORY PROGRAM WHITE PAPER SERIES (Jun. 2, 2010), available at http://laweconcenter.org/images/articles/zywicki_interchange.pdf; Todd J. Zywicki, Geoffrey A. Manne, and Julian Morris, *Unreasonable and Disproportionate: How the Durbin Amendment Harms Poorer Americans and Small Businesses*, INTERNATIONAL CENTER FOR LAW AND ECONOMICS (Apr. 25, 2017); Todd J. Zywicki, Geoffrey A. Manne, and Julian Morris, *Price Controls on Payment Card Interchange Fees: The U.S. Experience*, GEORGE MASON LAW & ECONOMICS RESEARCH PAPER NO. 14-18, (Jun. 6, 2014).

ture of consumer competitive choice, both in debit-card markets (where routing requirements currently exist) and in credit-card markets (the intended target of Sen. Durbin’s proposed law). Section III reviews the evidence regarding the effects of regulating payment networks. We summarize the pernicious effects of price controls and then explain how the routing mandate created by the 2011 Federal Reserve regulation, known as Regulation II, has had similar effects. Section IV considers the proposed changes to Regulation II and the new Durbin proposal to regulate credit-card routing, with a particular focus on the likely harmful effects of the changes on the incidence of fraud and the knock-on effects on issuers, cardholders, and merchants. Section V concludes.

II. How Routing Works

What do we mean by “routing” and why does it matter? When a cardholder submits a transaction for payment, information regarding that payment is sent over a proprietary network; this is called “routing.” Section A explains the two types of routing and offers some data regarding the volume of transactions routed over different networks. Section B explains the development and functioning of routing, using insights from law & economics. Debit- and credit-card routing and competition may superficially appear to be identical, but there are important differences; understanding the complexities and details of the systems highlights the difficulty of interventions.

A. Routing and Competition in Payment-Card Networks

The routing of a payment is determined by several factors. First and foremost, for any particular card (or equivalent payment method), messages can only be routed over a network that the issuer has enabled for that card. In some cases, consumers may be presented with the option to pick “debit” or “credit” at checkout; the choice will affect how the payment is routed. There are two types of debit transactions: PIN debit (also known as single-message debit) and signature debit (dual-message debit). Consumers might think, if they are using a debit card, that they should always punch “debit” but this is not the case. If the consumer chooses “credit,” the payment will be routed over the dual-message (credit-card) network enabled on the card. If the consumer chooses “debit,” the payment can be routed over a single-message (PIN debit) network (see below). Finally, if merchant-routing choice is permitted by the settings on the payment card, merchants may select their route of choice from among the networks available on the card. This is typically done either through automated settings in the merchant’s card-payment processing system (e.g., payment terminal), or by the merchant’s acquiring bank.

To understand debit-card routing, it helps to know that the debit card emerged almost simultaneously from two very different routes: automated teller machine (ATM) networks and the Visa credit-card payment network.⁶ In each case, the concept underpinning the cards and the mode of

⁶ At a 2019 meeting between representatives of several PIN debit networks and staff of the Federal Reserve, it was asserted that “The first debit cards were introduced by so-called ‘regional debit networks,’ such as PULSE and STAR.” See *Meeting*

authentication reflected their origin. Thus, the debit cards that emerged from ATM networks were seen as extensions of the mode of operation of an ATM and were authenticated using a 4-digit personal identification number (PIN) stored on the card (originally in the magnetic stripe and subsequently in EMV chips).⁷ By contrast, transactions involving the debit cards that emerged from the Visa network were authenticated and cleared/settled in the same way as that network's credit card transactions.⁸ The following subsections briefly describe the operation of these systems.

1. *Single-Message (PIN) Debit Networks*

Single-message debit networks generally rely on the PIN programmed on the card to authenticate a transaction. As a result, the only message that is required is a notification to the issuing bank to debit the account of the cardholder in the amount they have authorized and to credit that amount to the account of the merchant, less the discount fee, which is paid to the acquiring bank. Because of the nature of the transaction, settlement can be effected over banks' electronic-funds-transfer (EFT) networks that were initially built to settle transactions at shared ATMs, and subsequently over networks of ATMs.⁹ As with an ATM transaction, single-message debit transactions settle and funds are transferred more or less immediately from the consumer's account. In addition, restrictions on interstate banking meant that debit networks began as local networks, with some expanding to become regional; a small number are now national networks.¹⁰

2. *Dual-Message (Credit-Card and Signature Debit) Networks*

In a dual-message ("signature") payment network, the first message is a request for authorization. This message is sent to the issuing bank, which confirms the authenticity of the card and checks whether the cardholder has sufficient credit remaining (for a credit transaction) or funds in their account (for a debit transaction). But the message is also parsed by the network, which is able to

Between Staff of the Federal Reserve Board and Representatives of PIN Debit Networks, Merchants, Merchant Trade Groups, and Counsel, FEDERAL RESERVE BOARD (Jun. 11, 2019), available at: <https://www.federalreserve.gov/regreform/rr-commpublic/merchant-network-meeting-20190611.pdf>. In point of fact, PULSE was founded in 1981 and STAR was founded in 1984, whereas Visa began researching debit cards in 1973 and launched a debit card ("Entrée") in October 1975. See David L. Stearns, *"Think of it as Money": A History of the VISA Payment System, 1970–1984*, PhD Thesis, University of Edinburgh (2007) at 164-176.

⁷ Stearns *supra* note 6, at 171-172; Susan Herbst Murphy, *Clearing and Settlement of Interbank Card Transactions: A MasterCard Tutorial for Federal Reserve Payments Analysts*, RSRV. BANK OF PHILA. PAYMENTS CNTR, (October 2013), <https://www.philadelphiafed.org/-/media/frbp/assets/consumer-finance/discussion-papers/d-2013-october-clearing-settlement.pdf?la=en&hash=CB5785393686C300C316A43A2620E904>.

⁸ *Id.*

⁹ Stan Sienkiewicz, *The Evolution of EFT Networks from ATMs to New On-Line Debit Payment Products*, FED. RSRV. BANK OF PHILA (April 2002), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=927473.

¹⁰ Fumiko Hayashi, Richard J. Sullivan and Stuart E. Weiner, *A Guide to the ATM and Debit Card Industry: 2006 Update*, FED. RSRV. BANK OF KANSAS CITY (2006), available at: <https://www.kansascityfed.org/Payments%20Systems%20Research%20Briefings/documents/699/bksjournalarticles-ATMDebitUpdate.pdf>.

monitor for fraud. If authorized, the second message contains information confirming the actual amount of the transaction, which is then either added to the cardholders' credit-card bill or debited from the cardholder's account during clearing and settlement, as appropriate. In this sense, the signature-debit settlement process is analogous to a check, in that there is some delay in the posting and clearing of the transaction.

For example, if you present your card at a sit-down restaurant, the check total would be authorized by the network and a hold placed on your account for the stated amount on the bill. The opportunity to add a tip to the bill, however, permits a later second message that authorizes payment of the full amount and withdrawal from your account balance. Similar "holds" are also often used by online merchants to delay payment (sometimes by as much as several days), thereby reducing the likelihood of fraud and associated chargebacks.¹¹

This two-stage process of authorization followed by subsequent clearance is made possible by the fact that dual-message "signature" debit transactions run on the "rails" of the credit-card network, not on of the ATM ("PIN debit") networks. Unlike the single-message networks, dual-message networks have been effectively national since they were established in the 1970s; this has meant, almost inevitably, that the number of such networks has always been small, with two networks, Visa and Mastercard, representing the majority.

Signature debit is accepted by more merchants than PIN debit for several reasons. Relatively few online merchants require consumers to enter PINs, likely at least in part because of consumers' security concerns associated with entering their PIN during such transactions. Accepting PIN debit also requires more sophisticated and expensive processing equipment than signature debit. Many merchants (especially smaller merchants) therefore prefer to accept signature debit, which can be processed using an inexpensive dongle or other terminal suitable for credit-card acceptance (and thus does not need a secure terminal for entering a PIN). Roughly two-thirds of all debit transactions, in both volume and value terms, are signature-debit transactions.¹²

B. The Economics of Routing and Competition in Payment-Card Networks

Understanding the role of routing in payment-card networks requires an appreciation of such networks' many distinctive characteristics of competition, their underlying economics, and the linkage

¹¹ Tyler DeLarm, *Credit Card Authorization Hold: How and When to Use*, CHARGEBACK GURUS (Dec. 26, 2021), <https://www.chargebackgurus.com/blog/credit-card-authorization-holds>.

¹² BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, 2019 INTERCHANGE FEE REVENUE, COVERED ISSUER COSTS, AND COVERED ISSUER AND MERCHANT FRAUD LOSSES RELATED TO DEBIT CARD TRANSACTIONS 3 (May 2021).

that exists between routing and these economic elements. In this subsection, we attempt to offer a brief primer on such issues.

1. Competition in Debit- and Credit-Card Markets

As should be abundantly clear, single-message (PIN) debit and dual-message debit and credit-card markets are fundamentally different when it comes to routing. Equally important, however, are the substantial differences in the framework of competition for debit cards and credit cards in general. To the extent that policymakers believe, however inappropriately, that debit-card routing requires intervention to achieve so-called “competitive” routing, the same rationale should not be assumed to apply to credit cards. Whereas most consumers carry only one debit card—the one issued by their primary bank—they carry multiple credit cards. According to Experian, the average American consumer has about four credit cards.¹³ As a result, there is vigorous competition among cards both at the point of card uptake and at the point of sale. In other words, by any metric, credit cards are subject to vigorous, ongoing competition. Unlike debit, however, competition primarily occurs at the time of card adoption by consumers.

This observation gives the lie to the notion that routing mandates are fundamentally about promoting “competition.” It is worth remembering that payment-card issuers seek—first and foremost—to supply services to cardholders, who are the primary parties with whom they have a contractual relationship. Routing mandates of the kind contained in Regulation II and the Credit Card Competition Act forcibly abrogate that relationship, transferring the rights over who determines which network to use from the consumer to the merchant. Genuine market competition among issuers, of the kind described in the previous paragraph, tends to generate net benefits, such as more reliable, convenient, and secure payments. By contrast, as we explain below, the artificial “competition” that would result from this forced transfer of rights can be value destroying.

2. Payment-Card Networks as Declining Marginal Cost Industries

Mandating multiple networks to be enabled on payment cards under all circumstances also could have costs in terms of fragmenting network traffic and reducing network volume. Some of the indirect effects that could result from inefficient fragmentation of network traffic are discussed below, such as the potential for increased fraud and reduced innovation in payment-card markets. But an additional cost that must be considered is the potential for reduced economies of scale and other inefficiencies in payment-card transactions.

¹³ Stefan Lembo Stolba, *What is the Average Number of Credit Cards per US Consumer?*, EXPERIAN (Apr. 8, 2021), <https://www.experian.com/blogs/ask-experian/average-number-of-credit-cards-a-person-has> (estimating an average of 3.84 credit cards per person).

Payment-card networks such as Visa and MasterCard have characteristics of industries with diminishing marginal costs across most relevant production frontiers.¹⁴ Most of the expense of operating the network manifest in the form of capital costs. These are effectively fixed costs or, more generally, costs that cannot be attributed to a particular transaction by a particular consumer. This includes the cost of building out and operating and improving the network, enhancing network security, and a host of other costs that are spread across all consumers and all transactions. While the network does incur marginal costs associated with producing each transaction, these are small relative to the overall costs of owning and operating the network. They are what the late economist Ronald Coase refers to as “common costs”—as in, costs that are “common to numbers of consumers”—rather than fixed costs.¹⁵ Many Internet companies, including social-media companies and search engines, share this characteristic of being industries with high fixed costs relative to marginal costs.¹⁶

In markets with high fixed costs, “volume is king”; larger output enables these fixed costs to be spread over a greater volume of production.¹⁷ Classic examples of industries with high fixed costs and low marginal costs include utilities, such as power generation, as well as capital-intensive industries, such as steel and automobiles. Economists recognize that such industries have fundamentally different competitive characteristics, with efficient market structures that often feature a relatively small number of large firms, rather than multiple small competitors.

The network’s goal to maximize volume likely explains many of the distinctive features of the payment-card industry, most notably the use of rewards and other incentives to use electronic payments.¹⁸ Such loyalty and volume discounts are common in many industries, of course, including other industries with high fixed costs, such as airlines. In addition to a more efficient scale of operation, higher levels of volume also enable investment in quality improvements that are common to all consumers, such as complex fraud-detection protections and improved processing speed and reliability. Regulatory mandates that would artificially fragment these markets could result in lower levels of network volume than is economically efficient.

¹⁴ For the seminal analysis of such industries, see R.H. Coase, *The Marginal Cost Controversy*, 13 *ECONOMICA* 169 (1946).

¹⁵ *Id.* at 170.

¹⁶ See *The Importance of Volume in High Fixed-Cost Business*, VESTED, <https://vested.co.in/blog/tsmc-intel-netflix-and-the-importance-of-volume-in-a-high-fixed-cost-business> (providing the examples of Netflix, Intel, and the Amazon Prime streaming service).

¹⁷ *Id.*

¹⁸ See Sumit Agarwal, Sujit Chakravorti & Anna Lunn, *Why Do Banks Reward Their Customers to Use Their Credit Cards*, FED. RSRV. BANK OF CHICAGO, Working Paper No. 2010-19 (November 2019), <https://www.chicagofed.org/publications/working-papers/2010/wp-19>; Santiago Carbo-Valverde & Jose M. Linares-Zegarra, *How Effective are Rewards Programs in Promoting Payment Card Usage? Empirical Evidence*, EUROPEAN CENTRAL BANK WORKING PAPER SERIES No. 1141 (December 2009), available at: <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1141.pdf>.

I. *Payment-Card Networks as Two-Sided Markets*

One of the main challenges faced by any payment system is to persuade both merchants and consumers of its value. In some cases, this challenge can be solved by government mandate, such as the U.S. government requirement that Federal Reserve notes be accepted as legal tender. Moreover, this balance is not static. Checks were once the most popular non-cash payment device used in the United States; today, by contrast, checks are increasingly obsolete. Other payment tenders, such as cryptocurrency, may someday be broadly accepted by merchants and used by consumers but, to date, this has not been the case.

More generally, payment-network transactions consist of at least five parties: cardholders, the cardholder's issuing bank, the network (e.g., Visa, Mastercard), the merchant, and the merchant's bank. In addition, there may be an additional fee if the consumer processes the transaction through a third-party provider, such as ApplePay or PayPal.

If too few merchants accept a card, consumers will have little reason to hold it. Likewise, if too few consumers hold a card, merchants will have little reason to accept it. Conceptually, economists describe such situations as “two-sided markets”: consumers are on one side, merchants on the other, and the payment system acts as the platform facilitating interactions between them.¹⁹ The challenge, then, is to provide appropriate incentives for participation on each side of the market to maximize the *joint net benefits* of the platform to all participants—and to allocate costs accordingly.

Thus, the platform operator can be expected to set the respective prices charged to participants on each side of the market to achieve this maximand. If the operator sets the price too high for some consumers, such as by requiring excessive monthly or annual fees, then they will be unwilling to use the platform; similarly, if the operator sets the price too high for some merchants, such as by charging high interchange fees that result in excessive merchant-discount rates, they will not be willing to use the platform. For example, both Visa and Mastercard set caps on interchange fees for certain low-margin transactions, such as purchases at gas stations (for which the current cap on credit interchange is \$0.95), thereby increasing acceptance without creating problems for issuers.²⁰

The U.S. Supreme Court put it succinctly:

¹⁹ See Zywicki, *supra* note 5; see also Jean-Charles Rochet & Jean Tirole, *Two-Sided Markets: A Progress Report*, 37 RAND J. ECON. 645 (2006); As the Supreme Court wrote in *Ohio v. American Express Co.*, 138 S. Ct. 2274, 2280 (2018):

By providing these services to cardholders and merchants, credit-card companies bring these parties together, and therefore operate what economists call a “two-sided platform.” As the name implies, a two-sided platform offers different products or services to two different groups who both depend on the platform to intermediate between them.”... For credit cards, that interaction is a transaction.... The key feature of transaction platforms is that they cannot make a sale to one side of the platform without simultaneously making a sale to the other.

²⁰ *Visa USA Interchange Reimbursement Fees*, VISA PUBLIC (Apr. 23, 2022), available at:

<https://usa.visa.com/content/dam/VCOM/download/merchants/visa-usa-interchange-reimbursement-fees.pdf>.

To optimize sales, the network must find the balance of pricing that encourages the greatest number of matches between cardholders and merchants.²¹

Nonetheless, platforms must cover the system operating costs, which arise from the *joint* interaction of the two sets of participants, mediated by the platform. In the case of payment networks, marginal costs are incurred only if *both* the consumer and the merchant choose to interact through the platform.²² Because the costs of operating the network arise from the joint interaction of participants on both sides, there is no “natural” way to allocate them.²³ Ultimately, the costs of operating the platform must be covered either by merchants or by consumers, or by some combination of the two.²⁴ This often involves one side paying more of the costs than the other side.

This is also true for other two-sided markets. Take newspapers, for example, where advertisers are on one side of the market and consumers are on the other. Newspapers publish stories to attract readers. While some of the costs of operating a newspaper may come from readers’ newsstand or subscription payments, often much and sometimes all of the costs are covered by advertisers. Participants on one side of the market, the advertisers, thus effectively subsidize the production of content that is of interest to participants on the other side of the market, the readers. Likewise, search engines return searches that are of interest to consumers while also displaying advertisements (that may be related to the search or to some other activity the searcher has been undertaking), with the revenue from the advertisements funding the (non-advertising-related) search returns. Such cross-subsidies are common in two-sided markets and are generally considered to be presumptively efficient in most cases.

When it comes to newspapers, consumers clearly have many choices as to which “platform” to use (that is, which paper to read) or to read no newspaper at all. However, consumers who want to read a specific piece published in a particular newspaper would not expect to be able to find the same piece in another newspaper. This is because newspapers have contracted with journalists and commentators to supply copy, which is then edited and published by the newspaper and is subject to copyright. There are, of course, exceptions, such as wire stories and syndicated columns or cartoons, but these are not, for the most part, the distinctive content that attracts readers and advertisers. These exclusivity arrangements also benefit readers by enabling publishers to acquire higher-quality content and provide incentives to invest in the development and marketing of that content. When you read *The New York Times*, you do not expect to read a column by George Will (who has been writing for the *Washington Post* since 1974) and when you read the *Washington Post* you do not expect to read a story by Thomas Friedman (who has been an employee of *The New York Times*

²¹ *American Express Co.*, *supra* note 19, at 2286.

²² See William F. Baxter, *Bank Interchange of Transactional Paper: Legal and Economic Perspectives*, 26 J. L. & ECON. 541 (1983).

²³ See Ronald H. Coase, *The Problem of Social Cost*, 3 J. L. & ECON. 1 (1960).

²⁴ See Zywicki, *supra* note 5, at 31-32.

since 1981).²⁵ These journalists, who have distinctive styles and voices, are among the star attractions that draw readers to those newspapers and hence attract advertisers. If other newspapers and platforms could free ride on those investments by freely reprinting that exclusive content, those newspapers would lack incentives to invest in acquiring and marketing that talent to readers. Thus, the ability to recoup those investments is essential to provide incentives for newspapers to improve quality, build an economically sustainable base of subscribers, and thus benefit all of the platform's stakeholders over time.

The same is true of debit cards: each card typically has a primary network with which it is affiliated and the brand of that network is usually inscribed somewhere on the card. When using the card, you would presumably expect it to be processed by the network brand that appears on the card. Each network brand has invested in technologies that enable cards so branded to be used quickly and safely to process transactions. As such, when you use your card at a retailer, you expect that the correct amount of funds will flow from your bank account to the retailer's. Moreover, you expect that you will be notified in case there is unusual activity on your card and/or a temporary block placed on the card pending your confirmation that the activity was valid.

Like newspapers, if card networks lacked confidence that cards issued under a particular brand would actually be routed through that brand's network, those networks would have fewer incentives to invest in quality improvements, such as those related to security, speed, convenience, and reliability. Instead, all networks would be forced to compete on the basis of who could provide the lowest possible price. In particular, lower-quality networks would have the opportunity to free ride on historic investments in quality made by higher-quality networks, gaining the benefits without bearing the costs.

For example, to protect themselves from fraud losses, merchants could initially route a consumer's transaction over a more secure, higher-quality network. Then, after the consumer and the card have been verified and the fraud risk identified as low, the merchant could steer subsequent transactions to a lower-cost network, a process that would be especially easy with respect to online transactions. Over the long run, this ability of lower-quality networks to free ride on the security investments of higher-quality networks could lead to an unraveling of the entire market and result in suboptimal investments in security and related attributes.²⁶ As the Supreme Court noted in *Amex v. Ohio*, the power of merchants to steer consumers to less-expensive networks at the point-of-

²⁵ George F. Will, THE WASHINGTON POST, <https://www.washingtonpost.com/people/george-f-will> (last visited: Aug. 8, 2022); Thomas L. Friedman, THE NEW YORK TIMES, <https://www.thomasfriedman.com> (last visited: Aug. 8, 2022).

²⁶ See *Janus v. American Federation of State, County, and Municipal Employees*, Council 31, 138 S. Ct. 2448, 2487 (2018) (Kagan, J., dissenting) (describing how problems of free riding can cause unraveling of public-goods production).

sale creates a potential free-rider problem that discourages investment in quality attributes favored by consumers, which in turn “endangers the viability of the entire... network.”²⁷

Until October 2011, you would have been correct in your presumption that a card branded Visa would only be processed by Visa (for a dual-message transaction) or one of its direct affiliates, such as Interlink, its PIN debit subsidiary (for a single-message transaction). Since then, you would still largely be correct but there is a significant possibility that the transaction would be processed by another network, such as Star, Pulse, Shazam, or NYCE.

This was not a consequence of market dynamics. It is because, in October 2011, the Federal Reserve’s Regulation II came into force. This regulation implemented Section 1073 of the Dodd-Frank Act (often referred to as the “Durbin Amendment” after its primary sponsor, Sen. Richard Durbin) that, among other things, required all debit cards to include at least two *unaffiliated* networks on their cards. As such, where a retailer has set their default network to a lower-cost single-message (PIN) debit network that happens to be enabled on your debit card, your transaction will be routed over that network. As discussed in more detail below, this would mean that your preferred network has a less complete picture of your payment habits, reducing the effectiveness of its anti-fraud systems. Worse, if your card has, unbeknownst to you, been stolen and is used at a retailer that routes the transaction over a lower-cost network, the transaction would be less likely to be detected as fraudulent.

Going back to the newspaper analogy, this is a bit like subscribers to *The New York Times* and *Washington Post* waking up one day, opening their respective newspaper’s app, and finding that the content they are expecting is not there. No George Will. No Thomas Friedman. Instead, they find content from *China Daily* and *Pravda*. The content may not be entirely fabricated but it is difficult to know which stories to trust.

Lobbyists and trade associations for numerous merchant groups claim that extending mandatory debit routing “choice” to online transactions is a good thing for merchants, and thus for consumers, on the grounds that it reduces merchants’ costs and thereby reduces consumer prices.²⁸ But this conceives of payment-card networks as essentially undifferentiated commodities that compete solely on price. It ignores the quality aspects of routing, the free choice made by consumers when selecting their cards, and the associated expectations that go along with that choice. Consumers justifiably care whether their transactions are processed by Visa, MasterCard, or China UnionPay,

²⁷ *American Express Co.*, *supra* note 22, at 2289.

²⁸ See Mary Ellen Peppard, *R-1748; Regulation II - Debit Card Interchange Fees and Routing*, THE NEW JERSEY FOOD COUNCIL (June 2021), available at: https://www.federalreserve.gov/SECRS/2021/June/20210630/R-1748/R-1748_062821_138185_335560531135_1.pdf; Una Dillon, *R-1748; Regulation II - Debit Card Interchange Fees and Routing*, Merchant Risk Council (June 2021), available at: https://www.federalreserve.gov/SECRS/2021/June/20210616/R-1748/R-1748_061421_138151_415670000008_1.pdf.

in terms of security and reliability. And as discussed below, by artificially fragmenting routing traffic, these requirements for multiple routing options do not guarantee that total transaction costs will be reduced. Such mandates instead merely constitute an attempt to change the allocation of transaction costs. In reality, the optimal allocation of costs between merchants and consumers depends on the price elasticity of the participants on each side of the market.²⁹ Since merchants tend to be less price-sensitive, they generally bear more of the cost (via the merchant-discount rate, which includes the interchange fee and merchant-acquirer fees), though consumers often also bear some of the cost (for example, in the form of monthly account fees).

2. *Asymmetric Counterparty Risk*

A key concern in any transaction is counterparty risk. Indeed, one of the primary drivers of the shift from using checks to using payment cards for retail transactions has been the lower counterparty risk associated with cards. (See Appendix for more details.) While payment cards do not eliminate counterparty risk, parties affected by it have developed a range of technologies and processes intended to prevent and detect fraud. Moreover, asymmetries in such risks—and the associated incentives to mitigate them—have implications for the optimal allocation of decision rights for payment routing. The following subsections seek to tease out these asymmetries and their implications.

a. *The issuer*

As custodian of its cardholders' bank accounts, the debit-card issuer naturally is concerned to protect those accounts from fraud. In addition, issuing banks seek to alleviate cardholder concerns regarding fraudulent use by providing them with (limited) warranties against such fraud. This, in turn, raises concerns for issuers about their potential liability in the event of fraudulent transactions.

Regardless of whatever warranties might be provided by issuers through agreements with their account holders, the Electronic Funds Transfer Act of 1978 (EFTA) established statutory rules that include:

- Limiting cardholder liability to \$50 in the first two days following the loss or theft of a debit card, provided that the card is reported lost or stolen during those first two days.
- Limiting cardholder liability to \$500 in the 60 days following the loss or theft of a debit card, provided the card is reported lost or stolen after the first two days but during the 58 subsequent days.
- Unlimited cardholder liability if the loss or theft is not reported within 60 days.

²⁹ Zywicki, *supra* note 5, at 33; Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 J. EUROP. ECON. ASSOC. 990, 997 (2003); Julian Wright, *Pricing in Debit and Credit Card Schemes*, 80 ECON. LETTERS 305, (2003).

The corollary of these rules is that issuing banks are subject to almost unlimited liability during the first two days. Some of this liability may be mitigated through the chargeback process, whereby a debit transaction is reversed by the acquiring bank at the request of the issuing bank. Nevertheless, in its most recent survey, the American Bankers Association reported that U.S. banks lost \$1.2 billion in 2018 due to debit-card fraud.³⁰ For these reasons, issuing banks have strong incentives to take such action as would be cost-effective to prevent fraudulent use of cards they have issued.

In order to limit their liability for counterparty risk, issuers work with payment networks that have developed sophisticated tools to monitor and identify possible instances of fraud. For example, since the 1990s, Mastercard and Visa have used machine learning to develop profiles of cardholders, which then enable them to identify potential instances of fraud. Not all card networks, however, make as large of an investment in data security and reliability as those market leaders.

Issuers also require authorization of transactions, using increasingly sophisticated technologies:

- **Signature:** This is the historic method by which dual-message POS transactions were authenticated. Although they are conventionally called “debit transactions,” they are processed over the credit-card network and, unlike PIN debit, do not post and clear immediately.
- **Personal Identification Number (PIN):** This is the method by which single-message POS transactions are often authenticated. Historically, the PIN was stored on a card’s magnetic stripe but in most cases, it is now stored on the EMV chip (see below). In contrast to signature, PIN debit raises the unique risk that, if one’s card and PIN are compromised, fraudsters can raid the consumer’s bank account directly by making ATM withdrawals. The average loss a consumer suffers from fraud involving a PIN card is therefore larger than with a signature card. As a result, while fraud is more common in signature debit, the average size of loss for per fraudulent PIN-debit transaction is more than double that of signature debit.³¹
- **EMV Chip:** This is a computer chip programmed based on a technology specification developed by EMVCo, which stores and transmits card information using public-key encryption technology and sends a one-time token or cryptogram to the POS machine. EMV chips are more difficult to “skim” than magnetic stripe-based cards and, because they make use of a dynamic token generated by the chip, dramatically reduce the potential for hackers to steal and use stored card information from merchants.
- **Contactless Tokens:** These are similar to the tokens produced by EMV Chips and enable similar protections for contactless transactions over an encrypted transmission, whether using a card’s contactless system (“tapping” instead of “swiping” a magnetic-stripe card or “dipping” an EMV card) or that on a mobile phone. Because the card itself is never inserted into the ma-

³⁰ *Deposit Account Fraud Survey*, AMERICAN BANKERS ASSOCIATION (Jan. 1, 2020), <https://www.aba.com/news-research/research-analysis/deposit-account-fraud-survey-report#>.

³¹ See FEDERAL RESERVE, 2019 INTERCHANGE FEE REVENUE, *supra* note **Error! Bookmark not defined.**, at 18.

chine to have its underlying data read, contactless tokens are a highly secure form of payment transaction.

- **Address Verification (AVS):** This is mainly used during card-not-present (CNP) transactions, such as telephone or online sales.
- **Card Verification Value/Code (CVV/CVC):** The card-verification code is a three- or four-digit number that is unique to the card and is not held in merchant databases. This is also primarily used during CNP transactions.
- **Two-Factor Authentication (2FA):** Two-factor authentication entails the use of two independent proofs that the card user is legitimate, such as the CVV and a one-time password. 2FA is most commonly used for CNP transactions but is also used sometimes as a second line of defense for POS transactions identified as unusual.
- **3D-Secure (3DS):** 3D-Secure is an authentication system developed by EMVCo primarily for online transactions. It is a two-stage process. Stage one involves using the information sent in the first (authorization) message to check against a cardholder's profile. If the proposed payment fits the profile, it is permitted; if not, then the cardholder is asked to complete 2FA on the transaction.³² Of particular relevance here, 3DS requires that messages be sent across specific networks in order to work properly. But this can only be guaranteed if the routing rights are allocated to the issuer.
- **Biometrics and AI:** Payment networks, issuers, and other companies in the card-processing stack have begun to use biometrics, typically combined with machine learning, as part of the authentication and authorization process.³³

In addition, issuers have partnered with payment networks to offer means by which cardholders can temporarily stop their card from being used, in case that card has been lost and might have fallen into the wrong hands. Again, this requires that the issuer is able to set the message routing.

b. The cardholder

Although the EFTA limits cardholder exposure for loss or liability from fraud, consumers still have ample reasons to be concerned about fraudulent use of their cards. Dealing with a lost or stolen card can be very time-consuming and aggravating. Given the liability caps established under EFTA (and any more extensive warranties offered by the issuer), cardholders' main concerns would be to ensure that they are made aware promptly of any fraudulent use of their card and that they are able

³² EMV 3-D Secure Protocol and Core Functions Specification Version 2.3.0.0, EMVCo (September 2021), available at: https://www.emvco.com/terms-of-use/?u=/wp-content/uploads/documents/EMVCo_3DS_CoreSpec_v2.3_20213009.pdf.

³³ See, e.g., NuData: It's Time for Businesses to Replace the Old 'New Normal' With a New One, PYMNTS (Jun. 30, 2021), <https://www.pymnts.com/news/payments-innovation/2021/nudata-time-businesses-replace-old-new-normal>; Chris Burt, Smartmetric CEO Claims Progress Towards American Biometric Payment Card Launch, BIOMETRIC UPDATE (Jul. 18, 2022), <https://www.biometricupdate.com/202207/smartmetric-ceo-claims-progress-towards-american-biometric-payment-card-launch>.

to prevent any subsequent fraudulent use. Notifications can help to identify potentially fraudulent transactions, either during or after a transaction. These can take several forms, including:

- Basic transaction notifications—sent by text message or email—help cardholders know when their card has been used, how much was spent, and where it was spent.³⁴ Such information can enable vigilant cardholders to spot fraud almost the moment it occurs.
- Fraud alerts triggered when an attempt has been made to use a card in a way that did not fit a cardholder's profile.

As such, cardholders' interests regarding the network over which their transaction is processed are broadly aligned with those of the issuer.

c. The merchant

In general, merchants are only held liable for *unauthorized* transactions. But the mechanism for imposing liability for unauthorized transactions, the chargeback, can be quite onerous. When an issuing bank suspects that a charge on an account holder's card has been made fraudulently, it will typically ask the account holder to verify that the charge was legitimate. If the account holder confirms that the charge was fraudulent, the issuing bank may initiate a chargeback. The acquiring bank will then notify the merchant, who may challenge the chargeback. A successful challenge will usually require the merchant to demonstrate that the card was properly authenticated and the charge was properly authorized.

Unauthorized transactions can occur for a wide range of reasons, including: exceeding floor limits;³⁵ employee negligence (e.g., entering an incorrect card number or failing to store card information securely); POS skimming by employees (i.e., theft of card data); use of skimmed cards by others; and online fraud.³⁶ The risks of both negligence and skimming can be reduced by setting a \$0 floor limit and using the non-routing-specific authorization techniques listed above (e.g., EMV cards, AVS, AVV, and 2FA). The risk of incorrect data storage (and subsequent breach) can be reduced by implementing the industry-standard data-security protocol, PCI DSS.³⁷ Online fraud is

³⁴ Such notifications are available on Visa and Mastercard debit cards: *Visa Purchase Alerts*, VISA, <https://usa.visa.com/pay-with-visa/featured-technologies/purchase-alerts.html> (last visited: Aug. 9, 2022); *Transaction Alerts*, MASTERCARD, <https://sea.mastercard.com/en-region-sea/personal/get-support/safety-and-security/transaction-alerts.html> (last visited: Aug. 9, 2022).

³⁵ Many merchants have "floor limits" below which authorization is not required. While such limits historically have helped to increase the speed of transactions, they obviously expose the retailer to potential fraud. Since it is now possible to authorize a transaction in seconds, floor limits are becoming increasingly anachronistic. By setting a low floor limit, merchants can both reduce the likelihood of fraudulent transactions being processed and have a greater likelihood of successfully challenging chargebacks.

³⁶ Sara Sajwaj, *Top 5 Security Risks in Credit Card Payments (And How to Conquer Them)*, BASYS PROCESSING (Jan. 29, 2020), <https://basyspro.com/top-5-security-risks-in-credit-card-payments-and-how-to-conquer-them>.

³⁷ *PCI-DSS v4.0 At-A-Glance*, PCI SECURITY COUNCIL STANDARDS (March 2022), https://www.pcisecuritystandards.org/document_library/?category=pcidss&document=dss4aag.

most effectively reduced by using a 2FA system. Merchants that require 2FA for all transactions may lose sales, however, so 3DS (which requires 2FA for only some transactions) may be preferred.

For merchants whose business is exclusively or mainly POS, there may be net cost advantages in being able to route transactions over a lower-cost network, especially for high-volume, low transaction-value businesses, where the proportion and size of chargebacks are both small.

Some merchants have also used machine learning to develop profiles of their customers. They are thus able to monitor for potential fraud relating to those customers, reducing the need for similar monitoring by payment networks. In general, larger merchants and those that offer membership/loyalty programs are better able to build such spending profiles than are smaller merchants.

d. The acquirer

Since the costs of fraud fall primarily on the issuing bank and merchants, and to a lesser extent on cardholders, the acquirer is least exposed to fraud and may not have incentives to invest in its prevention. (The acquirer's main exposure is via chargebacks, but these costs are generally passed on to the merchant.) Acquirers potentially stand to gain the most by routing transactions over the lowest cost network, however, because they can capture part of the difference between the cost of processing transactions and the fee they charge. As such, if acquirers had routing rights, they would most likely choose the least cost route.

3. Overall Effects

In sum, each party to a transaction has somewhat different incentives regarding the choice of network. In general, the card issuer and cardholder both have strong incentives to route payments over the main branded network associated with the card. This ensures use of all of the security and anti-fraud protections available from an EMV card, including 3DS for online transactions and the ability for cardholders to place temporary holds on their cards.

Some merchants also have incentives to route over the main branded network, especially smaller merchants selling higher-value goods online, given the potential for very expensive chargebacks from unauthorized transactions. Many other merchants, however—especially larger high-volume merchants—would have incentives to use the lowest cost routing. This is especially true of those able to take advantage of the EMV chip and PIN for POS transactions, and those with proprietary machine-learning-based fraud-monitoring systems that enable them to reduce potential chargebacks on their own. Moreover, merchants have little incentive to consider any non-financial costs to consumers from fraud, such as the time and inconvenience of dealing with a lost or stolen card.

Finally, acquirers generally have less incentive to avoid fraud and stronger incentives to route transactions over the least-cost route.

Based on this analysis, from a static perspective, either merchant or issuer routing is likely to be most efficient from the perspective of cost-effective fraud prevention. In the absence of mandatory liability shifting under EFTA, consumer routing might be cost-effective, but this is unlikely to be the case under the present statutory liability regime. EFTA increases the exposure of issuers to fraud and reduces the exposure of consumers. As such, issuers have stronger incentives to avoid fraud than would otherwise be the case and consumers have fewer incentives.

Factoring in the two-sided market analysis, it seems likely that issuer routing is more efficient than merchant routing. Additionally, most of the strongest security features on payment cards—notably the EMV technologies—have been developed by a consortium of the major brand payment networks, including Visa and Mastercard. Indeed, it was a change in those major networks' liability rules in October 2015 that motivated merchants to adopt EMV-compliant POS terminals, thereby reducing POS-related fraud by more than 80%. This leads ineluctably to the conclusion that issuer routing is more compatible with the ongoing innovation that is needed to prevent fraud.³⁸

III. Regulating Payment Networks

As illustrated in the previous section, routing plays a crucial role in ensuring the efficient and secure operation of payment-card networks. Moreover, to assess whether there has been some sort of “failure” in the market for routing requires understanding both the nature of competition among card networks and the differences between credit cards and debit cards. While the propriety of mandated routing rules is questionable for debit cards, it is fundamentally wrongheaded when applied to credit cards.

Nevertheless, big-box merchants consistently claim that payment-card markets are uncompetitive and that, as a result, interchange fees are excessive. Ironically, they simultaneously argue that these anti-competitive features supposedly result in an *excess* output of card transactions. This runs counter to the standard economic concern about anti-competitive behavior, which is that monopolists will *restrict* output of their product. As a result, merchants have lobbied both for the introduction of price caps on interchange fees and for a shift from issuer routing to merchant routing, with the intent of reducing the price they pay for card acceptance. The following sections discuss the theories of harm underpinning these claims, the proposed remedies, and the effects of the remedies that have been implemented thus far.

A. Price Controls on Interchange Fees

Given the theoretical indeterminacy regarding the efficient allocation of costs between the two sides of a market noted in Section II, economists have cautioned against intervention unless there

³⁸ Visa EMV chip cards help reduce counterfeit fraud by 87 percent, VISA (Sep. 3, 2019), <https://usa.visa.com/visa-everywhere/blog/bdp/2019/09/03/visa-emv-chip-1567530138363.html>.

is evidence of a significant market failure.³⁹ Unfortunately, governments have not heeded this advice. In 1990, Denmark introduced the first price caps on interchange fees. In the years since, dozens of other jurisdictions have followed suit.⁴⁰

In our recent review of the effects of interchange-fee price controls, we concluded that price caps imposed on interchange fees have had many pernicious effects and that, in contrast to the claims of supporters, they have done far more harm than good.⁴¹

First and foremost, interchange-fee caps have harmed the very people they were supposed to help. Wherever they have been implemented, they have resulted in lower revenue for issuing banks, which have responded by increasing fees for consumers, either on bank accounts, on credit cards, or both. These fee increases have, in general, been highly regressive, hurting those with lower incomes the most.

For example, in response to the Durbin Amendment, banks dramatically increased the mandatory minimum balances necessary to qualify for free checking and increased the monthly maintenance fees for those who did not qualify. These adjustments impacted lower-income consumers much more than consumers with higher incomes. These higher fees also likely contributed to an increase in the number of unbanked and underbanked people.⁴²

In addition, covered issuers have reduced the rewards on payment cards. Since those with higher incomes and/or better credit records are better able to switch to alternative payment cards not subject to the caps, the reductions in rewards have mainly harmed the poor and those with poor credit records.⁴³

Meanwhile, the rate at which merchants have passed through reductions in costs associated with lower interchange fees (in the form of lower-priced goods) has been less than the rate at which

³⁹ Jean-Charles Rochet & Jean Tirole, *An Economic Analysis of the Determination of Interchange Fees in Payment Card Systems*, 2 REVIEW OF NETWORK ECONOMICS 69 (June 2003).

⁴⁰ For a fairly comprehensive overview of such caps, see: Fumiko Hayashi & Jesse Leigh Maniff, *Public Authority Involvement in Payment Card Markets: Various Countries: August 2020 Update*, PAYMENTS SYSTEM RSCH., FED. RSRV. BANK OF KANSAS CITY (2020), available at: https://www.kansascityfed.org/documents/6660/PublicAuthorityInvolvementPaymentCardMarkets_VariousCountries_August2020Update.pdf.

⁴¹ Julian Morris, Todd J. Zywicki, & Geoffrey A. Manne, *The Effects of Price Controls on Payment-Card Interchange Fees: A Review and Update*, GEO. MASON L. & ECON. RSCH. PAPER NO. 22-07 (2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4063914; see also Consumer Financial Protection Bureau, 1 TASKFORCE ON FEDERAL CONSUMER FINANCIAL LAW REPORT 588-592 (2021); Vladimir Mukharylyamov & Natasha Sarin, *The Impact of the Durbin Amendment on Banks, Merchants, and Consumers*, INST. FOR L. & ECON. RSCH. PAPER NO. 19-06, at 34-35 (January 2019).

⁴² Morris, Zywicki & Manne, *supra* note 41, at 15-19, 32-35.

⁴³ *Id.* at 19-23.

banks have passed through losses in fee revenue (in the form of higher-priced accounts, cards and services, and reductions in rewards). As such, consumers—especially lower-income consumers—have on net lost out.⁴⁴

Finally, interchange-fee caps have had somewhat predictable effects on modes of payment and hence on investments in those modes of payment. Thus, the Durbin Amendment, which exclusively affected debit, led to a shift in payments toward credit and impeded investment in debit-related payment technologies (until fintech companies realized they could partner with exempt financial institutions).⁴⁵

B. Regulating Routing

In addition to price controls, several jurisdictions have introduced mandates regarding how card payments may be routed. The effect of these mandates is of particular relevance in the United States, as Congress and the Federal Reserve consider new regulations on payment-card networks. In particular, policymakers have debated whether to extend the mandated reallocation of routing rights from consumers to merchants so that they apply to Internet transactions and even credit cards. In large part, this interest in “competitive” or “least-cost” routing stems from the Durbin Amendment, which introduced routing mandates for the first time.

Routing mandates typically require card issuers to include at least two unaffiliated payment networks on each card and, in many cases, also to require issuers to permit either:

- consumers to choose which network to use when checking out; or
- merchants to choose which network to use when processing a payment.

This subsection discusses the theory behind such regulations and the evidence of their effects.

C. Proposed Changes to Regulation II

The Fed’s proposed rule would change the language of the section of Regulation II that qualifies the Prohibition on Network Exclusivity. In the original, the prohibition (s. 235.7(a)(1)) was as follows (emphasis added):

1. Scope of restriction. Section 235.7(a) requires a debit card subject to the regulation to be enabled on at least two unaffiliated payment card networks. This paragraph does not, however, require an issuer to have two or more unaffiliated networks available for each method of cardholder authentication. For example, it is sufficient for an issuer to issue a debit card that operates on one signature-based card network and on one PIN-based card network, as long as the two card networks are not affiliated. Alterna-

⁴⁴ *Id.* at 23-30

⁴⁵ *Id.* at 29-32.

tively, an issuer may issue a debit card that is accepted on two unaffiliated signature-based card networks or on two unaffiliated PIN-based card networks. See also, comment 7(a)-7.⁴⁶

Under the proposal, this language would be amended by a revised s. 235.7(a)(2) as follows:

An issuer satisfies the requirements of paragraph (a)(1) of this section only if, for every geographic area, specific merchant, particular type of merchant, and particular type of transaction for which the issuer's debit card can be used to process an electronic debit transaction, such issuer **enables** at least two unaffiliated payment card networks to process an electronic debit transaction, and where **each of these networks has taken steps reasonably designed to be able to process the electronic debit transactions** that it would reasonably expect will be routed to it, based on expected transaction volume.⁴⁷

This change in language is subtle but important. Whereas, under the current rule, banks are required to ensure that at least two unaffiliated networks are included on a card (i.e., the PIN and signature networks that are enabled may not be owned by the same company), under the new rule, they would be required to *enable* at least two unaffiliated networks for each type of debit system (PIN and signature). Those networks would then also have to be enabled to process debit transactions for *every type of transaction*. That means cards capable of routing over one signature and one (unaffiliated) PIN network must have both networks enabled for card-not-present transactions.

D. Proposed Regulation of Credit-Card Routing

Credit cards are currently not subject either to interchange-fee price controls or routing mandates in the United States. As we have noted elsewhere, this likely reduced the harm caused by Regulation II. This is because many consumers—especially higher-income consumers—were able to shift to greater use of credit cards, thereby retaining access to rewards and other card features that were removed from debit cards.⁴⁸

However, it also meant that Regulation II was even more regressive, for two related reasons. First, consumers with poor or no credit rating are less able to obtain a credit card. Second, following the implementation of Regulation II, banks reduced the availability of free checking accounts and raised monthly account fees. Lower-income consumers are thus now even less likely to be able to afford to open or maintain a bank account and therefore less likely to be able to build a credit record.

As currently drafted, Sen. Durbin's Credit Card Competition Act would prohibit credit-card issuers from issuing cards that operate on only one network or "are operated by 2 or more such net-

⁴⁶ Limitations on Payment Card Restrictions, 76 Fed. Reg. 43,474 (July 20, 2011).

⁴⁷ Debit Card Interchange Fees and Routing, 86 Fed. Reg. 26,189 (May 13, 2021).

⁴⁸ *Supra* note **Error! Bookmark not defined.**

works which are owned, controlled, or otherwise operated by—(I) affiliated persons; or (II) networks affiliated with such issuer; or (iii) the 2 such networks that hold the 2 largest market shares with respect to number of credit cards issued in the United States by licensed members of such networks (and enabled to be processed through such networks)...” As a result, the proposed legislation expressly singles out Visa and MasterCard for discriminatory treatment. Notably, proprietary and store-branded cards—such as Target’s Red Card—that are not affiliated with Visa or MasterCard would not be subject to these limits.

In addition, the bill as drafted would prohibit issuers from imposing any restrictions on the routing of transactions, regardless of how those transactions are initiated. In effect, it requires implementation of open-source standards for tokens, which could create security risks.

E. The Consequences of Routing Mandates

At a visceral level, the routing question comes down to this: When you use your credit or debit card, should you have the right to require the transaction to be routed by the network that you prefer and trust, such as Visa, Mastercard, American Express, or Discover? Or should the merchant be allowed to choose the cheapest provider available on your card, even if that means you lose some of the benefits associated with the brand network?

More prosaically, requiring issuers to enable at least two methods to route every transaction and providing merchants with free rein to choose the cheapest of those creates a risk that consumers could suffer increased fraud and reduced reliability in their transactions, especially for online purchases. This would not only be detrimental to cardholders and issuers; it would also harm merchants, especially smaller merchants. By reducing trust in the use of payment cards for online transactions, it could even slow the shift toward online commerce.

1. Theory

The theory underpinning routing regulations, to the extent that one has been developed, is that limits set by issuers and networks on the ability of consumers, merchants, and acquirers to choose the network over which messages relating to a payment are made have the effect of inhibiting competition and thereby driving up interchange fees. By requiring issuers and networks to permit routing over an unaffiliated network and giving the merchant the authority to choose, the theory goes, competition and choice would inexorably drive down interchange fees.

But there is no evidence that the current structure of market-determined interchange fees is inefficient or that there is insufficient competition, as reflected in either interchange-fee rates or other non-pecuniary reasons (such as fraud prevention and detection) why card issuers and networks might have chosen to limit the networks over which messages are sent. In particular, this approach ignores the adverse impact and risk to consumers, as well as their confidence in the protection of their data and the reliability and efficiency of transactions.

If the right to determine which network routes a transaction is transferred by mandate from the consumer to the merchant, it is likely that many merchants will choose the cheapest network, without regard to the costs or security risks to consumers. Moreover, to the extent that this artificially drives down card-transaction fees, the consequent reduction in card revenue invariably will have similar effects to those caused by the Durbin Amendment's price controls.

In the case of debit cards, further erosion of interchange-fee revenues could force smaller institutions to finally give up free checking. If similar rules were extended to credit cards and credit-card interchange-fee revenues were to fall, issuers would respond by changing their revenue model. For example, they might introduce or reintroduce annual fees on standard cards that do not currently charge such fees. Alternatively, they might increase the amount of interest charged or reduce cash-back and other rewards.

Perhaps most significantly, if the Credit Card Competition Act or similar legislation were to pass, it would likely result in the elimination of most co-branded cards. This is because between 50% and 60% of the interchange fee on such cards goes to the co-branded entity, supporting the rewards earned by using the card.⁴⁹ If merchants were to route through the least-cost provider, as predicted, the interchange fee will not be adequate to cover the rewards being offered. Every rewards card, from airlines to entertainment, would likely disappear. In total, there are currently around 225 million co-branded cards in circulation in the United States. The adverse effect on consumer welfare from eliminating all or most of those cards would be enormous.

2. Evidence

This section discusses evidence pertaining to the effect of routing regulations in the United States, European Union, and Australia.

a. The United States

The most substantial evidence of the effects of routing regulations comes from the U.S. market and, specifically, from the Durbin Amendment's routing effects on credit unions and community banks. This is because the Durbin Amendment essentially set up an experiment in which large banks were covered by both the interchange-fee caps and by routing requirements, whereas smaller banks and credit unions were subject only to the routing requirements.

As already noted, since their earliest days, payment-card networks have sought to:

1. Maximize the joint benefits to merchants and cardholders in terms of reliability, convenience, speed, innovation, security, and cost;
2. Minimize the extent of fraud and theft;

⁴⁹ Itai Damti, *Ultimate Guide to Interchange Revenue*, UNIT, <https://www.unit.co/guides/ultimate-guide-interchange-revenue> (last visited: Aug. 9, 2022).

3. Optimize the interchange fee to achieve (1) and (2) most effectively.

Optimizing the net benefits of these factors involves tradeoffs. For example, it would be possible to drive the risks and costs of fraud and theft to near-zero but doing so could make payment-card transactions substantially slower and less efficient.⁵⁰ For example, requiring a PIN to be entered or two-factor authentication for every transaction could potentially reduce the risk of fraud. But it would also add delay and inconvenience, which would be especially burdensome for small-dollar transactions. As a result, card issuers have an incentive to minimize the overall costs of payment transactions, including the costs of time, fraud, loss, and other factors.

As discussed in A, the Durbin Amendment imposed interchange-fee price controls on banks with assets of \$10 billion or more. In their offerings to covered banks, payment-card networks have thus not been free to optimize their interchange fees in such a way as to achieve the above objectives.

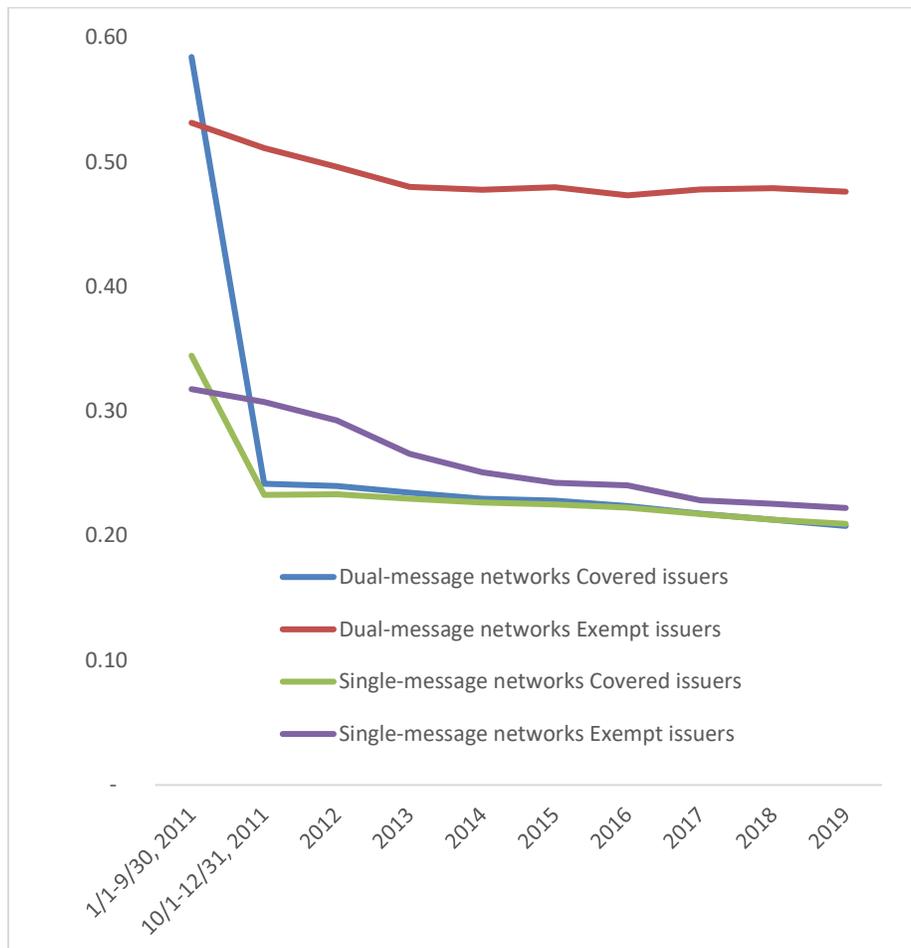
By contrast, banks with assets of less than \$10 billion were not subject to such caps. In principle, payment networks offering services to those banks exempted from the interchange-fee controls could still seek to optimize fees in such a way as to meet the other objectives. However, the Durbin Amendment also imposed routing requirements on *all* banks. Specifically, it added the following subsections to the Electronic Fund Transfer Act (EFTA):

- EFTA Section 920(b)(1) prohibits issuers and payment networks from imposing network exclusivity arrangements. In particular, *all* issuers must ensure that debit-card payments can be routed over at least two unaffiliated networks.
- EFTA Section 920(b)(1)(B) prohibits issuers and payment networks from restricting the ability of merchants and acquirers from choosing the network over which to route a payment.

As Figure 1 shows, for covered issuers, average interchange fees per transaction fell to the regulated maximum for both covered dual-message (signature) transactions and single-message (PIN) transactions immediately following the implementation of the Durbin Amendment in October 2011. By contrast, discounting for inflation, average fees per transaction for exempt issuers fell by about 10% for dual-message transactions. Average fees per transaction for single-message transactions fell by 30% over the course of eight years. In 2019, they were only marginally higher than the regulated maximum for covered banks, despite the claimed intent to protect smaller issuers from the effects of the debit interchange cap. This more gradual decline for exempt banks is a consequence of merchants choosing to route over lower-cost networks that have been enabled as a result of the routing mandate.

⁵⁰ See James Cooper & Todd Zywicki, *A Chip Off the Old Block or a New Direction for Payment Card Security? The Law and Economics of the U.S. Transition to EMV*, 2018 MICH. ST. L. REV. 869 (2018).

Figure 1: Fee Per Transaction (2011 Dollars), Covered v Exempt Issuers, Single- v Dual Message Networks

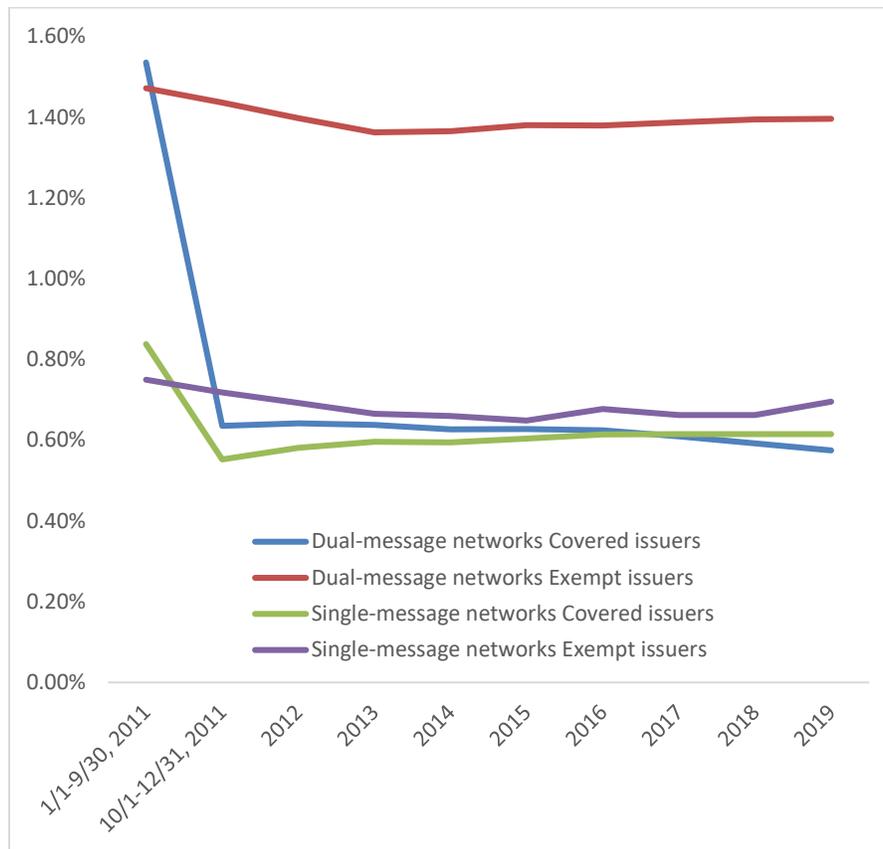


Source: Federal Reserve, St Louis FRED⁵¹

Figure 2 shows that, following implementation of the Durbin Amendment, average interchange fees (expressed as a percentage of transaction amounts) have on average been 7 basis points (single-message) and 8 basis points (dual message) below their levels pre-implementation.

⁵¹ Regulation II (Debit Card Interchange Fees and Routing), FED. RSRV., <https://www.federalreserve.gov/paymentsystems/regii-data-collections.htm>; Consumer Price Index: All Items for the United States, FED. RSRV. BOARD OF ST. LOUIS, <https://fred.stlouisfed.org/series/USACPIALLMINMEI> (last visited: Aug. 10, 2022).

Figure 2 Fee Per Transaction (%), Covered v Exempt Issuers, Single v Dual Message Networks



Source: Federal Reserve⁵²

In addition, the requirement to add a second unaffiliated network to every debit card has imposed considerable additional costs on all banks. Since there are economies of scale in compliance, these costs have fallen disproportionately on smaller community banks and credit unions.⁵³ With lower income from interchange fees and higher costs, exempt issuers have been forced to increase other fees, as the National Association of Federally Insured Credit Unions noted in their comments on the proposed change to Regulation II:

In 2020, the share of credit union respondents below \$10 billion in assets who reported a decline in per-transaction rates relative to the period before Regulation II went in-

⁵² *Id.*

⁵³ James Akin, *RE: Notice and RFC on Debit Interchange Fees and Routing (RIN: 7100-AG15)*, NATIONAL ASSOCIATION OF FEDERALLY REGULATED CREDIT UNIONS, 2021, available at: https://www.federalreserve.gov/SECRS/2021/September/20210902/R-1748/R-1748_081021_140765_295213985747_1.pdf.

to effect was 39.7 percent. As the Board memo for the proposed rule states, single-message transactions for exempt institutions (i.e., a small debit card issuer, together with its affiliates, with assets of less than \$10 billion) fell from 31 cents in 2011 to 25 cents in the most recent survey. These institutions have seen no relief from the Durbin Amendment's intended exemption. This may cause these smaller credit unions to introduce or increase fees for consumers while reducing debit card rewards, further diminishing access to financial services including restricting credit unions' ability to provide services to underserved communities.⁵⁴

Meanwhile, from studies of the effects of the Durbin Amendment's interchange-fee price controls, we can infer that acquirers and merchants have not passed through the reduced interchange fees to consumers to any significant degree, despite the touted benefits of the Durbin Amendment. There is no evidence that acquirers have reduced average merchant-discount rates (MDR) and, to the extent that they have, merchants likely have not passed through the full or perhaps even a substantial amount of the reduced costs to consumers.⁵⁵ More importantly, any cost savings that consumers have experienced in retail prices appear to be smaller than the dramatic increases in bank fees they have experienced.

In sum, the Durbin Amendment's routing requirements have reduced interchange-fee income and raised costs for exempt banks and credit unions, which have responded by increasing fees and reducing benefits (such as debit-card rewards).⁵⁶ While accountholders at these exempt institutions may have benefited from slightly lower costs of goods and services, these savings will likely not, on average, have made up for these higher fees.

b. The European Union

The EU introduced routing requirements as part of its Interchange Fee Regulation of 2015 (IFR), which inter alia (1) prohibits payment networks from hindering or preventing co-branding of brands or applications on payment cards; (2) prohibits most entities in the payments ecosystem from limiting cardholders' choice of payment brand and/or application; (3) permits merchants to set a prior-

⁵⁴ *Id.*

⁵⁵ In a 2014 study that looked at the effect of the Durbin Amendment, Zhu Wang, Scarlett Schwartz, and Neil Mitchell (*The Impact of the Durbin Amendment on Merchants: A Survey Study* 100 ECON. Q. 183 (2014) (3rd Quarter)) found that, while some merchants received reductions in the merchant-discount rate they paid, others actually saw their debit-card acceptance costs increase. Some merchants saw their acceptance costs increase because, prior to Dodd-Frank's price controls, some merchants, especially smaller merchants, had received discounts on acceptance costs. But the imposition of price ceilings also effectively created a price floor, leading some merchants to pay higher fees than previously. A more recent study by Vladimir Mukharlyamov and Natasha Sarin (*Price Regulation in Two-Sided Markets: Empirical Evidence from Debit Cards* (December 2019), <https://www.aeaweb.org/conference/2020/preliminary/paper/Kf9z7YQZ>) estimated that merchants passed through "at most" 28% of their debit-card savings to consumers. Meanwhile, banks passed through 42% of their interchange-fee revenue losses to consumers (with most of those losses passed on to lower-income consumers who pay higher bank fees).

⁵⁶ Some evidence suggests that banks might have reduced other services as well, such as closing bank branches, and increased other fees, such as overdraft fees, to offset this reduction in interchange-fee revenues.

ity-payment brand or application; but (4) prohibits merchants from overriding the cardholder's choice.⁵⁷

A recent report undertaken on behalf of the European Commission by Ernst & Young and Copenhagen Economics ("EY/CE study") notes that "co-badging is aimed at increasing competition between card schemes at the moment of performing a payment transaction"⁵⁸ and that, together, "these two measures (co-badging and choice of payment brand or application) imply that competition between card schemes shifts from the moment in which consumers choose their cards (among those offered by their issuer) to the moment in which they make a domestic transaction at the point of sale."⁵⁹ Yet, the report indicates that there is little evidence that any merchant cost-savings on card processing fees have been passed through to consumers:

Over 90% of the limited number of merchants that provided an answer stated that consumers are unaware of the possibility of such choice. This finding is supported by a study from the Danish Competition and Consumer Authority (DCCA) that found that 85% of interviewed consumers in 2017 did not know about the possibility to make a choice of payment brand or application when paying with a co-badged card. The DCCA also found out that consumers have limited incentives to use such options since, in practice, they experience no price difference between them. Merchants surveyed also expressed that view that consumers experience no price difference by making the choice of payment brand or application, which renders them indifferent between payment brands and applications.⁶⁰

In other words, co-badging has failed to achieve its objective because it was predicated on a false premise—namely, that consumers would have adequate incentives to make a choice about the network on which they route a transaction at the point of sale.⁶¹ Indeed, co-badging and the related requirements described above likely simply added costs with no discernable benefits.

⁵⁷ *Commission Regulation 2015/751*, (2015) O.J. (123), <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R0751&rid=5>. "Co-badging" in this context refers to the inclusion of multiple networks for routing transactions. This often occurs voluntarily, for example where a card can be run on either a single- or a dual-message network. However, as with the routing mandate in the Durbin Amendment, the prohibition on the prevention of co-badging interferes with such voluntary decisions.

⁵⁸ *Study on the Application of the Interchange Fee Regulation: Final Report*, prepared by Ernst & Young and Copenhagen Economics ("EY/CE study") for the EUROPEAN COMMISSION, (2020), available at <https://ec.europa.eu/competition/publications/reports/kd0120161enn.pdf>, at 190.

⁵⁹ *Id.*

⁶⁰ *Id.* at 196.

⁶¹ Suggestive evidence consistent with this is that, in the United States, many gasoline merchants offer discounts for paying with "cash" and hence effectively impose a higher price for both debit and credit, despite the fact that, following Durbin's enactment, debit-card costs are substantially lower than credit-card fees. See Kayla King, *Why You Should Pay with Cash Instead of Credit Card*, GASSYTANKS (Oct. 2, 2019), <https://gassytanks.com/why-you-should-pay-gas-with-cash-instead-of-credit-card/#:~:text=Check%20debit%20card%20prices%20%E2%80%93%20Some,to%20pay%20the%20credit%20price.>

In addition, the EU required payment networks to separate “schemes” from “processors.”⁶² Companies were still permitted to own both a scheme and a processor, but they were required to follow strict rules on various matters, such as information sharing between the two.⁶³

The EY/CE study found that Visa and Mastercard had separated their schemes from processing and were complying with the requirements of the regulation. In a survey undertaken for the analysis, however, respondents reported that this mandatory separation had little effect on the proportion of transactions processed by Visa and Mastercard compared to “fully independent processors,” with the latter staying in the range of 36%-42% from 2015 to 2017.⁶⁴ A large majority of respondents reported that processing costs had either increased (45%) or remained constant (37%), with only 18% reporting a reduction in such costs.⁶⁵ This likely reflects the additional cost burden imposed on Visa and Mastercard related to the forced separation of their schemes from payment processing. So, as with the co-badging requirements, it appears that the separation of scheme and processor has imposed significant costs with minimal or no benefits.

c. Australia

The Reserve Bank of Australia (RBA)—the Australian payments regulator—has been “encouraging” banks to issue dual-network payment cards.⁶⁶ It has also encouraged acquiring banks to enable merchants to choose “least cost routing” (LCR)—i.e., merchant-choice routing. In its recent Review of Retail Payments Regulation, the RBA asserts that:

[T]he increased availability of LCR functionality starting in early 2019 has contributed to a modest decline in the average cost of debit card payments. This has lowered debit costs both directly by allowing merchants to route transactions through the lowest-cost network, and indirectly by increasing the competitive pressure on debit schemes to lower their fees. Indeed, over recent years there have been sizeable declines in the interchange and scheme fees charged on routable transactions. For example, the inter-

⁶² *Regulation (EU) 2015/751*, supra note 57, Article 7(1). Where “payment card scheme’ means a single set of rules, practices, standards and/or implementation guidelines for the execution of card-based payment transactions and which is separated from any infrastructure or payment system that supports its operation, and includes any specific decision-making body, organisation or entity accountable for the functioning of the scheme” (ibid. Art. 2(16) and “processing’ means the performance of payment transaction processing services in terms of the actions required for the handling of a payment instruction between the acquirer and the issuer” (ibid. Art. 2(27)).

⁶³ The rules were outlined in *Commission Delegated Regulation (EU) 2018/72* of (Oct. 4, 2017) supplementing Regulation (EU) 2015/751 of the European Parliament and of the Council, on interchange fees for card-based payment transactions with regard to regulatory technical standards establishing the requirements to be complied with by payment card schemes and processing entities to ensure the application of independence requirements in terms of accounting, organization, and decision-making process.

⁶⁴ EY/CE Study, supra note 58, at 230.

⁶⁵ *Id.*

⁶⁶ *Review of Retail Payments Regulation: Conclusions*, RESERVE BANK OF AUSTRALIA (Oct. 22, 2021), <https://www.rba.gov.au/media-releases/2021/mr-21-23.html>.

change fees charged by the international schemes on standard card-present transactions – which are in-person transactions at non-strategic merchants, using physical cards that are not premium cards – have fallen from 12½ cents (Mastercard) and 8 cents (Visa) in mid 2017 down to 4 cents currently ...⁶⁷

As part of its review, the RBA considered ways to increase the prevalence of LCR, looking at various types of transactions. Its conclusions about mobile payments and card-not-present transactions are worth highlighting.

(1) Mobile Payments

The RBA noted that the tokens issued for mobile payments in Australia are currently tied to a specific network. As such, when a mobile wallet is used, payment can only be effected over the network that issued the token. The RBA considered two alternative models under which mobile payments might operate: “single token” and “dual token.”⁶⁸ The RBA notes that the first of these has been implemented to a limited extent in the United States and the second to a limited extent in France. It then observes:

The first model may be somewhat easier from a technical perspective, but by requiring schemes to detokenize payment credentials for competing schemes, it raises the likelihood of ongoing disputes about the commercial terms of, and access to, this service; it may also partly unwind the benefits of tokenisation in reducing fraud.⁶⁹

And it concludes:

[W]hile the benefits of enabling LCR in the mobile-wallet context could be substantial, the Board’s view is that these would likely be outweighed by the significant implementation costs, as well as other legal and practical challenges. The Board is also mindful that mobile payment methods could change significantly in coming years (through, for example, the use of quick response (QR) codes).⁷⁰

⁶⁷ *Id.* at 23-24.

⁶⁸ *Id.* at 19, noting “Under a ‘single token’ model, the mobile wallet would continue to present a single scheme token to payment terminals, but the owner of the scheme token (or token service provider (TSP)) would de-tokenise the payment credentials if needed and route the transaction to the merchant’s preferred network. The card schemes, along with their TSPs and other industry participants, would need to coordinate to develop such a solution.”

Meanwhile, “Under a ‘2 tokens’ model, mobile wallets would present tokens from both schemes to the terminal during checkout. Mobile-wallet providers would need to change their solutions so that their devices present 2 tokens simultaneously, which they have indicated may be feasible, but would be a significant and complex change. This model would likely also require all cards on mobile wallets to be reloaded (or ‘reprovisioned’). And many payment terminals would need significant modification (or replacement) to be able to make routing choices based on the 2 scheme tokens (rather than the single physical card number).”

⁶⁹ *Id.* at 20-21

⁷⁰ *Id.* at 21.

(2) *Card Not Present*

The RBA did come out more strongly in favor of LCR for card-not-present transactions. Specifically, regarding security concerns, the RBA asserts:

[T]he Bank is not persuaded that differences in the security capabilities of the schemes – once ePAL has finished building its online capabilities – are likely to have a material impact on security or fraud in the online payments ecosystem. Accordingly, given that merchants incur the cost of processing a transaction and bear much of the fraud risk, the Board considers that they should be able to route transactions via their preferred network, without significant friction being added to the checkout process. Regulators have reached a similar view in the United States, where issuers and schemes are not permitted to prevent merchants from routing debit transactions, including in the online environment.

This conclusion is dubious on two counts. First, while ePAL—the card-not-present payments solution employed by Australia’s EFTPOS—is implementing a version of EMVCo’s 3D-Secure architecture, it is premature to assert that it will be as resistant to fraud as the systems built by Visa and Mastercard, not least because their systems benefit from more than two decades of innovation in machine learning. Second, it is unclear why the RBA relies on “a similar view” taken by U.S. regulators regarding card-not-present transactions, while coming to quite a different view in relation to mobile transactions. At minimum, it must be demonstrated that ePAL is *in fact* as fraud-resistant as Visa and Mastercard debit. Even then, questions would remain as to whether mandating LCR creates the right incentives to invest in improving the network’s resistance to fraud.

IV. Effects of New U.S. Proposals to Regulate Routing

As noted at the outset, the Federal Reserve is considering new rules that would reinterpret the Durbin Amendment’s requirement that card issuers must offer an unaffiliated network. Under the revised rule, issuers would not only be required to offer at least two unaffiliated networks but would be required to *enable* two networks to process debit transactions “for every geographic area, specific merchant, particular type of merchant, and particular type of transaction for which the issuer’s debit card can be used to process an electronic debit transaction.”

Moreover, in spite of the already-pernicious effects of the routing regulation, especially on exempt banks, the proposed amendment would, *inter alia*, “clarify that card-not-present transactions are a particular type of transaction for which issuers must ensure at least two unaffiliated payment card networks have been enabled.”⁷¹ For debit cards with only two networks enabled—one dual-message and one single-message—it would mean enabling the single-message network for online and other CNP transactions.

⁷¹ Debit Card Interchange Fees and Routing, *supra* note 51, at 26192.

In addition to the Fed's proposed changes to the debit-routing rule, Sen. Durbin is now proposing to regulate credit-card routing in a similar manner. But Durbin's proposed Credit Card Competition Act would go further and impose a discriminatory provision that would expressly prohibit issuers from issuing cards that offered as alternatives the two largest payment networks (currently Visa and Mastercard) or their affiliates. Whereas today, Visa (for example) could not offer a card with Visa as its signature debit card and its subsidiary Interlink as PIN debit, under Durbin's new proposal, Visa would also be prohibited from offering MasterCard-branded cards as the alternative routing network. As a result, credit-card issuers would effectively be forced to permit routing via one of the smaller networks, such as China Union Pay or JCB.

What would these changes mean in practice? The answer seems quite clear: an increase in fraud, reduced innovation, harms to consumers, and benefits to big merchants, as we explore below.

A. Data Fragmentation

In Section II, it was noted that the major card networks have developed sophisticated machine-learning-based fraud-detection systems. These systems build profiles of individual cardholders using the messages sent across their networks; they also use those messages to determine whether a payment fits a person's profile. As such, individual profiles are constantly being improved and adjusted, and potential fraudulent transactions are identified.

Higher transaction volume enables networks to build deeper and more sophisticated profiles of individual card usage. For example, a consumer might use a card issued by one issuer for an airline ticket, a different one for a hotel, and a third card for transportation and dining. Even if all these cards are issued by different issuers, if they are all processed and routed by the same network, the network can seamlessly establish that you are traveling and thus recognize the entire pattern of transactions without flagging any of the transactions as suspicious.

As also noted in Section II, under merchant routing, some merchants would have incentives to route messages across lower-cost networks. While such decisions might minimize the private cost to the merchant, they would impose external costs on the cardholder, issuer, and other merchants, because data from these transactions will not be captured by the card network. As a result, cardholder profiles will be less accurate and subsequent instances of fraud may be missed.

It is possible that workarounds could be established. For example, issuers might be able to send messages to the brand network after they are received over the low-cost network. But this would effectively mean that the message is parsed by two separate networks, adding cost. Who would pay for the additional message processing? Presumably, the cardholder would, through additional monthly account fees.

In the absence of workarounds, the fraud rate will almost certainly increase, imposing costs on issuers, cardholders, and merchants.

B. Anti-Fraud Features Disabled

Another consequence of merchants routing payments across lower-cost networks would be that some card features that require use of the major-brand payment network associated with the card will not work. Most notably, if a cardholder has put a temporary hold on their card because they have lost it, such holds may not be effective if they are implemented at the network level.

C. PINless Debit and CNP Fraud

This brings us to the vexed question of PINless debit—that is to say, debit transactions processed over single-message (PIN) networks without using the PIN. PINless single-message POS transactions have benefited from the enhanced authentication enabled by EMV chips (public key encryption) and contactless tokens, but they are inherently more fraud-prone than transactions using PINs and dual-message transactions.⁷² Nonetheless, some U.S. single-message debit networks—such as Star, Pulse, and NYCE—have permitted PINless debit transactions over their networks for transactions up to \$50.⁷³ This seems destined to induce fraud. After all, if the fraud detection and security capabilities of PIN-debit networks were the same as for signature networks, there would be no need to limit PINless to lower-dollar transactions.

While CNP transactions using single-message networks can benefit from the use of address verification and CVV, CMS Payments Intelligence notes that “no equivalent to 3D-Secure exists for PINless debit, and, as such, merchants can bear a larger burden.”⁷⁴

A major reason that merchants generally prefer payment cards over checks for immediate sales is that the latter is a promise to pay, it is not guaranteed.⁷⁵ In other words, payment cards dramatically reduce counterparty risk, which particularly matters when the counterparty is taking possession of goods or receiving a service—transactions that cannot easily be reversed. But PINless debit reintroduces counterparty risk, because liability for fraud for unauthorized transactions accrues to the merchant, who will be subject to a chargeback.

D. Reduced Innovation

Over the course of the past three decades, the dual-message (credit-card) payment networks have developed and implemented many significant innovations that have resulted in faster and more

⁷² *The Pitfalls and Payoffs of PINless Debit Acceptance*, CMS PAYMENTS INTELLIGENCE (May 23, 2018), <https://cmspi.com/nam/en/resources/content/the-pitfalls-and-payoffs-of-pinless-debit-acceptance>.

⁷³ *The \$2bn Question: Is PINless the Next Game Changer for CNP?*, CMS PAYMENTS INTELLIGENCE (Feb. 1, 2018), <https://cmspi.com/nam/en/resources/content/the-2bn-question-is-pinless-the-next-game-changer-for-cnp>.

⁷⁴ *Id.*

⁷⁵ In some jurisdictions, such as the United Kingdom, some debit and credit cards were used as “check guarantee cards,” which reinforces, rather than contradicts, this point.

secure payments. These have included all the EMVCo technologies, including the EMV Chip, EMV Contactless, and EMV 3D Secure. The individual networks—and most notably Visa and Mastercard—have also invested heavily in machine-learning technologies, biometrics, and notification systems.

The requirements included in both Regulation II and the Credit Card Competition Act that issuers include at least two unaffiliated routing networks on each card, combined with the obligation to permit merchants' choice over routing, raise concerns about the incentives to innovate and compete. In the short term, the requirements create uncertainty as to which network might be used for transactions, making it more difficult for the networks to project future revenue and thereby reducing their incentive to invest in innovations. In the longer term, actual reductions in revenue will directly impact investment in innovation. Ultimately, such reductions in innovation harm everyone, as they result in transactions that are less efficient, less convenient, and less secure.

E. Harm to Consumers, Smaller Merchants, Co-Branding Benefits to Big Companies

The Durbin Amendment resulted in an increase in the average cost of bank accounts, reduced the availability of free checking, increased the minimum deposit required to maintain a free checking account, and likely led to an increase in the unbanked and underbanked. The Durbin Amendment also harmed many smaller merchants, especially those selling smaller-dollar items, as card networks eliminated lower interchange fees that had previously applied for small-ticket items. Meanwhile, the main beneficiaries were big-box retailers.

The proposed amendment to Regulation II and the proposed credit-card routing requirements in the Credit Card Competition Act would likely have similar effects. Specifically, by increasing the incidence of fraud, the changes to routing rules would impose costs on card issuers and merchants. These costs will be passed on to consumers in the form of higher bank-account and card fees and more expensive goods and services.

In addition, the Credit Card Competition Act is specifically intended to reduce the volume of credit-card payments routed over Visa and Mastercard's rails. If enacted, it would likely achieve that effect, with the result that interchange fees received by issuing banks would be much reduced. Issuers would then respond by raising fees and reducing rewards on credit cards, just as they did in Australia and elsewhere when credit-card interchange fees were forcibly reduced.

Another likely effect of the Credit Card Competition Act, if enacted, is that many co-branded credit cards would no longer be financially viable. This is because such cards, which include some of the most popular credit cards on the market—cards co-branded with airlines, hotels, and retailers—currently receive about half the interchange fee, which goes toward funding the often-generous merchant rewards the cards offer. By dramatically reducing interchange fees, Sen. Durbin's bill would at the very least force a change in the rewards offered by the co-branded entities and might

even result in the elimination of many, if not all, such cards. This would harm both consumers who currently benefit from the rewards and the co-brand entities who use rewards to build and reinforce loyalty.

In other words, by diminishing the choice of credit cards available to consumers, a bill touted as a means to promote competition would, in fact, significantly and dramatically *reduce* competition between issuers of credit cards. This would inevitably reinforce the harmful effects on innovation and security described above, harming consumers and merchants. It would also likely result in a significant reduction in credit card use, again to the detriment of both consumers and merchants.

The only unambiguous beneficiaries of the proposed routing changes will be the shareholders of very large retailers and service providers that have their own machine-learning-based profiling and fraud-prevention tools, enabling them to use cheaper, less secure routing without a significant increase in fraud and other losses.

V. Conclusions: Beware of Predictable Unintended Consequences

The payment-network ecosystem is both highly complex and finely balanced. Moreover, it is highly dynamic and has been evolving rapidly in response to existing and novel threats and opportunities, through the development of new technologies. Unfortunately, governments have frequently been goaded by big-box merchants into intervening. The outcomes of such intervention have generally been counterproductive, benefiting the shareholders of major merchants at the expense of poorer consumers.

The Durbin Amendment, as implemented in Regulation II, has undoubtedly imposed significant net costs on Americans. Nonetheless, the current card-payment system—including the credit-card system—has continued to work very well; during the COVID-19 pandemic, it has literally saved lives.

If the Federal Reserve moves forward with its proposed changes to Regulation II, more merchants will route transactions on a network other than the one primarily tied to the issuer. This would almost certainly harm cardholders, issuers, and merchants, for several reasons.

First, by splitting transactions over two or more networks, the cardholder's payment patterns will be obfuscated, making it more difficult for machine-learning algorithms to detect unusual spending patterns and thus flag potential fraud.

Second, to the extent that cardholder benefits are tied to a particular network—including, but not limited to, fraud-prevention tools such as card blocks—these may not be available to consumers if the merchant chooses not to route over that network. This problem was recognized by the Federal Reserve in 2011, which noted in its Final Rule for Regulation II:

From the consumer perspective ... requiring multiple payment card networks could limit the cardholder's ability to obtain card benefits that are tied to a particular network, such as zero liability protection or the ability to receive text alerts regarding possible fraud.⁷⁶

Third, there might well be an explosion of fraudulent CNP transactions. While merchants would presumably be liable, consumers would need to identify the fraudulent transactions and initiate chargebacks, which can be a long and tedious process. It could also create opportunities for fraud by merchants setting up fake businesses for short-term gain and then closing them before the chargebacks can be processed.⁷⁷ The result could be a legal quagmire and a loss of trust in the payment networks.

Fourth, the Credit Card Competition Act would artificially reduce interchange fees for credit cards. While it is generally acknowledged that establishing price controls on debit-card interchange fees is a difficult task, with all manner of predictable if unintended consequences, establishing a "reasonable and proportionate" price for interchange fees on credit cards is nearly impossible because of the issues of credit risk and loss rates.⁷⁸ As a result, Congress has been and should be understandably reluctant to impose new requirements to mandate price controls, either explicitly or via a requirement to enable multiple routing options for credit cards.

Instead of lathering on additional rules, the government should heed the recent assessment of the Dodd-Frank Act by the Consumer Financial Protection Bureau, which concluded: "Overall, the evidence indicates that operation of Section 1075 of the Dodd-Frank Act has had a significant adverse impact on financial inclusion, especially for lower-income consumers." The appropriate response to such a finding is clear: raise the maximum price that can be charged for interchange. Section 1075 of the Dodd-Frank Act (the Durbin Amendment) specifies that the "amount of any interchange transaction fee that an issuer may receive or charge with respect to an electronic debit transaction shall be reasonable and proportional to the cost incurred by the issuer with respect to the transaction." Since the current price controls are clearly causing harm, the fees must be unreasonably low.

⁷⁶ 76 FED. REG. 43,447 (Jul. 20, 2011).

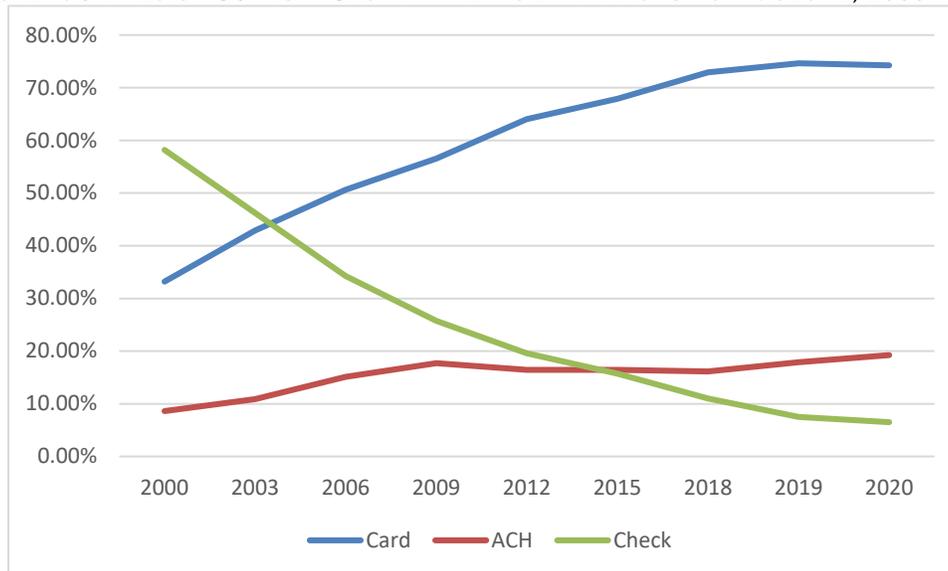
⁷⁷ *Common Types of Fraud*, NATIONAL MERCHANT ASSOCIATION, <https://www.nationalmerchants.com/common-types-fraud> (last visited: Aug. 10, 2022) noting: "Merchant fraud is another method that is surprisingly common, especially with smaller merchants and fly-by-night merchants. How it works: goods are offered at cheap prices, but are never shipped to the customer. However, the payments are kept."

⁷⁸ See Dodd-Frank Wall Street Reform and Consumer Protection Act, H.R. 4173, 111th CONG. (2010) (enacted) (identifying the elements to consider in establishing "reasonable and proportionate" costs of debit transactions by covered institutions, including the "functional similarity" which checking transactions that are required to clear at par).

Appendix: The Changing Pattern of Payments

The way we pay has changed dramatically over the past quarter century. According to data from Federal Reserve Payment Studies (a regular survey of “the largest depository and financial institutions”⁷⁹), between 2000 and 2020, the proportion of non-cash transactions made using checks fell from around 60% to below 10%, as can be seen in Figure 1. Meanwhile, the proportion of non-cash transactions made using payment cards has risen from just over 30% to around 75%, while ACH transactions have doubled from just under 10% to around 20%.

FIGURE 1: SHARES OF US NON-CASH PAYMENTS BY TRANSACTION VOLUME, 2000 - 2020



Source: Authors' calculations based on data from the Federal Reserve Payment Studies⁸⁰

Data from the Diary of Consumer Payment Choice (a demographically representative survey of between 1,000 and 3,000 consumers) is broadly consistent, showing that, in the past decade, consumers have shifted dramatically away from cash and toward cards and electronic payments, as can be seen in Figure 2.⁸¹ In 2012, cash was used for around 40% of transactions; by 2020, this had fallen to below 20%. Consumers had already largely shifted away from using checks by 2012, with usage hovering between 5% and 8%. The big gainers were credit cards, going from 17% to 27%,

⁷⁹ See *The Federal Reserve Payments Study (2021 Depository and Financial Institutions Payments Survey)*, FEDERAL RESERVE (2021), available at: https://www.federalreserve.gov/paymentsystems/files/DFIPS_2021_Survey.pdf.

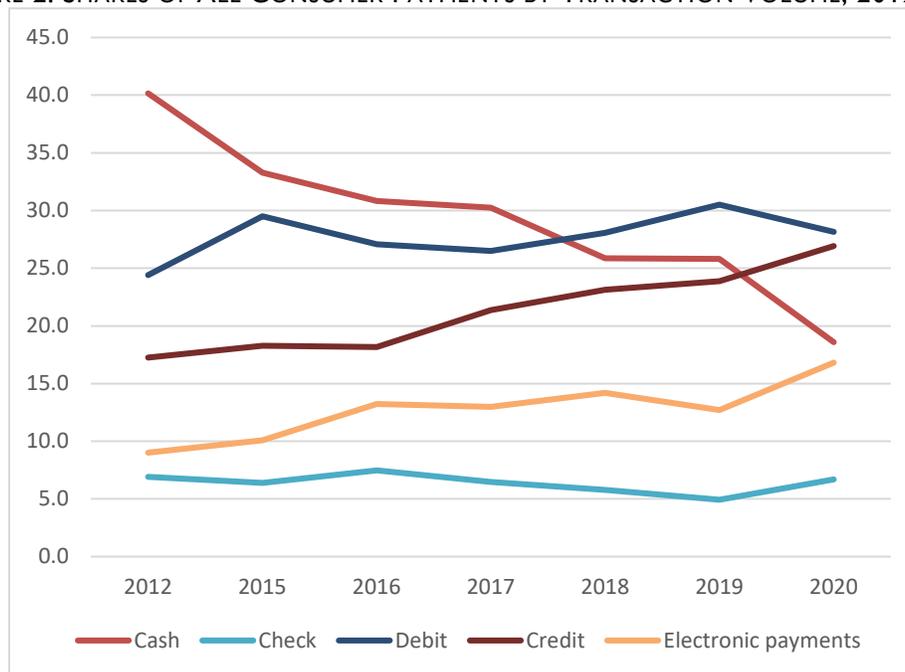
⁸⁰ *Id.*

⁸¹ Claire Greene & Joanna Stavins, *The 2020 Diary of Consumer Payment Choice*, FED. RSRV. BANK OF ATLANTA (2021), available at: <https://www.atlantafed.org/-/media/documents/banking/consumer-payments/diary-of-consumer-payment-choice/2020/2020-diary-of-consumer-payment-choice.pdf>. Data for 2012-2020 available at: <https://www.atlantafed.org/banking-and-payments/consumer-payments/diary-of-consumer-payment-choice?panel=2>.

and electronic payments, going from 9% to 17%. Debit cards also rose, but by less, going from 24% to 28% (though, at their peak in 2019, they were a little over 30%).

Looking at consumer payments by average transaction value, as shown in Figure 3, it is clear that the big shift has been from cash (and, to a lesser extent, checks) toward electronic payments. If both the Payments Studies and the Diary are representative, then the reduction in the use of checks seen in the Payment Studies after 2012 was presumably driven mainly by businesses shifting to the use of cards and electronic payments, since consumers had already dramatically reduced their use of checks.

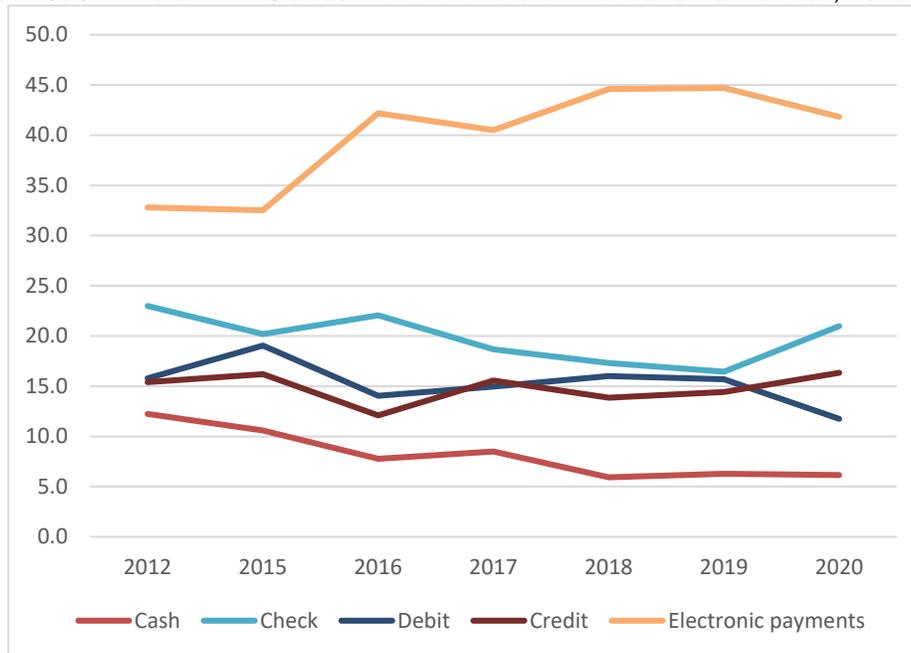
FIGURE 2: SHARES OF ALL CONSUMER PAYMENTS BY TRANSACTION VOLUME, 2012-2020



Source: Authors' calculations based on data from the Diary of Consumer Payment Choice.⁸²

⁸² Greene & Stavins, *supra* note 81. Note: "check" includes money orders, "electronic payments" includes mobile payments (excluding those made using credit and debit cards) and account-to-account transfers; "credit" includes charge cards.

FIGURE 3: SHARES OF ALL CONSUMER PAYMENTS BY TRANSACTION VALUE, 2012-2020



Source: Authors' calculations based on data from the Diary of Consumer Payment Choice.

F. Benefits, Costs, and the Changing Patterns of Payments

For any given transaction, a purchaser typically has a choice of payment options and will determine which one to use based on their relative costs and benefits.⁸³ Payment cards have numerous inherent advantages over cash and checks, such as:

- Both debit and credit cards enable consumers to spend more than they have in their wallet at the time of the purchase, which in turn reduces the amount of cash that they need to withdraw from the bank.
- Credit cards enable consumers to spend more than they have in their bank accounts at the time of the purchase. Because credit-card issuers typically charge no interest if the statement balance is paid by the due date (usually a month after issuance), cardholders are able to smooth their consumption patterns at much lower cost than if they were required to hold cash in their account or to use an overdraft facility.

But these inherent advantages are not, on their own, sufficient to explain the shift toward cards and away from cash and checks over the past 20 years. Logically, either (1) the benefits of cards

⁸³ Todd J. Zywicki, *The Economics of Credit Cards*, 3 CHAP. L. REV. 1, 7 (2000), <https://digitalcommons.chapman.edu/chapman-law-review/vol3/iss1/6>.

have increased, or (2) their costs have decreased, or (3) the costs associated with cash and checks has increased—or some combination of these three factors. The evidence suggests that it has mainly been a combination of (1) and (2). Specifically:

- Already by 1998, it took less time to process a payment made using a card than one using a check at a grocery checkout, though cash was marginally quicker than cards.⁸⁴ Improvements since then, including RFID-based contactless payments for cards and mobile, mean that transactions using such cards take on average about the same amount of time as cash at a mixed-payment checkout till.⁸⁵
- Some retailers have chosen to eliminate cash payments altogether. Studies suggest that such cashless-payment systems are quicker than those that also accept cash.⁸⁶ Eliminating cash reduces wait times for consumers and increases throughput for merchants—both significant benefits.
- Payment-card issuers and networks have developed numerous improvements in security and fraud detection for online payments, thereby reducing the costs associated with such payments.⁸⁷ This has coincided with, and likely helped to enable, a profusion in the number of ecommerce sites and an expansion in the proportion of retail that occurs online, as can be seen in Figure 4.
- The growth of online sales has been reinforced by dramatic improvements in the delivery of content over the Internet, including books, music, and movies.⁸⁸
- Online access to bank accounts has also likely improved consumers' ability to manage their financial affairs.
- Online access to credit-card accounts has made it easier for cardholders to track their credit-card payments, which has likely improved their ability to manage their spending.
- Credit-card networks have introduced a feature enabling cardholders temporarily to block the use of their cards, enabling them to avoid unwanted payments when their card has been lost or possibly stolen.

⁸⁴ A Retailer's Guide to Electronic Payment Systems Costs, FOOD MARKETING INSTITUTE (1998). Cited in: Daniel D. Garcia-Swartz, Robert W. Hahn & Anne Layne-Farrar, *The Move Toward a Cashless Society: A Closer Look at Payment Instrument Economics*, 5 REV. OF NETWORK ECON. 175, (2006).

⁸⁵ Michal Polasik, et al., *Time Efficiency of Point-of-Sale Payment Methods: Empirical Results for Cash, Cards and Mobile Payments*, In: Cordeiro, J., Maciaszek, L., Filipe, J. (eds) *Enterprise Information Systems. ICEIS 2012. LECTURE NOTES IN BUSINESS INFORMATION PROCESSING*, 141, 306-320, https://link.springer.com/chapter/10.1007/978-3-642-40654-6_19.

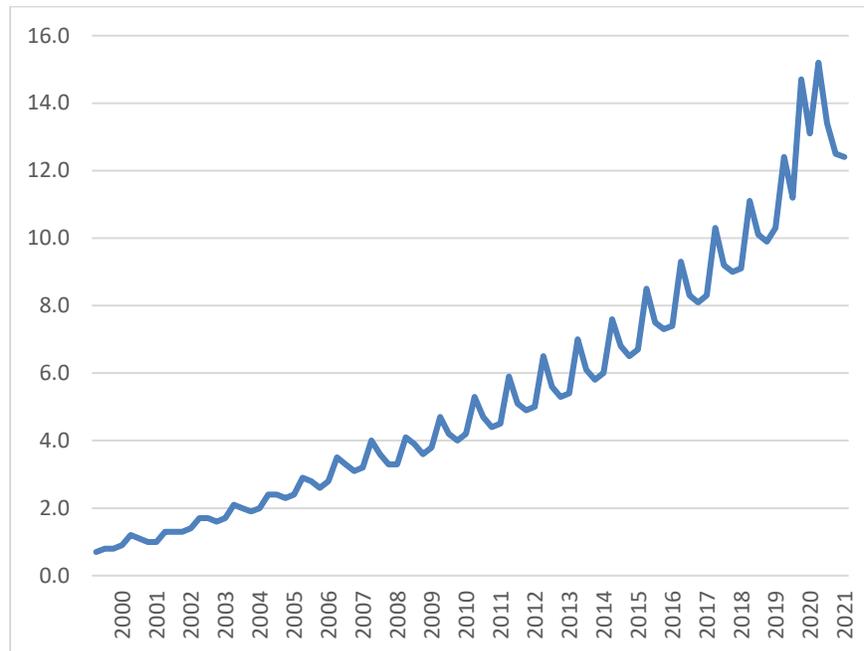
⁸⁶ Claire Wang, *Cash Me If You Can: The Impacts of Cashless Businesses on Retailers, Consumers, and Cash Use*, FED. RSRV. BOARD OF S.F. (August 2019).

⁸⁷ Joel Waldfogel, *How Digitization Has Created a Golden Age of Music, Movies, Books, and Television*, 31 J. ECON. PERSP. 195 (2017).

⁸⁸ Innovations include higher data-transfer speeds, better compression formats, the development of content-delivery networks, and new methods for streaming content.

- Improvements in online banking, mobile-banking apps, and third-party payment websites and apps, such as PayPal and Venmo, have enabled consumers and businesses to switch from making payments by check to making payments online. Mobile apps have also replaced some cash-based person-to-person transactions.⁸⁹

FIGURE 3: E-COMMERCE AS A PERCENTAGE OF TOTAL U.S. RETAIL, 2000-2021



Source: Department of Commerce.⁹⁰

These changes can be seen as a dynamic process—a virtuous cycle—in which innovations in payment cards and electronic-payment methods have increased the net benefits from using those payment systems (either by increasing the benefits or reducing costs, or both), in turn leading to increased use of such methods, which in turn reinforced the scale of the net benefits and led to further innovations in payment systems. Section III explored how this virtuous cycle developed over the past 70+ years. But before considering these innovations in more detail, it is worth considering the more recent trajectory of card and online payments.

⁸⁹ David Curry, *Mobile Payments App Revenue and Usage Statistics*, BUSINESS OF APPS (May 4, 2022), <https://www.businessofapps.com/data/mobile-payments-app-market/#:~:text=2020%20added%20900%20million%20new,pay%20for%20things%20in%20store>.

⁹⁰ *Quarterly Retail E-Commerce Sales 1st Quarter 2022*, U.S. CENSUS BUREAU NEWS (May 19, 2022), https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf.

G. Transaction Costs, Trust, and the Mode of Payment

If pecuniary cost were the only consideration, one might expect there to have been a shift *away* from cards and toward online payments, since the pure pecuniary cost of making a peer-to-peer payment (to an individual) or a direct funds transfer from a bank account (to a business or individual) is typically lower than the pecuniary cost of using a payment card. But as can be seen in Figures 2 and 3, there has been an increase in both. So, why have card payments been increasing?

As noted above, when choosing among different payment methods, merchants and consumers weigh the costs and benefits. A key component of that decision is the probability of counterparty default—i.e., either the merchant does not provide the goods or service they have promised, or the consumer does not actually pay. At the same time, attempting to limit the likelihood and/or consequences of counterparty default is also costly.

All else being equal, the payment method chosen by the parties to a transaction balances the likelihood of counterparty default with the cost of limiting that default in such a way as to minimize the sum of these two transaction costs.

When transacting with a trusted party, such as a friend or family member, or when making regular payments to the same party (such as a utility or landlord), the counterparty (vendor) has a reasonable expectation that payment will be made in a timely manner, since failure to pay can be met with withdrawal of service, shunning, and other extra-legal sanctions. As such, the vendor may request that payment be made in a way that minimizes *their* pecuniary costs, which may well be the use of a peer-to-peer network or an online bank transfer. In addition, many such vendors (landlords, friends, relatives) may not be able to process payment cards because they do not have a merchant account. In other cases, such as for very large value transactions (vehicles, houses, etc.), funds may be put into escrow and only released upon the performance of the promised transaction.

By contrast, transactions between parties that do not implicitly trust one another, especially for payments that require near-instant verification—such as when making a purchase at a store, on a website, or through an app—vendors may be willing to pay a premium to ensure that the payor is verified and the payment actually made (e.g., via debit) or guaranteed (e.g., via credit). In many cases, these premia are lower than the costs of accepting cash or checks, especially when taking into account the increase in transactions that occurs as a result of accepting cards (which, as noted above, reduces the need for consumers to carry cash and, in the case of credit cards, reduces liquidity constraints, enabling consumers to smooth consumption over time).

Transaction-cost minimization thus offers a plausible explanation for the shift of some types of payment from check and cash to payment cards, and others to electronic payments.