TCF NATIONAL BANK

BRIAN J. HURD
EXECUTIVE VICE PRESIDENT

February 18, 2011

Ms. Jennifer J. Johnson, Secretary
Board of Governors of the Federal Reserve System
20th Street and Constitution Avenue, N.W.
Washington, DC 20551

RE: Proposed Rule on Debit Card Interchange Fees, Docket No. R-1404

Dear Ms. Johnson:

We are submitting this letter and the enclosed materials on behalf of TCF
Financial Corporation and TCF National Bank (collectively "TCF") in response to
the Federal Reserve Board's notice of proposed rulemaking and request for
comment ("Proposed Rule") on debit card interchange fees and routing.[1]

TCF Financial Corporation is a bank holding company headquartered in
Wayzata, Minnesota with total assets of $18.3 billion. TCF National Bank, our
wholly-owned subsidiary, has 442 banking offices in Minnesota, Illinois,
Wisconsin, Michigan, Colorado, Indiana, Arizona, and South Dakota. TCF also
conducts commercial leasing, equipment finance, and inventory finance
businesses throughout the United States and Canada. TCF is the 11th largest
issuer of Visa debit cards. Each month, over 800,000 TCF customers use their
TCF debit cards. Together TCF employs 7,300 people.

TCF wishes to include for the Board's consideration, and for the record, two
studies we have commissioned to assess the likely impact of the Durbin
Amendment on TCF and other issuers.

The first, enclosed as Exhibit A, is by economist Anne Layne-Farrar of LECG
Consulting. Her study tabulates the dollar benefit of debit card services to
merchants versus the cost to merchants of accepting cash and checks. The
study concludes that the value of debit card services fully justifies current
interchange rates, and far exceeds the limited cost recovery permitted to issuers

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[1]   75 Fed. Reg. 81,722 (December 28, 2010).

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under the Durbin Amendment. It also concludes that debit card acceptance had the lowest net cost compared to cash and checks.

The second, enclosed as Exhibit B, is by economist Kevin Murphy, the George J. Stigler Distinguished Service Professor of Economics at the Booth School of Business and the Department of Economics at the University of Chicago. His study concludes that today's interchange rates are competitively priced and not the result of a market failure or a monopoly.

TCF appreciates the opportunity to comment on the Board's proposal. Please feel free to contact the undersigned at (952) 249-7116 or by email at bhurd@tcfbank.biz if you have any questions or need additional information.
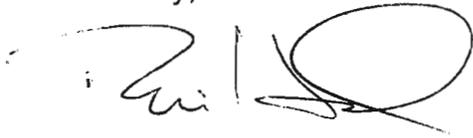
Yours truly,

EXHIBIT A

Executive Summary: Quantitative Cost-Benefit Study of Accepting Debit Cards for Retailers
By Dr. Anne Layne-Farrar
February 15, 2011

All payment instruments, even cash, involve costs and benefits for merchants handling and processing consumer payments for goods and services. For example, cash must be counted and deposited in a bank for safe keeping, and it can be stolen by employees or by robbers. Checks can bounce or be fraudulently written. And debit cards involve direct per transaction bank charges. It is these last fees that will be affected by the Durbin Amendment. Merchants claim that the transaction fees banks charge for debit cards are "too high", are "hidden" from consumers, and thus lead to higher consumer prices.

The argument that debit card transaction fees represent a "hidden tax" that increases prices to consumers does not make economic sense. The typical merchant incurs a number of costs in bringing its goods and services to consumers, and while all costs affect the merchant's pricing decisions, none is detailed for the customer on the ticket or invoice. For example, when a store receives a cash payment it must hire an armored truck to transport the cash to the bank at the end of the day, but the cash customer's bill does not have a line item for safe cash transport. Proponents of the "hidden tax" argument against debit cards have not explained why card fee expenses should be made transparent to consumers while the equivalent cash expenses should not.

Far more important to the debate over debit card fees, however, is the selective nature of the evidence that has been put forth thus far. Retailers have by and large focused solely on bank card fees and have not acknowledged that other payment instruments incur costs as well, nor have they admitted that cards may provide benefits that offset those bank fees. For instance, card payments can often be processed faster than cash, and are certainly faster than a check, which means retailers save labor time at the checkout station, save consumers time for their own checkout as well as in line behind others. In addition, debit cards do not involve cash in the till and thus lower retailers' risk of employee theft or break in. Unlike checks, debit cards provide merchants (following the prescribed steps) with guaranteed payment. Moreover, debit cards can offer retailers direct benefits, such as increased incremental customer spending as compared to paper payments.

I quantitatively analyze the costs and benefits that retailers incur in accepting cash, check, and debit card payments for goods and services rendered at fast food restaurants (QSRs) and at discount stores. The conclusions of that study are:

- Looking solely at bank fees presents a distorted view of the relative costs that merchants face in accepting debit cards as compared to cash or checks. When other relevant, quantifiable costs are included, bank transaction fees being but one of them, and when benefits are accounted for, debit cards emerge as less costly than paper instruments for both QSRs and discount store retailers.

- At a QSR, a typical transaction paid by debit instead of cash saves retailers 10 – 20 cents. At a discount store, a typical transaction paid by debit instead of cash saves retailers 8 – 13 cents and saves 30 – 35 cents over a check payment.

While all costs are factors in the prices that retailers set, there is no basis for the conclusion that debit card transaction fees lead retailers to charge higher prices to consumers than they would otherwise charge. My quantitative analysis illustrates that debit card transactions are one of the least costly payment methods for fast food and discount retailers to accept and save those retailers the higher costs associated with cash and check payments.

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Assessing Retailers' Costs and Benefits from Accepting Debit Cards

Dr. Anne Layne-Farrar

15 February 2011

LECG, LLC
33 West Monroe
Suite 2300
Chicago, IL 60603

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Section I Introduction & Executive Summary

1. My name is Anne S. Layne-Farrar. I have a Ph.D. in economics from the University of Chicago, where I also received my M.A. in economics. I received my B.A. in economics from Indiana University, summa cum laude, with honors. I am a Director at LECG, based in the Chicago office. My economic research and writings over the past fourteen years has been primarily quantitative, focused on topics in industrial organization and public policy. I have published numerous articles in peer-reviewed journals, including several papers on the economics of payment cards, and have authored or coauthored several book chapters. My curriculum vita, which lists my publications, is attached as Appendix 1.

2. In the following report I assess – to the extent reasonably possible – the costs and benefits that merchants face in processing payments from consumers for the goods and services they render.[1] Because retailers can differ significantly by the types of goods and services they provide, any study of merchant costs and benefits for payment instrument processing should take into account the specific venue at issue. I intend to study several different merchant types. Thus far, I have analyzed fast food restaurants, known as quick service restaurants (or QSRs) in industry parlance, and "big box" discount stores, like Wal-Mart and Target. This report presents my findings for these two retail venues. The analysis presented here builds on an earlier study I co-authored with Dr. Daniel Garcia-Swartz and Dr. Robert Hahn in 2006, referred to henceforth as GHL (2006).[2]

3. It is important to recognize that all payment instruments, even cash, involve costs and benefits for merchants handling and processing consumer payments for goods and services. For example, cash must be counted and deposited in a bank for safe keeping, and it can be stolen by employees or by robbers. Checks can bounce or be fraudulently written. Debit cards, on the other hand, do not involve deposit preparation expenses, but the cards do involve direct per transaction bank processing charges. It is these fees that will be affected by the Durbin Amendment. Merchants claim that the transaction fees banks charge for debit cards are "too high", are "hidden" from consumers, and thus lead to higher consumer prices.[3]

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[1] This work is part of ongoing research conducted at the behest of TCF National Bank.

[2] Daniel D. Garcia-Swartz, Robert W. Hahn & Anne Layne-Farrar, "The Move Toward a Cashless Society: Calculating the Costs and Benefits," *Review of Network Economics* ,Vol.5 (2): 199-228, (2006).

[3] See, e.g., the following article quoting the National Retail Federation, PYMNTS.com, "NRF Says Federal Reserve Action on Debit Cards Could Lead to Discounts for Consumers", Dec 16, 2010, 4:03pm, available at http://www.pymnts.com/nrf-says-federal-reserve-action-on-debit-cards-could-lead-to-discounts-for-consumers-20101216006715/?nl.

4. As a preliminary matter, the argument that debit card transaction fees (typically referred to as the "merchant discount") represent a "hidden tax" that increases prices to consumers does not make economic sense. The typical merchant incurs a number of costs in bringing its goods and services to consumers, and while all of them affect the merchant's pricing decisions, as a general matter none of them is detailed for the customer on the ticket or invoice. Consider the costs of keeping the lights on in a store, as well as heating or cooling the store, during the time the customer is served. These are incremental costs, but the customer's receipt does not include a line item for lights or temperature control. More directly related to payment instrument costs, when a store receives a cash payment it must hire an armored truck to transport the cash to the bank at the end of the day.[4] Again, the cash customer's bill does not have a line item for safe cash transport. Proponents of the "hidden tax" argument against debit cards have not explained why card transaction fee expenses should be made transparent to consumers while the equivalent cash transaction fees should not.

5. Far more important to the debate over debit card fees, however, is the selective nature of the evidence that has been put forth thus far. It is certainly true that banks charge retailers a per transaction fee for each purchase a customer makes with a debit card, while merchants do not pay a per transaction fee for purchases paid in cash. Because bank transaction fees appear on retailers' monthly profit and loss statements, these fees are highly visible to retailers. A quick review of retailers' P&L statements, however, cannot form the basis of a reasonable inquiry into the full costs associated with any payment instrument. There are other costs pertinent to incremental payment processing, even if these costs do not appear as a clear line item on any accounting document. Equally important, the benefits associated with different payment mechanisms must be assessed before any pronouncement can be made regarding which payment instrument is, on net, the most or least costly for retailers to accept.

6. Thus far in the debate over the Durbin Amendment, to the best of my knowledge, retailers have focused solely on bank card transaction fees and have not acknowledged that cards may provide benefits that offset those bank fees. For instance, card payments can often be processed faster than cash, and are certainly faster than a check, which means retailers save labor time at the checkout station, save consumers time for their own checkout as well as in line behind others. In addition, debit cards do not involve cash in the till and thus lower retailers' risk of employee theft or break in. Unlike checks, debit cards provide merchants (following the prescribed steps) with guaranteed payment. Moreover, debit cards can offer retailers direct benefits, such as increased incremental customer spending.

7. The goal of this report is to provide a balanced view of the costs and the benefits that retailers face in accepting various payment forms from their customers. Section II provides the cost-benefit analysis for QSRs. Cash was the only payment method at fast food restaurants until relatively recently. Starting in the late 1990s and early 2000s, select QSRs began accepting debit and credit cards. Today, there are three

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[4] Or, if the retailer is a small one, it must pay for a trusted employee's time in taking the cash deposit to the bank.

types of payment instruments commonly accepted at QSRs: cash, debit and credit.[5] Section III then presents the cost-benefit analysis for discount stores. Unlike QSRs, checks are generally accepted at discount stores and debit cards have been accepted for over twenty years. This retail venue also offers a case study with a much higher average transaction size (around $50 versus around $5 for QSRs), a factor that affects a number of the costs and benefits associated with various payment instruments. Section IV concludes the report with some general comments.

A. Key Findings

8. My quantitative analysis leads me to several conclusions.[6]

   - First, looking solely at bank fees presents a distorted view of the relative costs that merchants face in accepting debit cards as compared to cash or checks.

   - Second, when a variety of relevant, quantifiable costs are considered, bank fees being but one of them, signature/offline debit cards emerge as relatively more competitive with paper instruments than bank fees alone indicate.

   - Third, signature debit cards provide merchants with tangible benefits that can outweigh the bank fees and other costs incurred.

   - At a QSR, a typical transaction paid by debit instead of cash saves retailers 10 – 20 cents.

   - At a discount store, a typical transaction paid by debit instead of cash saves retailers 7 – 12 cents and saves 30 – 35 cents over a check payment.

9. We cannot conclude that debit card transaction fees lead retailers to charge higher prices to consumers than they would otherwise charge if debit cards did not exist. While all retailer costs are factors in the prices that consumers pay, as the quantitative analysis presented below illustrates, debit card transactions are less costly for QSR and discount merchants to accept than paper payment instruments.

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[5] While credit cards are accepted at those QSRs that accept debit cards, I do not study credit cards as the key payment instrument comparisons for the Durbin Amendment debate are debit cards with either cash or checks. Checks have never been widely (if at all) accepted at QSRs and thus are omitted in the QSR case study as well.

[6] As I add other retail venues to my case study analysis, these conclusions may change.

Section II QSR Cost-Benefit Analysis

10. In 1998, Sonic Inc., an Oklahoma City based drive-in chain, became one of the first QSRs to accept cards at its 2,200 restaurant locations. According to an article published three years later, in 2001, the increasing relative costs of handling cash as compared to card payments was the primary motivation for Sonic.[7] Technological advances over time have lowered the network and equipment costs of processing card transactions while the costs of handling cash do not appear to have fallen. Sonic subsequently found that customer orders (tickets) paid by card were 80% higher than cash tickets.[8] In other words, although Sonic decided to accept cards in order to lower their payment handling costs, they found direct benefits from card acceptance in the form of dramatically higher sales.

11. KFC began accepting cards in 2001, three years after Sonic. In contrast to Sonic, as its motivation KFC cited specific benefits expected from cards, rather than solely the savings derived from reduced cash handling. Specifically, KFC began accepting payment cards as a way to sell its higher priced group meals, such as large buckets of chicken with side dish containers and packages of biscuits.[9]

12. Sonic, KFC, and the other "first movers" did not start an immediate mass industry move, however. Estimates indicate that by 2000 only 7% of all QSRs accepted cards, up from 5% in 1999.[10] Instead, other QSRs have taken a cautious approach to card acceptance, beginning with small scale tests prior to broad acceptance. McDonald's began extensive testing of credit and debit card transactions at select restaurants across the nation in 2001. Visa and Burger King began a pilot program to test debit and credit card acceptance at restaurants in the Atlanta area in 2002.[11] Wendy's also began testing card acceptance in 2002.[12]

13. In November 2002, Visa released a study based on tests at various QSRs (Burger King plus several others) that revealed three important results for QSR owners. First, the average credit card transaction was 20-30% higher than cash transactions. While not as dramatic as Sonic's experience, the increase is nonetheless substantial and confirms that card acceptance offers QSRs tangible benefits. Second, card transaction processing speed was reduced significantly by waiving the requirement

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[7] Fredric H. Lowe, "Cards Make the Fast-Food Menu", *Cards and Payments* Vol. 14 (1) March 2001, at 18..

[8] Lowe, supra note7.

[9] Id.

[10] Id.

[11] "Visa U.S.A. and Burger King Corp. Test Payment Cards At Approximately 100 Atlanta Burger King Restaurants," *Business Wire*, June 2002.

[12] Shirley Lueng and Ron Lieber, "The New Menu Option at McDonalds: Plastic – Fast Food Giant Will Allow Customers to Use Credit Cards; Earning Miles With Your Fries," *The Wall Street Journal*, November 26, 2002, at D1.

for signatures on transactions below a pre-specified minimum (usually $25). This change made card transactions as quick as, or even quicker than, cash. Finally, surveys indicated that customer satisfaction from using payment cards at QSRs was extremely high: 96% of customers considered the technology easy to use and were satisfied with the speed of service.[13]

14. Corroborating the Visa study and providing further evidence of the improved ticket sizes associated with payment cards, Subway claimed in 2002 that its average credit transaction had doubled to $9 since it started accepting cards in 1999.[14]

15. The Visa study, and others supporting it, appears to have been a significant factor in subsequent QSR decisions to accept payment cards. After 2002, a number of major QSRs began accepting debit and credit cards. Pizza Hut and Domino's started accepting cards in 2002. Burger King, Wendy's and McDonald's all began accepting cards in 2003.[15] Note however that industry wide card acceptance, while increasing each year, was still relatively low, at around 14.5% of QSRs in 2002.[16]

16. By 2003, the time taken to approve a card transaction had fallen to 4 - 5 seconds, compared with cash transactions which took 8 - 10 seconds.[17] In other words, cards moved from being competitive with cash in terms of transaction time to being twice as fast as cash. This meant that QSRs could serve more customers in the same amount of time, reduce the length of lines at their restaurants, and McDonald's could come closer to its goal of a 90 second customer in-and-out time.[18] Moreover, lowering time at checkout increased QSR throughput: according to one industry estimate, every 10 seconds that could be cut from drive-through service increased sales by $1000.[19] It is likely that these factors played a key role in McDonald's decision to accept cards, a decision which Wall Street welcomed as the restaurant saw a 2.7% increase in its share price after the announcement.[20]

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[13] Visa study, as cited in "Visa Efforts Demonstrate that Payment Card Acceptance Increases Ticket Size, Increases Speed, and Improves Customer Satisfaction," *Business Wire,* Nov 2002.

[14] Lueng and Lieber, supra note 12.

[15] Some McDonald's franchisees had been taking cards before 2003 on their own initiative. In 2003, McDonalds decided to sign a single umbrella agreement with Visa, MasterCard, American Express and Discover to accept their cards. See W. A. Lee, "How Cards Finally Won Reluctant McDonalds Over," *American Banker* Vol. 169 (59), March, 2004.

[16] Id.

[17] Lueng and Lieber, supra note 12.

[18] Lueng and Lieber, supra note 12; "Visa Efforts Demonstrate that Payment Card Acceptance Increases Ticket Size, Increases Speed, and Improves Customer Satisfaction," *Business Wire,* Nov 2002.

[19] Linda Punch and Jeffrey Green, "Fast Food Meets Fast Payment," *Credit Card Management* Vol. 15 (11), January 2003 at 18. Drive-through windows account for between 50 and 65% of an average QSRs sales.

[20] Ari Weinberg, "McDonald's Goes Plastic," http://www.forbes.com/2004/03/25/cx_aw_0325mcd.html ("Investors applauded the move [of increased card acceptance], which was announced late in the trading day, boosting shares 75 cents, or 2.7%, to $28.45.")

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17. Debit card networks introduced an additional important pricing change in 2003 that also helped to spur QSR acceptance. The fixed rate interchange fees charged at that time were much harder for QSRs to accept on their relatively smaller tickets of $3 - $6 as compared to merchants with substantially higher average sales per transaction. In recognition of this reality, MasterCard, First Data and NYCE developed QSR specific rates in which the bulk of the interchange fee was derived from a percentage of the ticket value.[21] While Visa and American Express did not implement separate rates for fast-food restaurants, they claimed that processing costs were more than offset by increases in ticket values (of 40-100% depending on the card brand). Moreover, McDonald's negotiated with the card networks to obtain the following special interchange rates:[22]

- 1.8% for MasterCard
- 1.65% + 4 cents for Visa
- 12.5 cents flat fee for First Data Corp
- Amex and Discover also negotiated lower interchange fees, although these remain confidential.

18. As more and more QSRs began to accept payment cards, cards' share of QSR transactions increased. In 2007, 80% of orders at QSRs were still transacted in cash.[23] Over the course of that year, however, the use of Visa cards at QSRs increased by 31% and the use of debit cards in general increased by 32%.[24] By 2008, cash transactions at QSRs were down to 66%.[25] I do not have data for 2010, but it is possible that the ratio is now closer to 50-50 given the ongoing general trend towards greater debit use. The results confirm that while cash may still be the primary means of payment at QSRs, there is steady growth in card transactions, particularly debit cards, driven by a clear consumer preference for the convenience that cards provide.[26]

19. With this brief history of QSR card acceptance in mind, I turn next to the specific costs entailed in QSR payment handling.

A. The Costs Associated with QSR Payment Processing

20. Table 1 below presents QSR costs associated with processing cash, signature debit, and PIN debit payments, broken down into the constituent per transaction cost elements. Each cost element is explained below. I take a transaction of $5.62 as the

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[21] Punch and Green, supra note 19.

[22] W. A. Lee, supra note 15.

[23] "Payment Cards Make Fast Food Faster," *QSR Magazine,* June 2007

http://www.qsrmagazine.com/news/payment-cards-make-fast-food-faster

[24] Id.

[25] "The Price of Credit," *QSR Magazine,* accessed on Jan 14, 2011,

http://www.qsrmagazine.com/articles/operations/128/priceofcredit-1.phtml

[26] For a survey on consumer benefits from card use at QSRs, see "Payment Cards Make Fast Food Faster," *QSR Magazine,* June 2007 http://www.qsrmagazine.com/news/payment-cards-make-fast-food-faster.

basis for the calculations.[27] The tables presented in this report assume a large transaction base which one would associate with a major QSR like McDonald's. A large number of transactions reduces the estimate of per-transaction cash handling costs for variable costs that do not change at the individual transaction level, such as armored car transport. Costs of this sort are "lumpy": as long a QSR takes one cash payment, it must expend resources to safely transport that cash to the bank. As long as one armored car suffices, the total cost does not vary over a large range of transactions, until the threshold is reached where two armored car pickups per day are required. As a result of stepped variable costs of this sort, the number of transactions can affect per transaction calculations.[28]

Table 1: Estimated Costs by Payment Type, Large QSRs

| | Costs Per Transaction ($), for $5.62 cash trans | | |
	Cash	Signature Debit	PIN Debit
POS Time	0.021	0.010	0.010
Back Office	0.003	0.000	0.000
Bank Costs	0.007	0.160	0.161
Float Costs	0.000	0.000	0.000
Theft/Robbery/Fraud	0.001	0.002	0.002
Counterfeit	0.001	0.000	0.000
Fraud Prevention Costs	0.013	0.000	0.000
Other Direct Costs	0.015	0.000	0.000
TOTAL	0.060	0.173	0.174

Note: Figures are independently rounded. See Appendix 2 for details on how these figures are estimated.

21. POS (point of sale) time is computed by calculating the merchant's cost of taking payment for a single transaction. This is given by the time taken to process the transaction (in seconds) – that is, the time from when the amount owed is first displayed on the cash register to the time payment is consummated – times the wage rate of the cashier (in dollars/second). According to industry reports, cash transactions take about 6 - 10 seconds to complete, whereas card transactions take 4 - 5 seconds to complete.[29] To estimate POS costs, I use May 2009 hourly wages for cashiers in food services reported by the BLS.[30]

22. Back office costs cover the expense that merchants face in processing deposits. In this example, debit cards incur no back office costs because the merchant's bank

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[27] The average transaction (regardless of payment type) at McDonalds is $6. As explained below and in Appendix 2, we can back put the cash transaction size using other data points. Assuming that card tickets are 20% higher than cash tickets implies the average cash transaction is $5.62.

[28] I have also analyzed smaller, regional QSRs and find the results are qualitatively the same.

[29] Lueng and Lieber, supra note 12.

[30] U.S. Department of Labor, Bureau of Labor Statistics. See national 5-digit NAICS industry-specific estimates available at http://www.bls.gov/oes/oes_dl.htm.

account is credited with payment upon clearance, whereas cash deposits need to be prepared by an accountant or clerk. In the original 2006 GHL study, I relied on a 1997 FMI survey of supermarkets for deposit preparation times. Here, I assume that the time taken to process a cash deposit remains what it was in the FMI survey. The FMI study also reports that 2.7 bank deposits are made each day; in order to adjust this figure for QSRs, I multiply it by the ratio of representative QSR annual sales to supermarket annual sales.[31] For wage data, I use May 2009 hourly wages for bookkeepers, accountants, and auditing clerks in food services reported by the BLS.[32] I divide daily costs by the estimated number of daily cash transactions to estimate the average marginal cost.[33]

23. Bank costs for cash are the fees charged by banks to process cash deposits. I use lower end estimates of fees charged by Wells Fargo Bank to business customers in Illinois, Wisconsin, and Michigan and multiply this by the cash transaction size of $5.62.[34] Bank costs attributable to debit arise from the transaction fees paid on a transaction of $5.62. As of October 2010, the Visa signature debit interchange rate for QSRs is 1.55% + 4 cents.[35] For PIN debit, the relevant Visa Interlink interchange rate is .50% plus a flat fee of $0.10 per transaction, capped at $0.60.[36] Evidence of intense competition amongst merchant acquiring banks leads one to expect that acquirer margins have remained stable over time.[37] Assuming that the ratio of

[31] Weekly average supermarket sales in 2003 are available through the FMI available at http://www.fmi.org/facts_figs/?fuseaction=superfact. I compute this ratio separately for small and large QSRs.

[32] U.S. Department of Labor, Bureau of Labor Statistics. See national 5-digit NAICS industry-specific estimates available at http://www.bls.gov/oes/oes_dl.htm.

[33] See Appendix 2 for details on how this is estimated.

[34] See Wells Fargo Bank business account holder service fees in IL, WI, and MI https://www.wellsfargo.com/downloads/pdf/biz/accounts/fee_information/michigan_wisconsin_illinoi s.pdf. Cash deposit fees are $0.0012 per dollar deposited; this is the lower of the two fee schedules shown (p. 31 and p. 38).

[35] Visa eliminated the QSR specific interchange rate. Now QSRs pay the "small ticket debit" rate of 1.55% + $0.04 for tickets less than or equal to $15 and they pay the "restaurant debit" rate of 1.19% + $0.10 for tickets greater than $15. See, http://usa.visa.com/download/merchants/october-2010-visa-usa-interchange-rate-sheet.pdf.

[36] See http://usa.visa.com/download/merchants/october-2010-interlink-interchange-rate-sheet.pdf.

[37] Ann Kjos, "The Merchant-Acquiring Side of the Payment Card Industry: Structure, Operations, and Challenges," Federal Reserve Bank of Philadelphia Payment Card Center Discussion Paper, October 2007, p. 17-18. Available at http://www.philadelphiafed.org/payment-cards-center/%5Cpublications/discussion-papers/2007/D2007OctoberMerchantAcquiring.pdf. In fact, a VISA study estimated that the merchant discount was 2.08% in 2004 and had grown by less than 0.5% annually over the previous 10 year period. See VISA, "Driving Value and Innovation: Interchange in Action," Federal Reserve Bank of Chicago, May 2005

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interchange rates to merchant transaction fees has remained the same, I compute the current bank transaction fee for QSR's to be 2.85% for both forms of debit.[38]

24. While PIN debit is frequently less expense than signature debit, over time PIN debit fees have risen considerably relative to signature debit.[39] As Table 1 illustrates, the bank transaction fees for two forms of debit are now quite close to one another.

25. Float costs are given by the interest income that merchants could have earned if payments cleared instantaneously. Cash "clears" at the end of the day when the bank account deposit is made and thus incurs no float cost. Likewise, PIN debit transactions typically clear within one day and therefore incur no float costs either.[40] According to a VisaNet report provided to TCF, TCF signature debit transactions take 1.46 days on average to clear. To calculate float costs on the roughly half a day of delay, I assume that merchants would be able to earn the November 2010 Series I U.S. savings bond interest rate of 0.74%.[41]

26. Theft, robbery, and fraud costs vary considerably by payment type. Theft and robbery are not applicable to signature and PIN debit, but fraud is. An FMI survey on loss prevention from 2003 estimates that fraudulent debit transactions cost merchants 0.04% in retail sales.[42] For cash transactions, fraud comes in the guise of counterfeited bills. The Federal Reserve Bank of Chicago estimates that around 1 out of every 10,000 bills is counterfeit.[43] Assuming that QSRs receive no more or less than the average number, their cost of counterfeit currency is simply 1/10,000 multiplied by the transaction size. In addition, losses that arise from employee theft and store robbery are significant. I use data from the 2003 FMI survey on supermarkets to determine estimated losses for QSRs for all cash theft and robbery. Details on these computations, as well as all others, are provided in Appendix 2.

27. Fraud prevention costs are also estimated from data in the FMI 2003 study.[44] A Federal Reserve Bank study observed that "[t]he high costs of preventing payments fraud ... are similar to the estimates of actual losses due to fraud."[45] Expenses

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[38] The smaller the transaction size, the less of a base over which to spread the fixed fee portion of the charge. At larger transaction sizes, the fixed fee portion of the interchange fee will matter less, lowering (in percentage terms) retailer transaction fees for debit charges.

[39] Fumiko. Hayashi, Richard Sullivan, and Stuart. Weiner, "A Guide to the ATM and Debit Card Industry, 2006 Update," Federal Reserve Bank of Kansas City, especially pp. 12-13. "The gap between signature and PIN debit interchange fees has narrowed since 2001. (...) partial convergence has been the result of a slight decline in interchange fees for signature debit and a large increase for PIN debit." (p. 12)

[40] See American Credit Card Processing Corp. "Study: PIN Debit Cheaper, Less Fraud-Prone Than Signature," Nov 2005. Available at http://www.accpconline.com/site/754600/page/696144.

[41] See http://www.treasurydirect.gov/news/pressroom/currenteebondratespr.htm.

[42] FMI survey data, "Loss Prevention," 2003, p.8

[43] Ruth Judson and Richard Porter, "Estimating the Volume of U.S. Counterfeit Currency in Circulation Worldwide: Data and Extrapolation", Federal Reserve Bank of Chicago, Financial Markets Group, Policy Discussion Paper Series, March 1, 2010, p. 2.

[44] FMI survey data, "Loss Prevention," 2003, p.20.

[45] Richard J. Sullivan, "Can Smart Cards Reduce Payments Fraud and Identity Theft?", 2008, available at www.KansasCityFed.org.

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incurred in association with locksmiths and CCTVs are included within this cost category. For QSRs these costs are typically associated with the costs of preventing cash theft and are therefore considered only under the cash processing cost in Table 1.

28. Finally, I estimate direct costs that can arise from other sources. For example, cash requires armored cars for transport. I update the average annual armored car costs per supermarket estimated in 1997 using the Bureau of Economic Analysis' PCE chain-type price index for "other goods and services." The FMI data for supermarkets indicate that 2.7 deposits are made per day on average. I assume, however, that QSRs deal with lower cash volumes and therefore only make a single cash deposit each day. I therefore divide the annual armored car cost by 2.7. As with all calculations, further details on these figures are provided in Appendix 2.

29. As Table 1 illustrates, if we look just at bank transaction fees, debit "costs" QSRs around 17 cents while cash "costs" QSRs less than 1 cent. However, when we consider other relevant incremental costs, the relative position of debit to cash changes considerably: debit is only around 3 times more "costly" than cash, not 17 times more. Since, as explained in Section I, we cannot consider costs alone, we turn next to estimating benefits.

B. QSR Benefits Associated with Debit Cards

30. Retailers can receive a number of benefits from the payment instruments they choose to accept. Some of these will simply be relative cost savings, such as savings on armored car transport costs when customers pay using a debit card or a reduction in float costs for cash as compared to cards. These "benefits" are already accounted for in the cost table above. Other benefits are important but extremely difficult to quantify. For instance, debit cards provide retailers with information about their customers that cash cannot: the names on the cards can be linked to zip codes and customer lists with demographic factors, which can help retailers improve their inventory and marketing practices. For QSRs, however, two explicit benefits that can be quantified have been identified within the industry: ticket lift and increased throughput.

31. As noted earlier, ticket lift is the increased per transaction sales that QSR merchants have reported when their customers pay with cards instead of cash. Sonic, one of the first QSRs to accept payment cards, found that its order tickets paid by card were 80% higher than cash tickets.[46] Other later adopters have reported more modest, but still sizable gains, on the order of 20-30% higher than cash transactions. This effect is not surprising. If a customer is limited to the cash in his or her wallet, then they may be constrained to purchase less than they would otherwise have at the moment they are ordering their meal.[47] With a debit card, however, an extra dollar or so to

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[46] Lowe, supra note 7.

[47] While it might be possible that card tickets are higher because customers use cards to pay when they order more, available evidence suggests that the causality runs in the other direction: customers order more when they use a card. See, e.g., Tamara E. Holmes, "Credit cards can make you fat", Bankrate.com,

add a bag of French fries or a dessert to the order is possible. With small size purchases like those made at QSRs, the ability to purchase more is not a matter of credit availability, as it would be at, say, an electronics store. Instead, the constraint is likely to be limited cash in the customer's wallet, not in their demand deposit account. Debit cards free consumers from the time and expense of having to obtain and carry cash, but do not involve credit or finance fees. In the table below, I assume two different ticket lift amounts for QSRs: 5% and 20%.

32. The second merchant benefit reported by QSRs is increased throughput. The notion here is that for every second a fast food restaurant is able to shave off of the POS time, the more customers that QSR will be able to serve during its peak lunch and dinner rush times. Not only will the restaurant be able to get to the next order faster, lines will be shorter both at the counter and in the drive through, lines that could deter potential customers from ever stopping at the restaurant. I rely on the industry estimate reported above for per transaction throughput improvement.

33. The average transaction, averaged across both cash and card sales, at large QSRs is around $6.00.[48] If we assume that card tickets are 20% larger than cash transactions, that implies an average cash transaction size of $5.62,[49] the amount employed for the cost calculations above. If, on the other hand, cards provide only a 5% ticket lift, this implies the average cash transaction is $5.90. We calculate benefits at each transaction size.

Table 2: Estimated Gains by Payment Type, Large QSRs

| | Large QSR Gains Per Transaction ($), $5.62 | | |
	Cash	Signature debit	PIN debit
Ticket Lift (20%)	0.000	0.258	0.258
Throughput Improvement	0.000	0.138	0.138
WEIGHTED TOTAL	0.000	0.311	0.311

| | Large QSR Gains Per Transaction ($), $5.90 | | |
	Cash	Signature debit	PIN debit
Ticket Lift (5%)	0.000	0.068	0.068
Throughput Improvement	0.000	0.138	0.138
WEIGHTED TOTAL	0.000	0.121	0.121

Note: Figures are independently rounded. See Appendix 2 for details on how these figures are estimated.

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http://www.bankrate.com/brm/news/cc/20070704_credit_cards_fat_a1.asp. ("According to a new survey commissioned by Visa, 82 percent of respondents said fast food purchases made with debit or credit cards are more convenient than dealing with cash. And 68 percent say using payment cards is faster than paying with cash. Importantly, 77 percent say they can buy exactly what they want because they are not limited by the cash they have available.")

[48] Results for McDonald's from a *Fast Food Company Magazine* survey available at http://www.jeremyperson.com/fast-food-per-store-sales-information/

[49] Appendix 2 explains this calculation.

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34. The two benefits estimated in the table above result in a merchant benefit of between 12 cents and 31 cents, which are significant amounts in light of the overall costs involved.

Net Effects

35. Recall that cost advantages, like no float and lower bank charges for cash, are incorporated into the total cost figure reported in Table 1; these are repeated below. In the cost section above, we presented only the costs associated with the $5.62 (20% ticket lift) transaction. We therefore need to calculate the costs associated with a 5% ticket lift benefit resulting from cards to combine with the benefits estimated on the basis of 5% ticket lift. This is presented in Table 3 below.

Table 3: Estimated Costs by Payment Type, Large QSRs

	Costs Per Transaction ($), for $5.90 cash trans		
	Cash	Signature Debit	PIN Debit
POS Time	0.021	0.010	0.010
Back Office	0.003	0.000	0.000
Bank Costs	0.007	0.166	0.163
Float Costs	0.000	0.000	0.000
Theft/Robbery/Fraud	0.001	0.002	0.002
Counterfeit	0.001	0.000	0.000
Fraud Prevention Costs	0.013	0.000	0.000
Other Direct Costs	0.015	0.000	0.000
TOTAL	0.062	0.179	0.176

36. We are now ready to combine the cost and benefit estimates for QSRs to obtain the overall, or net, effect. Table 4 below combines the appropriate costs and benefits (holding transaction size and the ticket lift assumption constant) to obtain the net benefit, if any.

Table 4: Aggregate Effects by Payment Type, Large QSRs

	Big QSR Per $5.62 Transaction ($)		
	Cash	Signature debit	PIN debit
Costs	0.060	0.173	0.174
Benefits (20% lift)	0.000	0.311	0.311
NET BENEFITS	-0.060	0.138	0.137

	Big QSR Per $5.90 Transaction ($)		
	Cash	Signature debit	PIN debit
Costs	0.062	0.179	0.176
Benefits (5% lift)	0.000	0.121	0.121
NET BENEFITS	-0.062	-0.057	-0.055

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36. As Table 4 makes clear, a 20% ticket lift is sufficient to provide debit (both signature and PIN) transactions with a positive net benefit for merchants, even counting those payment instruments' higher bank transaction fees. Cash, which has no offsetting explicit benefits, is strictly negative. With only a 5% ticket lift for debit cards, all three payment instruments is strictly negative on a net basis and all cost roughly the same – cash is not cheaper than debit.

37. When we step back to consider the history of QSR payment card acceptance, these results are not at all surprising. QSRs had been among the most reticent of merchants to accept debit or credit cards. The first QSR to make the change was Sonic, which began accepting cards in 1998 – 40 years after the first credit card appeared and several years after debit cards entered the mainstream.[50] Thus, had card acceptance not made financial sense, it seems clear that QSRs would to this day still not accept them.

38. Reinforcing that point is the fact that the early card adopters among QSRs were publicly traded firms. It is likely that Sonic and KFC each had to make a compelling case to their respective boards before they could gain approval for the investment required to accept cards. Not only did QSR merchants need to incur capital expenses (e.g., the installation of card readers or the acquisition of cash registers with integrated card readers), they also knew they would face per transaction bank fees. Nor did one of the very first adopters, Sonic, expect the substantial ticket lift that it later discovered.[51] Even knowing they would have upfront investment costs and increased per transaction bank costs, these early adopter QSRs nonetheless decided to move forward with payment cards, indicating that they expected the customer service improvements and cost savings relative to cash to outweigh the costs of taking cards. Once the sizable ticket lift became apparent, the justification for accepting cards was that much more obvious for later adopting QSRs. The calculations presented in Table 4 are consistent with this view.

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[50] Sonic began accepting cards in 1998, Lowe, supra note 7; BankAmericard was launched by Bank of America in 1958, http://corporate.visa.com/about-visa/our-business/history-of-visa.shtml; the establishment of a national EFT network and universal ATM access in the early 1990s encouraged rapid growth of debit card use, see Fumiko. Hayashi, Richard Sullivan, and Stuart. Weiner, "A Guide to the ATM and Debit Card Industry," Federal Reserve Bank of Kansas City, 2003, pp. 12-13, available at http://www.ffiec.gov/ffiecinfobase/resources/retail/frb-guide%20to%20the_atm_debit_card_ind.pdf.

[51] Lowe, supra note 7.

Section III Discount Store Cost-Benefit Analysis

39. As noted in the introduction, the costs and benefits associated with transaction payments can differ by retail venue. For instance, a higher average transaction size will drive a higher bank card transaction fee and greater cash sales per store will entail higher theft and counterfeit risks. Some costs and benefits scale in a linear fashion (e.g., employee theft) while others do not (e.g., the debit card interchange fee, which has a percentage portion and a fixed portion), so it is important to calculate the costs and benefits for the transaction size of interest, rather than simply scaling those for another venue and transaction size. As a result of these factors, it is important to estimate payment instrument costs and benefits at a variety of venues to gain a better understanding of how the costs and benefits can differ among retailers.

40. The second case study I consider is a purchase made at a discount store, such as Wal-Mart, Target, or Costco.[52] For the purposes of cost-benefit analysis, there are two key differences between QSRs and discounters. The first is the transaction size. Rather than $5, the average transaction size at discount stores is around $50. The second key difference is the interchange fee, which differs from the QSR rate. According to Visa data, discount store retailers pay a blended interchange rate that combines the rate for grocery stores and retail stores. Finally, discount stores have traditionally accepted personal checks as payment, while QSRs generally do not.

41. The use of checks in the US economy has been declining steadily for years now. A study by First Data Corporation found that in-store check use was 18% in 1999; by 2008 it had fallen to 8%.[53] From the consumer's perspective, checks are time consuming to write and process at the checkout counter and are cumbersome to carry. Because the risks of non-payment are too great, retailers rarely ever accept out-of-state checks, so they are a poor choice for consumers when travelling. Even within the consumer's home town, more and more stores refuse to accept checks today. Debit cards, on the other hand, provide a convenient means to access funds in a demand deposit account regardless of where the consumer is shopping. Thus the First Data study reported that in-store debit card use (signature and PIN combined) rose from 21% in 1999 to 37% in 2008.

42. From the retailer's perspective, checks present a host of problems. According to a Federal Reserve Bank report, check fraud cost retailers $10 billion in 2006.[54] That figure is over five times the fraud cost that debit cards imposed on retailers that same year, as the total cost to POS retailers from both debit and credit cards was only $2 billion in 2006. When a check bounces, the retailer's bank will typically attempt to run

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[52] I am in the process of analyzing additional retail venues but these were not far enough along to include in this interim report.

[53] First Data Market Brief, Consumer Payment Preferences for In-Store Purchases. 2008.

[54] Sullivan, supra note 45.

it through a second or third time – charging the retailer a returned deposit item fee each time the check bounces. If the check fails to clear after the second or third try, it is up to the retailer to recover the loss. This typically entails hiring a collection agency. But even with collection attempts, some checks are never paid. Of the funds that are recovered, the collection agency often keeps a substantial percentage as its fee. The costs and risks associated with checks explain why so many merchants now refuse to take checks as payment.

43. In short, checks are not convenient for consumers and are costly and risky for merchants. Thus, despite the government subsidy that comes in the form of bank-to-bank at-par exchange,[55] both check use and check acceptance have been declining steadily within the US.

A. The Costs Associated with Discount Store Payment Processing

44. Table 5 below presents the costs of payment instrument acceptance for a typical "big box" discounter. The analysis is based on an average transaction size of $49.38, the implied cash transaction amount when debit cards provide a 10% ticket lift for discount retailers. As with QSRs, even though credit cards are a popular form of payment at discount stores their use is not relevant for the debit card debate and thus credit card use is again ignored in the analysis presented here. Checks are included.

Table 5: Estimated Costs by Payment Type, Big Box Discount Store

| | Costs Per Transaction ($49.38) | | | |
	Cash	Check	Signature Debit	PIN Debit
POS Time	0.041	0.136	0.046	0.043
Back Office	0.037	0.093	0.000	0.000
Bank Costs	0.059	0.080	0.409	0.360
Float Costs	0.000	0.001	0.002	0.000
Theft/Robbery/Fraud	0.033	0.444	0.019	0.019
Counterfeit Losses	0.004	0.000	0.000	0.000
Fraud Prevention Costs	0.085	0.000	0.000	0.000
Other Direct Costs	0.010	0.026	0.000	0.000
TOTAL	0.269	0.780	0.476	0.423

Note: Figures are independently rounded. See Appendix 2 for details on how these figures are estimated.

45. While the cost estimates themselves differ, the methods for estimating the cost elements are the same as employed for the QSR case study. A couple of important differences should be pointed out, however. First, as noted above the interchange

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[55] Howard Chang, Marina Danilevsky, David Evans, and Daniel Garcia-Swartz, "The Economics of Market Coordination for the Pre-Fed Check-Clearing System: A Peek into the Bloomington (IL) Node", *Explorations in Economic History* 45:4 (September 2008).

fee for discount stores is different, which leads to a different merchant transaction fee. In particular, big box discount stores typically have a grocery section and a general merchandise section. As such, one of two interchange rates applies depending on the particular items purchased. The grocery store rate for signature debit is 0.62% + $0.13 (capped at $0.35) and is $0.20 for PIN debit.[56] The general merchandise rate for signature debit is 0.62% +$0.13 with no cap and 0.50% + $0.10 (capped at $0.60) for PIN debit.[57] I employ the same method as used for QSRs to estimate the applicable retailer bank transaction fee, which is 0.82% for signature and 0.73% for PIN.

46. The check fraud cost estimate is based on a LexisNexis Report that finds that retailers face an average annual check fraud loss of 0.9% of their total annual revenue.[58] Because this figure is expressed as a percentage of total annual revenue, it will understate the loss that retailers experience as a percentage of check payment revenue, which would be a better measure of the cost to retailers of accepting an incremental check payment. The check fraud cost estimate of 44 cents reported in Table 5 above is therefore conservative.

47. Discount stores also differ significantly from QSRs in that they have to worry about both cash theft from the till and the theft of goods from inventory. Discount store theft prevention expenses are therefore substantial, but only a portion of that expense is relevant for cash payment acceptance. While there are public reports of what retailers expend to prevent theft from employees and thieves, I was unable to find the breakdown of those expenditures for inventory shrinkage/theft versus cash theft. As a conservative estimate, I assume that only 25% of a discount store's theft prevention expenditures are directed toward preventing cash loss (e.g., CCTV aimed at the till to catch employee theft).

48. While the individual costs reported in Table 5 are quite different from those reported for QSRs in Table 1, the qualitative conclusion is the same. Looking just at bank transaction fees presents a highly misleading picture of the relative costs to retailers of accepting the various payment instruments. On the basis of bank charges alone, signature debit cards are around 6 times more costly than cash and around 5 times more costly than checks. However, when the relevant incremental costs are accounted for, signature debit falls to less than 2 times more costly than cash and reverses position entirely with checks, which are over 1.5 times more costly than debit transactions.

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[56] See, http://usa.visa.com/download/merchants/october-2010-visa-usa-interchange-rate-sheet.pdf and http://usa.visa.com/download/merchants/october-2010-interlink-interchange-rate-sheet.pdf, respectively.

[57] I do not have the data necessary to parse discount store sales into grocery and general retail so I assume a 50-50 split to calculate the blended PIN debit rate. For the signature debit rate, I use the rates that TCF debit card transactions imply, which account for the split in sales.

[58] 2009 LexisNexis True Cost of Fraud Study.

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B. Discount Store Benefits Associated with Debit Cards

49. The benefits that discount stores enjoy from different payment instruments differ from those that QSRs enjoy. In particular, throughput is not, to the best of my knowledge, as important a factor for discount stores. Certainly all retailers would like to maximize their sales while minimizing their customers' waiting in line time, but there is no daily peak lunch or dinner rush in which speeding customers through the checkout line is particularly important. Moreover, shoppers at discount stores are generally there to save money, not time. The large box layout of discount stores is not aimed at shopper convenience, but rather at volume discounts. As a result of these considerations, while it is possible that increased throughput for debit relative to cash and checks benefits discount retailers, I do not quantify that benefit.

50. Ticket lift, however, remains an important benefit for discount stores. The transaction size here is roughly ten times the average at QSRs so ticket lift will be a smaller percentage. Debit cards do not involve access to credit, so ticket lift is, as before with QSRs, based on the convenience of directly accessing funds in the consumer's demand deposit account without having to carry a lot of cash. Indeed, studies continue to find that U.S. consumers are carrying less and less cash over time, as debit card use increases.[59] Thus, discount store shoppers can purchase a magazine or some candy and a drink – items that discount stores tend to stock at the POS counter to catch impulse purchases – whether they have the additional $5 in their pockets or not. This level of purchase (a $4-$6 magazine, for example) implies a ticket lift of 10% on an average transaction of $49.38. As Table 6 illustrates, this translates into a benefit of around 29 cents for all non-cash payment instruments.

Table 6: Estimated Gains by Payment Type, Big Box Discount Store

	Gains Per Transaction ($49.38)			
	Cash	Checks	Signature Debit	PIN Debit
Ticket Lift	0.000	0.287	0.287	0.287
TOTAL	0.000	0.287	0.287	0.287

51. Table 7 below combines the cost and benefit estimates to obtain the next cost/benefit for each payment instrument accepted at a discount store for a transaction of $49.38.

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[59] See, e.g., Electronic Banking Options, "U.S. consumer use of cash to decline by nearly $200 billion by 2015, January 15, 2011, http://electronicbankingoptions.com/2011/01/15/u-s-consumer-use-of-cash-to-decline-by-nearly-200-billion-by-2015/ ("United States consumers' use of cash declined 3 percent last year and it will continue to drop at the same rate through 2015, according to a new report by Aite Group LLC, a Boston-based consulting firm.").

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Table 7: Aggregate Effects by Payment Type, Big Box Discount Store

| | Per Transaction ($49.38) | | | |
	Cash	Checks	Signature Debit	PIN Debit
Benefits	0.000	0.287	0.287	0.287
Costs	0.269	0.780	0.476	0.423
NET BENEFITS	-0.269	-0.494	-0.189	-0.136

52. Each payment instrument is strictly negative, however the debit transactions have the smallest costs of all four payment instruments. Once benefits are included (at least those that can be quantified), checks emerge as over 2 times more costly than debit while cash is almost 2 times more costly. Relative to cash, the use of a debit card saves discount retailers between 8 and 13 cents. Relative to checks, debit saves discount retailers between 30 and 35 cents. Clearly, it is inappropriate to consider just banking transaction fees when assessing retailers' costs of payment processing.

Section IV Conclusions

53. On the basis of the above analysis I conclude that debit cards provide retailers with tangible benefits for typical transactions when compared to paper transactions.

    - Looking solely at bank transaction fees is highly misleading and suggests the wrong conclusion: cash and checks are not cheaper than signature debit at the transaction sizes I have studied thus far.

    - The benefits that debit cards provide to major QSRs and discount stores appear to justify the higher bank charges that such merchants must pay for signature debit transactions.

    - There is no economic basis for concluding that debit card bank transaction fees raise consumer prices any more than the transaction costs associated with cash or check payments do. In fact, debit tends to be less costly to QSR and discount retailers than either paper instrument is.

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Appendix 1

Anne Layne-Farrar, Director, LECG

33 West Monroe
Suite 2300
Chicago, IL 60603-5659
USA

Phone: 312.267.8243
Fax: 312.267.8220
Email: alayne-farrar@lecg.com

Summary

Dr. Layne-Farrar specializes in antitrust and intellectual property matters, especially where the two issues are combined. She advises clients on competition, intellectual property, regulation, and policy issues across a broad range of industries, with a particular focus on high-tech. Her client list includes some of the largest information technology, communications, and pharmaceuticals companies in the world.

Her advisory work for industry leading clients has included: analyzing reasonable licensing, including RAND and FRAND; analyzing market definition; assessing economic incentives and firm behavior within standard setting organizations; reviewing the competitive implications of licensing IPR; calculating damages; conducting empirical research on the costs and benefits of policies and regulation, including payment instruments within the United States, labor unions, television ratings, software security, and e-commerce; and assessing the antitrust implications of mergers and acquisitions in a number of industries, including software, telecommunications, pharmaceuticals, airlines, manufacturing, and consumer goods.

Dr. Layne-Farrar received her BA in economics with honors, summa cum laude, from Indiana University (Bloomington), her master's and her PhD in economics from the University of Chicago. She has published articles in magazines including *Antitrust*, *Global Competition Review*, and *Regulation* and has numerous publications in academic journals, including *Antitrust Law Journal*, *Harvard Journal of Law and Public Policy*, and *Journal of Competition Law and Economics*.

EDUCATION

University of Chicago
> PhD Economics, 1999
> MA, Economics, 1997

Indiana University
> BA, Economics, 1987

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PROFESSIONAL EXPERIENCE

August 2006 – present	*LECG* Director. Manage economic research projects; provide expert testimony; oversee research team and coordinate outside experts' work; manage project budgets. Co-managing director for the Chicago LECG office.
2006–2004	*LECG* Senior Managing Economist; Principal.
2001–2004	*NERA ECONOMIC CONSULTING* Senior Consultant.
1997–2001	*LEXECON INC.* Economist/Consultant.
1993–1997	*UNIVERSITY OF CHICAGO* Research Assistant (Professor James J. Heckman, Nobel Laureate).
1989–1991	*GTE – TELEPHONE OPERATIONS HEADQUARTERS* Market Researcher (Small Business Customers).
1987–1989	*GTE – SOUTHWEST INC.* Market Forecaster.

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Appendix 2

This appendix provides details on the assumptions and underlying calculations used to compute the merchant costs and benefits. For the QSR case study, ticket size and representative transaction volume provide basic inputs for the cost and benefit computations. We start with these two cost elements and then move on to the other cost measures included in Table 1 in the body of the report.

1. Ticket Size

A Hitachi Consulting study estimated that for QSRs in 2008 payment cards accounted for 34 percent of transactions, with cash accounting for 66 percent.[60] The average transaction at McDonalds in 2009 was $6.00 (regardless of payment type).[61] Finally, a 2002 Visa Study found that card payments at QSRs were accompanied by a 20-30 percent increase in ticket size.[62] While many of the quotes related to "ticket lift" refer to credit cards, given the small transaction sizes it is reasonable to conclude that cards do not so much provide "credit" as they release the consumer from the constraints imposed by the cash currently in the consumer's wallet. I therefore take a conservative range of potential ticket lifts for debit cards, assuming that the use of debit cards provide a ticket lift of 5 to 20 percent. Combining all these pieces of data, we can estimate the range of the average ticket size for cash and card payments at McDonalds (as a representative QSR) by solving the following equations:

$$0.66 \text{ Cash Ticket} + 0.34 \text{ Card Ticket} = 6.00$$

$$\text{Card Ticket} = \text{Ticket Lift Factor} * \text{Cash Ticket} \quad (\text{where } 1.05 <= \text{Ticket Lift Factor} <= 1.2)$$

Solving this system of equations with the date reported in the paragraph above gives the following cash ticket range of $5.62 - $5.90 and a card ticket range of $6.19 - $6.74.[63]

An analogous calculation is made for discount stores. We made the calculations on the basis of the top three discount stores: Wal-Mart, Costco, and Target. In the calculations we weighed the three companies by their 2008 total sales. Wal-Mart receives a weight of 74 percent, Target 12 percent, and Costco 14 percent. Their interchange fees for signature debit are 0.65, 0.79, and 0.37 percent, respectively. Thus, the weighted-average interchange fee is 0.63. The cash transaction size is $51.29, $40.55, and $82.50, respectively. Thus, the weighted-average transaction size is $54.32.

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[60] "The Price of Credit" QSR Magazine Jan 14, 2011,
http://www.qsrmagazine.com/articles/operations/128/priceofcredit-1.phtml
[61] Results from a *Fast Food Company Magazine* survey available at
http://www.jeremyperson.com/fast-food-per-store-sales-information/
[62] "Visa Payment Card Acceptance helps the Bottom Line of Quick Service Restaurant Partners," *Business Wire*, Nov 12 2002.
[63] At 5 percent ticket lift, cash transactions are $5.89 while card transactions are $6.19, which, with rounding, provides the correct weighted average transaction of $6. At 20 percent ticket lift, cash transactions are $5.62 while card transactions are $6.74.

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2. Transaction Volume

Daily transaction volume at QSRs varies considerably depending on the type of chain and the restaurant's location. Due to limited data availability, I use two estimates of representative QSR transaction volume: the first, McDonalds, represents a large national chain on the higher end of transaction volume; the second, Taco Time Northwest, a local chain in the Pacific Northwest represents a medium sized QSR. McDonald's sales volume per store in 2009 was $2.3 million, and the average transaction size in 2009 was $6. We can therefore infer that the number of transactions processed annually per store was 383,333, which translates to about 1050 transactions per day per store.[64] Using samples of monthly transaction data from various Taco Time Northwest franchises in 2009-10, I estimate that a smaller QSR averages about 10,773 monthly transactions per location,[65] or 359 transactions per day per location. As noted in the main body of the report, scale is important for variable costs that do not vary per individual transaction, but rather vary over tranches of transactions. This follows because the larger the number of transactions, the greater the base over which "lumpy" variable costs are spread, which has an impact on the cost-benefit analysis.

According to industry estimates, the average QSR has 70 transactions per hour during the peak periods of lunch and dinner, each of which lasts an hour, for a total of 140 peak period transactions.[66] Because 140 transactions are made per location in the peak periods, the remaining 219 occur during slack periods, for a total of 359 transactions per day. At a larger restaurant like McDonalds, we assume that the ratio of peak to total transactions remains the same as reported for average QSRs (140/359=38.9%). Applying this ratio to the total transaction volume of 1050 at a McDonald's restaurant results in 409 peak and 641 off peak transactions. Since smaller QSRs have fewer transactions, their aggregate cash processing costs are estimated as being slightly higher. I present tables on costs, benefits, and aggregate effects for smaller QSRs at the end of this appendix. These tables are analogous to the tables presented in the main text which exhibit costs, benefits, and net effects for large QSRs.

The daily number of cash transactions is equal to the share of cash payments (0.66) multiplied by the daily transaction volume. Similarly, the daily number of card transactions is equal to the share of card payments (0.34) times the daily transaction volume.

3. Transaction Costs

For all payment instruments, POS costs per transaction are determined by multiplying the relevant transaction time (at QSRs, 4.5 seconds for cards and 9 seconds for cash[67]) by the cashier's wage rate ($8.37/hour or $0.002/second[68]). Thus, POS cost is measured as a labor cost for handling payments by payment instrument type.

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[64] Results for McDonalds from a Fast Food Company Magazine survey available at http://www.jeremyperson.com/fast-food-per-store-sales-information/. While some purchases will be for coffee only, and thus far less than $6, other transactions will be for far more than $6, such as when a family of four purchases dinner. Given the limited data available, using the average transaction size to estimate the number of transactions should provide a reasonable estimate.
[65] Eric A. Finkelstein et al., "Mandatory Menu Labeling in One Fast-Food Chain in King County, Washington," *American Journal of Preventive Medicine* Vol. 40 (2):122-127 (2011), p.124.
[66] Amy Garber, "Quick-Service Leaders Eye Life in the Fast Lane," *Nation's Restaurant News*, Dec 12, 2005.
[67] Lueng and Lieber, supra note 12.

Back office costs for cash are also measured as a labor cost from the 1997 FMI survey of supermarket data. This figure is determined by multiplying average deposit preparation time (36.5minutes) with the accountants wage rate ($14.58/hr or $0.243/min) and the number of deposits prepared each day (2.7).[69] In order to adjust this figure for QSRs, I multiply it by the ratio of representative QSR (or discount store) annual sales to supermarket annual sales.[70] This amount is then divided by the number of daily cash transactions.

For card transactions, bank costs are given by multiplying the relevant merchant discount by the transaction size. Note that merchant discounts are seldom reported directly. We have merchant discount rates (2.08%) from 2004, along with QSR specific interchange rate data from that year (1.65% + 4 cents).[71] As acquiring services have remained competitive among banks, we assume that the relationship between the interchange rate and the merchant discount has remained constant. We therefore multiply the ratio of interchange fee to merchant discount from 2004 by the current interchange fee (1.65% + 4 cents) to obtain an estimate of current merchant discounts. For cash transactions, bank costs are given by multiplying the bank cash deposit fee ($0.0012per dollar deposited) by the transaction size.[72] We do similar calculations for discount stores.

Float costs for debit cards are given by multiplying the transaction amount first by the number of days taken for the transaction to clear (1.46[73]) and then by the interest earned each day (0.74%/365[74]).

Fraud costs for cards are based on the costs reported in the FMI 2003 study on fraud losses in the supermarket industry.[75] For lack of better data, I assume that the QSRs incur payment card related fraud losses of the same scale and proportion as supermarkets. For debit transactions, the study estimates that losses are on the order of 0.04% of revenue. Therefore we multiply the transaction amount by 0.04% to determine losses to fraudulent debit cards on a per transaction basis. As noted in the text, fraud costs for checks at discount stores are based on the LexisNexis report.

For the supermarket industry in 2003, 1 in 15 stores was robbed each year; this is equivalent to a rate of 0.07 robberies per store per year.[76] Annually, the loss to each supermarket chain was estimated at $38,884.35.[77] Multiplying total company wide losses by the robbery rate per store gives us about $2592 in losses per store. In order to adjust

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[68] This is the hourly wage rate for cashiers in the food services industry. U.S. Department of Labor, Bureau of Labor Statistics. See national 5-digit NAICS industry-specific estimates available at http://www.bls.gov/oes/oes_dl.htm

[69] FMI, "A Retailer's Guide to Electronic Payment Systems Costs," 1998.

[70] Weekly average supermarket sales in 2003 are available through the FMI available at http://www.fmi.org/facts_figs/?fuseaction=superfact. I compute this ratio separately for small and large QSRs.

[71] 2004 merchant discount of 2.08% is from VISA, "Driving Value and Innovation: Interchange in Action," Federal Reserve Bank of Chicago, May 2005. In 2004 VISA negotiated QSR specific interchange fees of 1.65% + 4 cents. See W. A. Lee, "How Cards Finally Won Reluctant McDonalds Over," American Banker Vol. 169 (59), March, 2004.

[72] See Wells Fargo Bank business account holder service fees in IL, WI, and MI https://www.wellsfargo.com/downloads/pdf/biz/accounts/fee_information/michigan_wisconsin_illinoi s.pdf. Cash deposit fees are $0.0012 per dollar deposited; this is the lower of the two fee schedules shown (p. 31 and p. 38).

[73] VisaNet report provided to TCF.

[74] See http://www.treasurydirect.gov/news/pressroom/currenteebondratespr.htm

[75] FMI survey data, "Loss Prevention," 2003, p.8

[76] Id.

[77] Id.

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this figure for QSRs, I multiply it by the ratio of representative QSR annual sales to supermarket annual sales.[78] Aggregate cash sales per store can be computed by multiplying 365 by the daily cash transaction volume and the cash transaction size, which yield around $485,853 per store for small QSRs and $1,421,020 for McDonalds. Adjusted per store losses to robbery are then divided by annual cash sales to compute the proportion of robbery losses per dollar of cash sales for small and large QSRs respectively. This fraction is then multiplied by the relevant transaction size to give robbery losses per transaction for both small and large QSRs.

Employee theft of cash and merchandise at supermarkets was estimated at 3.47 detected incidents per store in the FMI 2003 study.[79] An average of $450.49 was recovered in each incident (this amount included both cash and merchandise).[80] I assume, however, that QSRs incur only cash losses. In the FMI study it was estimated that 49% of store locations experienced cash theft; I apply this fraction to the recovery per incident to estimate the amount of cash recovered in each detected incident.[81] The FMI study notes that several undetected cases of employee theft occur for each detected case. I assume, conservatively, that there is only one undetected loss for all detected losses. Undetected losses are then given by the product of detected incidents per year, average recovery per incident, and share of cash locations with theft, which yields about $766 per year in employee theft. In order to adjust this figure for QSRs, I multiply it by the ratio of representative QSR annual sales to supermarket annual sales.[82] This amount is then divided by annual cash sales for small and large QSRs respectively to compute the proportion of employee theft losses per dollar of cash sales. This fraction is multiplied by the relevant transaction size to give employee theft losses per transaction for both small and large QSRs.

Loss prevention costs are also estimated from data in the FMI 2003 study. Expenses incurred in association with locksmiths and CCTVs are included within this category. In 2003, each supermarket incurred about $28,356 in loss prevention costs. I update these costs to 2009 levels using the BEA's PCE chain type price index for other goods and services.[83] In order to adjust this figure for QSRs, I multiply it by the ratio of representative QSR annual sales to supermarket annual sales.[84] This amount is divided by annual cash sales for small and large QSRs respectively in order to compute the proportion of loss prevention costs per dollar of cash sales. Finally, this fraction is multiplied by the relevant transaction size to give loss prevention costs per transaction for both small and large QSRs.

Because discount stores must protect against both cash theft and inventory shrinkage/theft, their loss prevention expenditures will be greater than those at QSRs.

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[78] Weekly average supermarket sales in 2003 are available through the FMI available at http://www.fmi.org/facts_figs/?fuseaction=superfact. I compute this ratio separately for small and large QSRs.
[79] FMI survey data, "Loss Prevention," 2003, p.8
[80] Id.
[81] Id.
[82] Weekly average supermarket sales in 2003 are available through the FMI available at http://www.fmi.org/facts_figs/?fuseaction=superfact. I compute this ratio separately for small and large QSRs.
[83] U.S. Department of Commerce, Bureau of Economic Analysis, Table 2.5.4 Price Indexes for Personal Consumption Expenditures by Function (A) available at http://www.bea.gov/national/nipaweb/SelectTable.asp.
[84] I Weekly average supermarket sales in 2003 are available through the FMI available at http://www.fmi.org/facts_figs/?fuseaction=superfact. I compute this ratio separately for small and large QSRs.

However, only those prevention measures aimed at stopping cash theft from the till (either by employees or robbers) is relevant for our purposes. For lack of data, I assume that 25% of loss prevention expenditures at discount stores are aimed at cash loss.

Other direct costs for cash transactions are assumed to include only armored car costs. For lack of better data, I assume that the supermarket industry presents a suitable proxy for QSRs. In an FMI 1997 study, it was estimated that armored cars used to transport deposits to the bank cost stores $2357 annually.[85] I update this figure to 2009 price levels using the BEA's PCE chain type price index for other goods and services.[86] The FMI data estimated 2.7 deposits prepared each day for each supermarket store. I assume that less cash is handled at QSRs and therefore only one cash deposit is made each day. I therefore divide estimated annual costs by 2.7 resulting in about $1273 in annual armored car costs. This amount is then divided by annual cash sales to compute the proportion of armored car costs per dollar of cash sales. Finally, the resulting fraction is multiplied by the relevant QSR transaction size.

4. Transaction benefits

According to the assumptions outlined above, ticket lift for QSRs varies from a lower bound of 5% to an upper bound of 20%. The ticket lift benefit per transaction is given by multiplying the profit margin earned by McDonalds (taken as a representative QSR) with the appropriate ticket lift in dollars. We assume a ticket lift of 10% at discount stores.

If we assume a ticket lift of 5%, the dollar difference between card and cash tickets is $6.19 - $5.90 = $0.29. McDonald's had a profit margin of 22.94 percent.[87] Therefore, the benefit provided by ticket lift is $0.29x0.2294 or about $0.07. A similar computation follows for an assumed ticket benefit of 20%. And an analogous calculation is made for discount stores.

We know that card transactions are about 5 seconds faster to process than cash transactions at QSRs.[88] Therefore, replacing a cash transaction with a card transaction frees up 5 seconds of service time. At peak periods, 70 transactions occur each hour per location, which corresponds to a rate of 51 seconds per transaction. 5 seconds of additional service time corresponds to a throughput increase of 0.1 transactions.

The benefits from throughput improvements of 5 seconds depend on whether the additional time is spent serving a card paying customer (probability of 34 percent) or a cash paying customer (probability of 66 percent). Throughput benefits also vary depending on whether ticket lift is assumed to be 5 percent or 20 percent. In general the expected value of throughput benefits is given by the equation below:

(0.10) x (0.66) x cash ticket x profit margin + (0.10) x (0.34) x card ticket x profit margin

If we assume a ticket lift of 5 percent, we use the upper bound cash ticket and the lower bound card ticket in the equation above. If we assume a ticket lift of 20 percent, we use the lower bound cash ticket and the upper bound card ticket in the equation above. In both cases, the expected value of the benefit is estimated to be $0.137.

[85] FMI survey data, "A Retailer's Guide to Electronic Payments Systems Costs," 1997, p.20
[86] U.S. Department of Commerce, Bureau of Economic Analysis, Table 2.5.4 Price Indexes for Personal Consumption Expenditures by Function (A) available at http://www.bea.gov/national/nipaweb/SelectTable.asp.
[87] See McDonald's Annual Report 2009, p.7. I calculate profit margins as operating income divided by total revenues.
[88] Lueng and Lieber, supra note 12.

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The benefits of throughput occur only during peak hours and not during slack periods. Ticket lift, however, occurs both during peak and slack periods. We must therefore weight the benefits accrued from ticket lift and throughput accordingly. Since 140 transactions on average occur during peak periods for regional QSRs, while the remaining 219 occur during non-peak periods,[89] the following formula estimates the weighted benefits derived from throughput improvements and ticket lift (lift and throughput benefits both vary depending on the ticket lift assumed):

(proportion of peak) x (lift benefit + throughput benefit) + (proportion of non-peak) x (lift benefit)

If we assume a ticket lift of 5 percent the cumulative weighted benefits are $0.121. If we assume a ticket lift of 20 percent, the cumulative weighted benefits are $0.311.

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[89] And I assume that the ratio of peak to non-peak sales is the same for larger, national QSRs as well.

EXHIBIT B

Report of Professor Kevin M. Murphy

February 15, 2011

Executive Summary

The Durbin Amendment and its proposed implementation by the Federal Reserve Board are based on a fundamental misunderstanding of how competition works in the debit industry. The debit system is not "broken" – it has proven to be an enormously successful payment method that has substantially displaced checks and cash for many types of transactions. Merchants derive substantial value from accepting debit, as debit's increased adoption in new merchant categories (such as fast-food restaurants) shows.

Debit networks generally impose transaction fees on merchants, not cardholders. This reflects the basic economics of two-sided platforms, and is not unique to debit or to well-established platforms. New two-sided platforms like OpenTable and Groupon have adopted the same pricing model – imposing fees on merchants and not on consumers. Merchant complaints about paying such fees are not evidence of an absence of competition, but rather reflect merchants' collective preference to limit competition for customers.

The Durbin Amendment and the FRB's proposal are an extreme form of price regulation. A vast body of economic literature has shown the harm to efficiency and consumers from price controls that limit price below the level that covers the relevant measure of economic cost, which is what the FRB has proposed. Critics fail to recognize that the price regulation intervention they propose will cause other adjustments which will harm merchants and consumers.

Proponents of debit regulation have not identified any market failure that justifies intervention, because there are none. They wrongly conclude, without appealing to any evidence, that cash and check customers subsidize debit users. In fact, the opposite is more likely to be true given the benefits that merchants obtain from their customers' use of debit. Critics identify no benefits from increased transparency of debit interchange fees, and indeed economics shows that transparency in merchant costs is not common in retailing and thus its absence does not suggest a lack of competition. And there is no evidence that smaller networks or competition among a larger number of debit networks would result in lower merchant fees, and indeed economic theory and available evidence show that this would not result.

The key economic principles to guide future consideration of the wisdom of the Durbin Amendment and the FRB's proposed implementation are whether there is a market failure to solve (and there is not), whether the proposed rule does more good than harm (it does not), and whether there is a likelihood of harmful unintended consequences (there is). Thus, the consequence of the current proposal likely will be substantial loss of efficiency and harm to consumers.

Table of Contents

I.   INTRODUCTION AND SUMMARY OF CONCLUSIONS

My name is Kevin M. Murphy. I am the George J. Stigler Distinguished Service Professor of Economics in the Booth School of Business and the Department of Economics at the University of Chicago, where I have taught since 1983. I earned a doctorate degree in economics from the University of Chicago in 1986. I received my bachelor's degree, also in economics, from the University of California, Los Angeles, in 1981.

At the University of Chicago, I teach economics in both the Booth School of Business and the Department of Economics. I teach graduate level courses in microeconomics, price theory, empirical labor economics, and the economics of public policy issues. I cover a wide range of topics in these courses, including the incentives that motivate firms and individuals, the operation of markets, and the impacts of regulation and the legal system. Most of my teaching focuses on two things: how to use the tools of economics to understand the behavior of individuals, firms and markets; and how to apply economic analysis to data. My focus in both research and teaching has been on integrating economic principles and empirical analysis.

I have authored or co-authored more than 65 articles in a variety of areas in economics. Those articles have been published in leading scholarly and professional journals, including the *American Economic Review*, *Journal of Law and Economics*, and the *Journal of Political Economy*.

I am a Fellow of the Econometric Society and a member of the American Academy of Arts and Sciences. In 1997, I was awarded the John Bates Clark Medal, which the American Economic Association awarded once every two years to an outstanding American economist under the age of forty.[1] In 2005, I was named a MacArthur Fellow, an award that provides a five-year fellowship to individuals who show exceptional merit and promise for continued and enhanced creative work.

In addition to my position at the University of Chicago, I am also a Principal at Navigant Economics (formerly Chicago Partners), a consulting firm that specializes in the application of

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[1] Although the John Bates Clark Medal was awarded biennially until 2009, it now is awarded annually. *See*, http://www.vanderbilt.edu/AEA/clark_medal.htm.

economics to law and regulatory matters. I have consulted on a variety of antitrust, intellectual property and other matters involving economic and legal issues such as mergers, class certification, damages, labor practices, joint ventures, and allegations of anticompetitive exclusionary conduct, tying, price fixing, and price discrimination. I have submitted testimony in Federal Court, to a committee of the U.S. Senate and to state and federal regulatory bodies, and I have submitted expert reports in numerous cases. Of particular relevance to the issues I address in this submission, I have written on the economics of two-sided markets, I have served as an expert witness in connection with litigation over merchant fees, and I submitted a report to the Federal Reserve Board on behalf of Bank of America in connection with its consideration of implementation of the Durbin Amendment.[2]

In this report, I explain that the Durbin Amendment[3] and its proposed implementation by the Federal Reserve Board[4] are based on a fundamental misunderstanding of how competition works in the debit industry.[5] The Amendment and proposed implementation fail to acknowledge the benefits that merchants receive from widespread adoption of debit and reflect a dangerous overestimation of benefits from imposing regulation and disregard for the adverse consequences to economic efficiency from doing so. My primary conclusion is that proponents of debit regulation have not identified any market failure that justifies intervention, because there are none. Instead, debit's critics adopt a merchant-centric view with blinders – limiting their focus to the amount of bank fees paid by merchants without understanding the competitive forces from which these fees arise and the corresponding benefits to merchants and consumers that would be lost if merchant debit fees were capped as proposed. Importantly, critics fail to recognize that the price regulation intervention they propose will cause other adjustments, many of which will harm merchants and consumers.

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[2] *Economic Analysis to Guide Interpretation of Provisions of the Dodd-Frank Act Regarding Regulation of Debit Interchange Fees, Submission of Professor Kevin M. Murphy on Behalf of Bank of America Corporation*, November 23, 2010.

[3] "Sec. 920. Reasonable Fees and Rules for Payment Card Transactions," Sec. 1075 (a)(2) of U.S. Congress. House. *Dodd-Frank Wall Street Reform and Consumer Protection Act*. H.R. 4173. 111th Cong., 2nd sess. (5 January 2010).

[4] "Regulation II, Debit Card Interchange Fees and Routing – Notice of proposed rulemaking" 12 CFR Part 235. Federal Register Vol. 75, No. 248. December 28, 2010 ("FRB Proposal").

[5] My submission has been prepared at the request of Timothy Kelly, outside counsel for TCF National Bank.

II. THE LEVEL OF DEBIT INTERCHANGE RATES IS NOT UNREASONABLE AND DOES NOT REFLECT AN ABSENCE OF COMPETITION OR "A MARKET THAT IS WORKING LESS THAN COMPETITIVELY"[6]

A. The Debit System is Not Broken – It is a Tremendously Successful Innovation in Payment Systems

It is highly unusual, indeed perhaps unprecedented, to focus regulatory scrutiny and intervention on a segment of the economy that all participants have voluntarily and enthusiastically embraced, and that has grown faster than and substantially displaced competing products or services. The enormous success, expansion and benefits of debit may be the one fact acknowledged and agreed upon by all parties that participated in the Federal Reserve Board's ("FRB's") deliberations that resulted in the proposed *Regulation II, Debit Card Interchange Fees and Routing* ("FRB Proposal") issued for public comment on December 16, 2010. In its request for comments on the Proposal, the FRB noted that, since the mid-1990s, checks and "most likely cash payments" have been replaced by other payment methods, that "[d]ebit card usage, in particular, has increased markedly during that same period," and that "[d]ebit card payments have grown more than any other form of electronic payment over the past decade..."[7] The FRB further noted that today "[d]ebit cards are accepted at about 8 million merchant locations in the United States"[8] and that "beginning in the early 1990s, signature debit networks also began creating separate pricing categories for merchants in certain market segments (*e.g.*, supermarkets and card-not-present transactions) to gain increased acceptance in those markets,"[9] an effort that clearly has succeeded. However, after acknowledging the enormous success of debit card systems, the FRB proposed rules to dramatically reduce interchange rates that will endanger that success.

A fundamental economic principle is that, absent rare circumstances, quantity or "output" provides the clearest and best indication whether economic actors are benefiting from supply of a product or service. The much-discussed "two-sided market" feature of debit cards does not change, indeed perhaps even strengthens, this fundamental economic fact – when customers find

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[6] Transcript of Fed Governors-Staff Colloquy, p. 14.

[7] FRB Proposal, p. 81723.

[8] FRB Proposal, p. 81723.

[9] FRB Proposal, p. 81724.

that a product or service provides value given its price, they demand more of it and its quantity increases. This economic principle applies to both sides of two-sided markets – the adoption and expansion of a product or service occurs only if customers on *both* sides of the platform find it in their interest to "purchase" more. And it is clear that both merchants and cardholders have, in effect, "voted with their feet" by adopting and using debit for more and more transactions.

Despite this incontrovertible evidence of a healthy and growing market for debit services, Congress adopted the Durbin Amendment ("Amendment") to the Dodd-Frank Act ("Act") without identifying any market failure to justify the imposition of price regulation in a highly successful marketplace. The FRB then worsened a bad situation by proposing an interpretation of the Amendment and the FRB's mandate under the Act that would dramatically shift how issuers finance their debit programs from fees paid by merchants to fees paid by cardholders and even (according to the FRB itself) to "other sources, besides interchange fees, from which [issuers] can receive revenue to help cover the costs of debit card operations."[10]

In other words, the FRB proposes to shift the fees that compensate issuers for the costs of operating their debit programs from the merchants that benefit from the availability of debit as an efficient payment method to issuers' unrelated businesses. This recommendation tramples on the fundamental economic principle that economic efficiency is achieved through appropriate price signals and is endangered when products and services are "taxed" to subsidize other operations.

One interpretation of the intent of the Amendment and the FRB's proposed rate regulation is that Congress and regulators view merchants as victims who are forced to pay for a system from which they do not benefit, and that the proposed regulations remedy this inefficiency by shifting how the debit system is financed to cardholders and other bank customers.[11] But this view is contrary to the evidence and to proper economic analysis. Merchants derive substantial value by accepting debit. This is evident from their actions –

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[10] FRB Proposal, p. 81736.

[11] This is consistent with the speech that Senator Durbin gave when he introduced the Amendment, in which he pointed to a complaint by one of his constituents – the CEO of Walgreens – about the size of its interchange fees. Of course, Senator Durbin made no effort to distinguish between fees associated with credit and debit, or to explain why, if these fees were so onerous, Walgreens did not stop accepting debit. I doubt the CEO of Walgreens would deny that he wants to receive the conveniences of debit cards – reduced cash losses, reduced cashier time, convenience to other customers, larger transaction size, etc. – but prefers to obtain these benefits without having to pay for them (or paying 80 percent less).

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merchants increasingly accept debit and have voluntarily moved away from other payment methods such as cash and checks. Further, as is evident from the experience of early adopters in new retailing segments (such as the quick-service restaurant segment), merchants derive substantial net benefits from accepting debit at *the prevailing level of debit fees.*[12] While some merchants in markets where the acceptance of debit is widespread might complain that they "must take" debit, this does not imply that those merchants do not receive equal or even greater benefits in exchange. The fact that merchants compete with other merchants by accepting debit cards is no different from the fact that those same merchants must compete on price, service and product quality. The fact that a competitor's lower prices or better service offsets much of the gain that a merchant otherwise receives by lowering its own prices and improving its service is a natural part of the competitive process, and not a rationale for regulatory intervention.

B. Consumers are Choosing Debit over Paper-Based Payment Methods

Consumers recognize that debit offers benefits when compared to checks and cash. A recent consumer survey, the Survey of Consumer Payment Choice ("SCPC"), found that:

> "...[m]ore consumers now have debit cards than credit cards (80.2 percent versus 78.3 percent), and consumers use debit cards more often than cash, credit cards or checks individually."[13]

> The move to debit cards occurred while "U.S. consumers have more payment instruments to choose from than ever before (nine)."[14]

> "More than half of U.S. consumers (51.6 percent) said they wrote fewer checks in 2008 than they did in 2005. In contrast...49.5 percent of consumers reported an increase in their use of debit cards..."[15]

> Non-adopters of ATM or debit cards have higher average cash holdings on their person ($141) and make larger average monthly withdrawals ($462) compared with adopters of ATM/debit ($68 and $313, respectively).[16]

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[12] *Assessing Retailers' Costs and Benefits from Accepting Debit Cards,* Dr. Anne Layne-Farrar, February 15, 2011 ("Layne-Farrar Report").

[13] Kevin Foster, Erik Meijer, Scott Schuh, and Michael A. Zabek, "The 2008 Survey of Consumer Payment Choice," Federal Reserve Bank of Boston Public Policy Discussion Papers, April 2010 ("Foster et al."), p. 2.

[14] Foster et al., p. 9.

[15] Foster et al., p. 10.

[16] Foster et al., pp. 22 and 23.

Another recent study found that "the share of all noncash payments (by consumers, businesses, and government) made using checks fell from 77% to 36% [from 1995 to 2006], while the shares of three other instruments increased, especially the shares of debit cards [from 2 to 27 percent] and Automated Clearing House (ACH)."[17] This study attributes 34 percent of the decline in check share to a "decrease in relative convenience of checks" and 11 percent to the "increase in relative cost of checks."[18] The study concluded that "[o]ne of the most common substitutions of payment use from checks to another payment instrument has occurred with debit cards... On average, most consumers view debit cards as having better timing than checks..."[19]

Another consumer study found that 88 percent of debit users reported "convenience" as a reason for using debit rather than other payment methods, while only 8.3 percent of non-users of debit reported "convenience" as a reason for using a payment method other than debit. The same study found that debit users who reported "a desire for Time and Convenience" viewed debit as a substitute for cash "and somewhat less strongly, for checks."[20]

Data from the Visa Payment Panel Study ("VPPS") also document the switch from checks to debit, and the increased adoption of electronic payment forms generally. One analyst of the VPPS data commented that "[p]articularly striking is the displacement of checks by debit cards."[21] The data showed that, between 2000 and 2008, "the [monthly] incidence of check use declined from 84 percent to 69 percent."[22] Ownership of debit cards increased from 60 percent in 1997 to 92 percent in 2008, with usage increasing from 17 to 60 percent over this period. "[I]n just a seven-year period, changes in American consumer payment preferences caused a

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[17] Schuh, Scott and Stavins, Joanna, "Why are (some) consumers (finally) writing fewer checks? The role of payment characteristics," *Journal of Banking & Finance,* Vol. 34 (2010) 1745-1758 ("Schuh and Stavins"), pp. 1745-1746.

[18] Schuh and Stavins, p. 1756. The measure of the relative convenience of checks was based on the share of consumers surveyed who reported that checks were convenient (declined from 50 percent in 2001 to 25.7 percent in 2005). *Id.*

[19] Schuh and Stavins, p. 1755.

[20] Ron Borzekowski, Elizabeth K. Kiser and Shaista Ahmed, "Consumers' Use of Debit Cards: Patterns, Preferences, and Price Response," *Journal of Money, Credit and Banking,* Vol. 40, No. 1 (February 2008) ("Borzekowski et al."), p. 158.

[21] Herbst-Murphy, Susan, "Trends and Preferences in Consumer Payments: Lessons from the Visa Payment Panel Study," Payment Cards Center Discussion Paper, May 2010 ("Herbst-Murphy"), p. 1..

[22] Herbst-Murphy, p. 3.

shift in transactions from only $1 of every $14 being made with a debit card to nearly $1 in every $5."[23]

C. Merchants Accept Debit because of the Benefits Debit Provides

Merchant acceptance of debit also has been growing, with debit increasingly accepted by merchants in new business segments (such as fast-food restaurants and in-flight airplane purchases) where transactions typically are small. A study of payment trends in thirteen countries concluded that "[o]ur empirical results suggest that the adoption of POS debit terminals by merchants was the key factor in the explosive growth in debit card usage. This suggests that both consumers and merchants generally prefer debit cards to other payment alternatives for certain types of transactions."[24]

Grocery stores, which typically have extremely low margins, were early adopters of debit cards. Studies have quantified the time and other cost savings to merchants when cardholders purchase using debit rather than checks. One study estimated the "ring time" to transact with debit at a grocery store was about 25 seconds less than with checks.[25] With a wage of $9.61 per hour and an average transaction size of $37, the savings to grocery merchants in labor costs alone would be roughly 0.2 percent of the purchase amount.[26] This is a conservative estimate of merchant benefits, since it does not consider other savings from faster checkout times (such as more efficient use of checkout facilities and spillover effects to other customers from more efficient checkout); nor does it include merchant savings from other features of debit, such as faster settlement, lower fraud losses, etc.

Another study based on a grocery chain's scanner data also found that it took less time to transact with debit than with credit cards, and substantially less (by 50 percent or more) than

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[23] Herbst-Murphy, p. 6.

[24] Gene Amromin and Sujit Chakravorti, *Debit Card and Cash Usage: A Cross-Country Analysis*, March 2007 ("Amromin and Chakravorti"), p. 28.

[25] Elizabeth Klee, "How people pay: Evidence from grocery store data," 55 *Journal of Monetary Economics* (2008) 526-541 ("Klee"), p. 533.

[26] $9.61 was the average hourly wage for grocery cashiers in May 2009 according to the Bureau of Labor Statistics. *See,* www.bls.gov/oes/2009/may/oes412011.htm. $37.00 is an average of Signature Debit and PIN Debit average purchase amounts. *See,* Daniel D. Garcia-Swartz, Robert W. Hahn, and Anne Layne-Farrar, "The Move Toward a Cashless Society: Calculating the Costs and Benefits," *Review of Network Economics* 5:2 (2006): 199-228, p. 201.

with checks.[27] It also took less time to give a shopper cash back with debit (0.26 seconds per dollar) than with checks (0.77 seconds per dollar).[28] Authorization and verification costs were lower with debit (9.4 seconds) than with credit (15.1 seconds) and checks (35.5 seconds).[29] From an economic standpoint, the early adoption of debit by grocery stores reflects the fact that grocers recognized that debit offered substantial functional advantages over checks, their traditional mainstay form of payment.[30]

It is possible to quantify some of the value to merchants of other functions provided by debit, but not by checks. In particular, merchants bear the overdraft or fraud risks as to checks, but banks take these risks as to debit. The cost to merchants to purchase a level of payment guarantee equal to that provided by debit for a check transaction is substantial. In many cases, the cost of purchasing check guarantee and verification are high enough that the merchant either declines to accept a check (and thus loses some potential sales) or assumes the risk of non-payment associated with check transactions. In cases where merchants purchase payment guarantee from third-party providers, the fees average about 0.92 basis points.[31]

Taken together, this evidence shows that merchants benefit substantially when consumers use debit rather than checks. Although both checks and debit transfer funds from a customer's demand deposit account to the merchant's account, debit cards are not "electronic checks."[32] The two payment methods do not provide the merchant with the same benefits (which is what is critically relevant from the point of view of evaluating the level of interchange rates).

D. By Choosing to Accept Debit, Merchants Demonstrate that the Value they Receive from Debit Exceeds the Bank Fees they Pay

The benefits realized by a merchant when consumers use debit rather than payment methods such as checks do not disappear once the merchant (and its competitors) transition to

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[27] Klee, p. 533.

[28] Klee, p. 533.

[29] Klee, p. 535.

[30] The growth of self- and automated checkout facilities is evidence of additional cost savings merchants achieve by reducing labor costs associated with checkout. The use of debit rather than checks facilitates the shift to self-checkout, with at least some of these gains attributable to the shift toward debit.

[31] *See,* "Check Authorization – 2009," Nilson Report #953 (July 2010).

[32] According to the Merchant Payment Coalition, it is a "Fact" that "debit cards are simply electronic versions of checks." (*See,* Merchants Payment Coalition Letter to Senator Crapo, December 20, 2010. ("MPC Letter to Senator Crapo")).

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accepting debit. Implicitly, merchants acknowledge this when they argue that they must accept debit or they will be at a competitive disadvantage. A merchant easily recognizes debit's advantages when it first introduces debit and can directly measure the associated benefits from reduced checkout times, increased ticket size, reduced losses from bad checks and increased customer satisfaction. Those gains then become part of the status-quo once the merchant and its competitors accept debit; as time goes by, even though debit provides all the same benefits as before, accepting debit becomes part of keeping up with the competition. The same is true of many competitive tools used by merchants, including price discounts, free parking, better service, or the provision of higher quality products – merchants may be unhappy about having to match competitive sales prices, amenities or superior quality, but the essence of competition is firms' efforts to gain an advantage over competitors, and competitors' responses to the challenge.

The complaints from merchants about current debit rates also reflect the different characteristics of debit's costs and benefits. The value received by merchants does not show up as a separate line item on the merchant's profit and loss statement; rather, it shows up in avoided costs and incremental benefits, such as reduced labor costs, reduced losses on bad checks and increased sales. In contrast, debit fees are directly measured and presented on each profit and loss statement.[33] As a result, merchants are likely to misperceive the debit value proposition once debit acceptance becomes part of the status-quo for the merchant and its competitors, recognizing its costs more clearly than its benefits.

Debit's continued adoption by a wider array of merchants demonstrates its benefits. Evidence summarized by Dr. Anne Layne-Farrar shows how debit's acceptance by quick-service restaurant ("QSR") chains grew from 2000 to 2005, as operators recognized the benefits of debit over cash for the typical small transactions that QSRs process, and restaurants found that the

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[33] Senator Durbin explained, as noted earlier, that he introduced his amendment after the CEO of Walgreens, a constituent, told him "that when they look at the expenses of this national chain of drugstores, the No. 1 expense is compensation of employees, personnel costs; No. 2, mortgage and rent payments; No. 3, health insurance; No. 4, interchange fees. It turns out the fees Walgreens pays to credit card companies is the fourth largest item of cost for their business." The problem with the perspective of the Walgreen's CEO is that he focused only on his bank-fee expense from accepting debit and credit cards, and not the benefits. *See,* Transcript to Senator Richard Durbin's "Interchange Amendment – Senate Floor Statements," May 5, 2010, p. 9.

average transaction size with debit was greater than with cash.[34] The benefits from accepting debit became clear to QSRs, and they voluntarily joined debit networks as a convenience to customers, a way of lowering their costs of processing transactions and in order to get customers to purchase more than they might if they were constrained by the amount of cash in their pockets.[35]

Merchant discount fees are an explicit cost of doing business, and thus an easy focus for merchant complaint. But the benefits provided by debit are like other benefits that merchants obtain by improving their service relative to their competitors. A merchant can reduce the number of sales clerks to reduce its labor costs, crowd merchandise into smaller floor space to lower its rent, lower the lighting and heat and reduce the amount of air-conditioning to lower its utility bills, reduce or eliminate advertising of the services it offers and make other adjustments in its operations to lower its costs. Still, the merchant chooses not to do so because such actions would make it less attractive relative to its competitors. Thus, many cost-saving measures are unprofitable when the merchant weighs the benefits against the cost in terms of lost customers and/or lost customer purchases. The same is true for debit.

At the same time, the merchant would welcome regulation that forced its competitors to take the same actions – reducing the number of sales clerks, crowding merchandise into less floor space or limiting their advertising – because then it would not be disadvantaged relative to the competition. For example, a law prohibiting advertising would benefit merchants; to a large extent, each merchant's advertising simply attracts customers that the merchant otherwise would lose when its competitors advertise.[36] But a prohibition on advertising, even if it were in the interest of competitors, would not be in the interest of consumers. Consumers are harmed by restrictions that prevent merchants from competing to please shoppers, even if such restrictions lower merchants' costs.[37]

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[34] Layne-Farrar Report.

[35] Layne-Farrar Report.

[36] *See e.g.,* Benham, Lee, "The Effect of Advertising on the Price of Eyeglasses," *Journal of Law and Economics,* Vol. 15, No. 2 (October 1972), pp. 337-752.

[37] For example, by proclaiming a national emergency in 1979 and regulating the temperature in non-residential buildings, President Carter eliminated the competitive disadvantage that would have been suffered by any firms that

In the same way, merchants would like government to regulate debit interchange rates, and thereby enable each merchant to obtain all the benefits from accepting debit without directly paying for them. The Amendment and the FRB's proposed debit interchange rules provide merchants with the advantage they seek, but the consequences would be harm to competition and to consumers.

E. Merchants' Reaction to OpenTable Fees Demonstrates the Same Merchant Bias to Avoid Paying for the Value they Receive

OpenTable – a relatively new internet provider of "real-time online restaurant reservations for diners and reservation and guest management solutions for restaurants" – is experiencing the same "lifecycle" reaction that debit cards face.[38] OpenTable, an intermediary that delivers customers to merchants, is an internet site that allows users to search for and make reservations at restaurants in cities throughout the world (and it offers a Dining Reward Program and an Affiliate Revenue Sharing Program for restaurants that link their own website to OpenTable's website).[39] Established in 1998, OpenTable currently has more than twenty thousand restaurant customers and has seated more than 200 million diners around the world.[40] The company had its initial public offering in May 2009, and now operates throughout the United States, Canada, Germany, Japan, Mexico and the United Kingdom.[41]

OpenTable acknowledges that, like debit cards and other intermediaries, it is a two-sided platform, with the ability to attract merchants dependent on the ability to attract diners.[42] To consumers, OpenTable "provides a fast, efficient way to find available tables that meet desired criteria for cuisine, price and location at a specified time." For "reservation-taking restaurants, OpenTable helps fill seats through the company's online booking service" and can help reduce

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unilaterally elected to lower their energy costs by making customers uncomfortable. *See,* "Energy Timeline from 1971 to 1980," U.S. Department of Energy. Available at www.energy.gov/about/timeline 1971-1980.htm.

[38] "About OpenTable." Available at www.opentable.com/info/aboutus.aspx.

[39] *See,* "Frequent Dining Has Its Rewards," OpenTable. Available at www.opentable.com/popups/rewardsbrief.aspx?ltms=1260485927018&ltzo=360 (accessed December 12, 2009). *See also,* www.opentable.com/info/affiliates.aspx.

[40] "About OpenTable." Available at www.opentable.com/info/aboutus.aspx.

[41] "Investor Relations" and "Investor FAQs." Available at investors.opentable.com/index.cfm.

[42] "Our strategy is simple: We grow the OpenTable network by adding restaurants and attracting more diners. The more restaurant selection we offer to diners, the more diners use the system. The more diners use the system, the more value we offer to restaurants." *See,* "OpenTable Corporate Presentation." Available at files.shareholder.com/downloads/ABEA-2TKK09/1013420981x0x393323/874d4f1c-9789-470e-8291-ddd314f29ecb/OpenTable%20Corporate%20Presentation%20August%202010%20FINAL.pdf.

costs by "replac[ing] pen- and-paper at the host stand" and "streamlin[ing] the reservation- and table-management process..."[43]
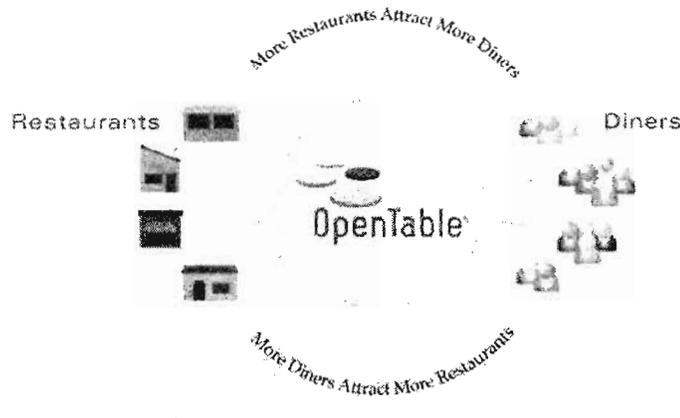
Source: OpenTable Corporate Presentation, p. 6.[44]

Diners pay nothing to use OpenTable. In exchange for a per-diner fee, restaurants that belong to OpenTable outsource part of their reservation handling and potentially obtain additional diners. Participating restaurants pay a fee for every diner who reserves through OpenTable, and not just for customers delivered by OpenTable who would not otherwise have dined at the restaurant. In 2009, OpenTable charged merchant fees of about $1.60 per seated diner, or 3.2 percent of the price of a $50 meal.[45]

By using OpenTable, consumers benefit from reduced costs of search and ease of making a reservation, while restaurants pay an intermediary to recruit and deliver diners in an effort to gain incremental business and to lower their costs to process reservations. Diners do not pay fees for a reservation, although clearly they benefit from OpenTable's convenience, including its ability to identify restaurants available at a particular time and to quickly book a table ("[t]he

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[43] "Investor Relations." Available at investors.opentable.com/index.cfm.
[44] "OpenTable Corporate Presentation." Available at files.shareholder.com/downloads/ABEA-2TKK09/1013420981x0x393323/874d4f1c-9789-470e-8291-
ddd314f29ecb/OpenTable%20Corporate%20Presentation%20August%202010%20FINAL.pdf.
[45] The average of $1.60 per diner is calculated by dividing OpenTable's 2009 Revenues ($68.6 million) by the number of seated diners (42.7 million). *See,* OpenTable 2009 Annual Report at p. 31. OpenTable reported a $50 average ticket size in an article in May 2010. *See also,* Schonfeld, Erick, "OpenTable's $150 Million Mobile App (And Q1 Earnings)," TechCrunch, May 4, 2010. Available at techcrunch.com/2010/05/04/opentables-150-million-mobile/.

convenience of seeing great restaurant choices in one place, with table availability organized by time, is palpable").[46] Diners sometimes receive rewards for using OpenTable financed from the fees that restaurants pay, including earning points "redeemable for OpenTable Dining Cheques which can be used at any OpenTable restaurant."[47]

When OpenTable was introduced, its adoption clearly was voluntary – a restaurant would choose to join the program if it viewed the reduction in the cost of taking reservations and the additional customers delivered as worth the expense (including the initial enrollment fee and the ongoing monthly cost, as well as the per-diner fee). OpenTable has been tremendously successful, and many restaurants (estimated at one third of U.S. restaurants that accept reservations[48]) found the fee worth paying.

However, the same phenomenon that occurred as debit's adoption became ubiquitous now is occurring with OpenTable – restaurants feel that they are forced to continue to purchase the service because they will suffer if they do not, given that their competitors offer the convenience to their customers. According to a headline in the New York Times, OpenTable provides the "Online Reservations that Restaurants Love to Hate," and the article notes that "[w]hat perhaps most rankles restaurateurs is the reservation fee: $1 per patron," a fee unchanged since restaurants voluntarily elected to sign up for the program.[49]

In the language of debit's critics, the OpenTable system is "broken"[50] – merchants are forced to pay an average of $1.60 for each diner that books through OpenTable,[51] and they prefer to pay less and have the diner book directly. However, the absurdity of expecting Congress to intervene is obvious. Although the ubiquity and popularity of OpenTable may mean that restaurants as a whole now would be better off if regulatory intervention prevented them from "competing" by signing up for the service, competition and consumers would be harmed. The reason why individual restaurants continue to pay $1.60 for OpenTable customers is the essence

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[46] Stross, Randall, "The Online Reservations that Restaurants Love to Hate," New York Times, December 12, 2010.
[47] "Frequent Dining Has Its Rewards!" Available at www.Opentable.com/info/diningrewards.aspx.
[48] Stross, Randall, "The Online Reservations that Restaurants Love to Hate," New York Times, December 12, 2010.
[49] Stross, Randall, "The Online Reservations that Restaurants Love to Hate," New York Times, December 12, 2010.
[50] MPC Letter to Senator Crapo.
[51] As described above, this calculation is based on OpenTable's total revenues and therefore includes the setup, monthly and per-diner fees outlined elsewhere.

of competition, even though OpenTable's "authorization, clearance and settlement" ("ACS") costs (the costs that the FRB concluded determine the proposed regulated interchange rate) likely are substantially lower and OpenTable does not have market power in any meaningful sense.

The history of OpenTable illustrates the economic flaws in the logic of the Durbin Amendment and the danger of the FRB's proposal for dramatically reducing debit interchange rates and shifting the banks' costs of operating the debit programs to cardholders and other bank customers. First, there is no evidence that the competitive outcome in a debit network is to impose fees on consumers rather than merchants. OpenTable decided to impose the cost of operating the platform on merchants rather than consumers, just as debit networks did. Given that this model – where the merchants that benefit from the payment and/or transactions method incur the costs to finance the program – is selected in a competitive marketplace, there is no logic to merchants' claims that the debit system is "broken" because the debit network imposes a fee on the merchants that benefit. That is how these networks work.

Second, there is no relationship in a competitive two-sided market between the fee charged to a merchant and the marginal per-transaction cost of processing a transaction. From its inception, OpenTable's pricing involved a one-time $600-700 setup fee, a monthly fee of $199 plus add-ons (currently averaging $270 per month), and a per-diner fee of $1.[52] Thus, the FRB's proposal to force down the debit interchange fee to a level that covers only a small fraction of issuers' true incremental cost is inconsistent with how competitive markets operate. It creates, rather than repairs, a market distortion and failure.

Third, merchants are not adept at recognizing the value they receive from a service once they are accustomed to the benefits. Restaurants were quick to sign up for OpenTable, which after only 12 years now services about one third of U.S. restaurants that take reservations.[53] Each restaurant recognized the benefit of joining the program – the convenience and incremental

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[52] Although OpenTable's original fees were slightly different, its fee structure has remained largely the same (an article from 1999 lists charges of between $500 and $1000 for setup plus a $100 to $200 per month fee as well as the $1 per reservation fee). *See,* "OpenTable Corporate Presentation," p. 12. Available at files.shareholder.com/downloads/ABEA-2TKK09/1013420981x0x393323/874d4f1c-9789-470e-8291-ddd314f29ecb/OpenTable%20Corporate%20Presentation%20August%202010%20FINAL.pdf and Copage, Eric V., "Tables Are Waiting On the Internet" *The New York Times*, November 24, 1999.

[53] Stross, Randall, "The Online Reservations that Restaurants Love to Hate," New York Times, December 12, 2010.

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sales, and the improvement in its competitive position. Once accustomed to those benefits, some restaurants began to question whether they receive sufficient value, and wished that they were not "forced" to continue to participate. However, it was not OpenTable that "forced" them to participate; it was competition – the same motivation that "forces" restaurants to charge lower prices than they otherwise would want and to provide other costly services to their customers.

A recent article quoted the view that restaurants "retained [OpenTable] because they feared that customers would revolt and stop coming to their establishments" if they dropped it,[54] presumably the same reason that those restaurants offer clean table cloths, well-trained servers, high quality food, etc. This illustrates the pressure that competition places on merchants – forcing them to incur marketing and other costs to remain competitive. It is misguided to interpret these kinds of complaints (such as the representation by Senator Durbin that it is in the interest of economic efficiency to use regulation to lower the interchange fees that Walgreens' pays) as evidence that there is a need for intervention in the operation of a tremendously successful service.

F. Merchants Voluntarily Pay to Participate in Customer Acquisition Networks Because They Receive Value in Return, Just as They do from Accepting Debit

"Group buying" programs – such as Groupon, LivingSocial, Dealster, and YouSwoop – are examples of competitive two-sided markets where merchants pay fees to participate in a network that delivers customers (who pay no explicit fee).[55] These sites typically charge merchants a per-transaction fee calculated as a portion (10-50 percent) of the coupon value. The sites generally operate by working with the merchant to develop a significantly discounted offering (say, $20 worth of goods for $10), which the site offers to its network of customers.

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[54] "Is OpenTable Bad for Restaurants," *Inc.* November 18, 2010.

[55] The competitive nature of the daily deal services is readily apparent. The technology is simple and the startup costs are low. In March 2010, Groupon's CEO estimated that there are between 100 and 150 "Groupon clones" around the world. (*See,* Coburn, Lawrence, "Groupon CEO Andrew Mason Talks Growth, Clones, and why Groupon isn't a Coupon Site," The Next Web, March 24, 2010. Available at thenextweb.com/location/2010/03/24/groupon-ceo-andrew-mason-talks-growth-clones-groupon-coupon-site/). If competition favored a different way of financing such services, such as by imposing fees on consumers and none on merchants, then another business model would have succeeded. The efficiency of the pricing model adopted by Groupon (charging fees to merchants and none to consumers) is confirmed both by Groupon's own success as well as by the fact that the same fee structure has been adopted by the large number of firms that have challenged Groupon. *See e.g.,* Overly, Steven, "LivingSocial deals draw mixed merchant reactions," The Washington Post, December 6, 2010.

When a customer purchases the offer or "coupon," the site retains a portion of the price paid by the customer (say, 50 percent), and delivers the remainder (say, 50 percent) to the merchant.

One of the best-known and most successful group-buying sites is Groupon, which initially was established in Chicago and Boston in 2008 and by March 2010 had expanded to 50 cities and three million subscribers. Today, Groupon covers more than 300 markets in 35 countries, and has over 27 million subscribers.[56] Groupon's highly successful business model – adopted when it was established and still used today – is to impose all fees on merchants, and none on consumers. In this way, Groupon balances demand from the two sides of the platform in a way that expands the size and value of the network.

Groupon retains approximately 30-50 percent of the revenue from the "Groupons" it sells, remitting the rest to merchant partners.[57] Combined with the fact that Groupons typically sell at a discount from the retail price, this means that the net amount earned by the merchant can be substantially less than the full retail price.

Many merchants have chosen to join Groupon and other "group-buying" programs, despite what might seem to be a substantial cost for the service.[58] Groupon not only imposes no fees on consumers, but it even provides "referral rewards" if a customer refers someone to Groupon who makes a purchase within 72 hours of when he or she clicks on the referral link (a type of incentive to expand the consumer side of the platform similar to payment card rewards).[59]

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[56] www.groupon.com/about; Coburn, Lawrence, "Groupon CEO Andrew Mason Talks Growth, Clones, and why Groupon isn't a Coupon Site," The Next Web, March 24, 2010. Available at thenextweb.com/location/2010/03/24/groupon-ceo-andrew-mason-talks-growth-clones-groupon-coupon-site/; www.grouponworks.com/.

[57] See, "Game on with Groupon" December 3, 2009, available: smokejumperstrategy.com/archive/game-on-with-groupon/; Coburn, Lawrence, "Groupon CEO Andrew Mason Talks Growth, Clones, and why Groupon isn't a Coupon Site," The Next Web, March 24, 2010. Available at thenextweb.com/location/2010/03/24/groupon-ceo-andrew-mason-talks-growth-clones-groupon-coupon-site/.

[58] Merchants receive many benefits from participating in Groupon, including targeted email advertising sent to the Groupon subscriber base that provides valuable exposure to the local customer base even if no customers purchase the deal. Once consumers purchase the deal, merchants also gain from any incremental spend over the face value of the Groupon and from repeat business generated by the new customers. Groupon also claims that it provides a type of city guide to the consumers. See, Coburn, Lawrence, "Groupon CEO Andrew Mason Talks Growth, Clones, and why Groupon isn't a Coupon Site," The Next Web, March 24, 2010. Available at thenextweb.com/location/2010/03/24/groupon-ceo-andrew-mason-talks-growth-clones-groupon-coupon-site/.

[59] Other sites, such as LivingSocial.com provide similar consumer side expansion incentives. A consumer who refers three purchasers of the deal receives his deal for free. See, livingsocial.com/deals/how_it_works; and www.groupon.com/faq.

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Groupon's fee structure (charging merchants but not consumers), which is the same as observed for debit networks, reflects the value that merchants obtain from freely joining the system (Groupon claims to have over 100 merchants in a queue waiting to become the daily deal[60]). Thus, the competitive industry of group buying programs has adopted the same pricing model as we observe for debit card networks. The incentive to support the network through fees on merchants, not consumers, is not evidence of market failure or absence of competition, but rather the competitive outcome in many two-sided markets.

III. PRICE CONTROLS, LIKE THOSE PROPOSED BY THE FRB, ARE AN INEFFICIENT AND HARMFUL WAY TO CONTROL DEBIT INTERCHANGE RATES, EVEN IF (CONTRARY TO THE EVIDENCE) THE DEBIT INTERCHANGE SYSTEM WAS FLAWED

A. The Economic Framework

Contrary to critics' claims that debit cards are just electronic checks,[61] debit cards represent a payment method innovation with substantial advantages to merchants and consumers over alternatives such as checks and cash. The rapid worldwide growth in debit demonstrates debit's advantages relative to paper-based payment methods. According to one study, "[t]he increase in debit card transactions [in 13 countries studied] suggests that the net benefits of using debit cards have increased vis-à-vis other payment instruments for consumers and merchants..."[62]

In an unregulated market, when a new product presents advantages over the current method, those advantages ensure growth and the displacement of less efficient alternatives. This occurs when firms have incentives to supply those efficient products to the market and consumers face incentives to shift their purchases to those new products. The efficiency gain from a new product provides the incentive to do so; to the extent that the new product costs less

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[60] Coburn, Lawrence, "Groupon CEO Andrew Mason Talks Growth, Clones, and why Groupon isn't a Coupon Site," The Next Web, March 24, 2010. Available at thenextweb.com/location/2010/03/24/groupon-ceo-andrew-mason-talks-growth-clones-groupon-coupon-site/.

[61] For example, the Merchants Payments Coalition ("MPC") claims that "[d]ebit cards are simply electronic versions of checks and were introduced to save the banks money on processing paper check transactions." *See,* MPC Letter to Senator Crapo.

[62] The authors found that, between 1988 and 2003, "debit card usage grew rapidly" and "check usage continues to decrease in most countries and has disappeared in many countries" studied. *See,* Amromin and Chakravorti, pp. 4-5.

to produce than the old one, suppliers have an incentive to shift to producing the new product; to the extent that the new product is more valuable to customers, customers have an incentive to buy it instead of the older products. Prices provide the mechanism by which both sides are induced to switch to the superior technology. By equating market supply and demand, competitive pricing tends to maximize market output and efficiency by splitting the gains between the parties efficiently.[63]

This mechanism is impaired when prices are controlled by regulators, rather than the market. The FRB views its mandate under the Durbin Amendment to be to impose price controls on debit interchange fees, and it has set for public comment rate levels that would reduce interchange revenues for issuers by about 80 percent.[64] Economic analysis of price controls has been done mostly in the context of "one-sided" markets, but the same basic principles extend to understanding the impact of price controls in two-sided markets such as debit systems. The economic evidence is clear – *price controls create inefficiencies that harm consumers.*

When prices are controlled, the price signals needed to achieve efficiency are absent. If the benefits on the consumer side are reduced, consumers have less incentive to switch to new and better products, which limits growth of the more efficient alternative. Similarly, if surplus on the producer side is reduced, suppliers have less incentive to switch, which also limits growth of the more efficient alternative. Output is limited by the minimum of supply and demand (*i.e.*, consumers cannot purchase more than suppliers supply and suppliers cannot sell more than consumers demand). This same logic extends to two-sided markets, where the roles of suppliers and demanders are played by the two sides of the market (in this case merchants on one side and issuers/cardholders on the other).

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[63] Prices above the competitive level would give consumers enhanced incentives to switch, but would reduce the amount suppliers would be willing to supply and thus would reduce overall output. Similarly, prices below the competitive level would enhance the incentives of suppliers to switch, but would limit output by reducing the incentives of buyers to do so.

[64] The FRB Proposal states that rates shall be no more than seven cents per transaction or a cost-based rate up to twelve cents. TCF's average debit interchange rate was 47 cents per transaction; therefore, the midpoint of the seven and twelve cent caps (9.5 cents) would imply an 80 percent reduction in TCF's interchange rate (= (47-9.5)/47). *See,* FRB Proposal, p. 81755 and Exhibit A to the Declaration of Anne Layne-Farrar in the matter of TCF National Bank v. Bernake et. al., ¶4.

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The United States has considerable experience with the harmful effects of price controls that limit price below the level that covers the relevant measure of economic cost. Examples include retail and wholesale price controls on gasoline,[65] rent controls[66] and limits on payments to providers under Medicaid.[67] Economic literature shows that the adverse impact of below-cost price caps manifests in two ways: lower output and reduced quality of products and services.

The demand for price controls typically originates with buyers, who focus on how they will benefit from forced reductions in "price," as if this can be accomplished without affecting supply. Not surprisingly, buyers prefer to pay less for a given volume and quality of purchases. However, in both perfectly competitive and imperfectly competitive markets, price and supply cannot be separated in this way. A forced reduction in price increases demand, while it lowers incentives for suppliers to satisfy demand.

For this reason, price controls can harm even the parties they were intended to help. The impact on buyers may be uneven, as they historically are with rent controls. Those lucky enough to have a rent-controlled apartment may benefit in the short term, while those who are trying to rent an apartment and are willing to pay the "market" price find no supply available. The market may "clear" at the controlled price, but a lower quality product or service generally develops, so that suppliers can satisfy demand for the lower-cost, lower-quality product that they can supply profitably at that price.

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[65] *See e.g.,* Hans H. Helbling and James E. Turley, "Oil Price Controls: A Counterproductive Effort," Federal Reserve Bank of St. Louis (1975), p. 3 ("domestic producers are discouraged from producing [] oil, insofar as the implicit rate of return of keeping oil in the ground exceeds that of investing the proceeds from the current sale of oil at $5.25 per barrel [the maximum price]").

[66] *See e.g.,* Edward L. Glaeser and Erzo F. P. Luttmer, "The Misallocation of Housing under Rent Control," 93 *The American Economic Review* (2003), pp. 1027-1046 ("in many cases products under price controls will be allocated somewhat (or completely) randomly to everyone who wants them. Furthermore, binding price controls attract new renters who would not be interested in renting at market prices. As such, rent control means that some renters, who would greatly value an apartment, are shut out while others, who never would have rented an apartment under free-market rates, obtain rental apartments").

[67] *See e.g.,* David C. Grabowski, "A Longitudinal Study of Medicaid Payment, Private-Pay Price and Nursing Home Quality," 4 *International Journal of Health Care Finance and Economics* (2004), pp. 5-26, p. 23 ("the estimated Medicaid payment-quality elasticities were fairly sizeable for the health care sector and indicate that the Medicaid rate may indeed be an important policy instrument towards addressing the quality of nursing home care"); Mark Duggan and Fiona M. Scott Morton, "The Distortionary Effects of Government Procurement: Evidence from Medicaid Prescription Drug Purchasing," 121 *The Quarterly Journal of Economics* (2006), pp. 1-30, p. 4 ("our results strongly suggest that Medicaid coverage of prescription drugs has increased the price paid by other health care consumers for these same treatments").

The same economic principles apply, but with additional complexity, in the case of two-sided markets such as debit. In two-sided markets, producers set two "prices," one for each side of the market, although the relevant price when analyzing competitive effects is the combined or "total price" of a transaction. In such markets, a regulated "price" to one side of the market (here, the interchange fee charged to acquirers, which thereby affects the merchant discount fee charged by acquirers to merchants) has an impact on pricing to the other side of the market (the cost to cardholders to obtain and use a debit card). If lowering the "price" to acquirers results in higher prices to cardholders for using debit, then debit becomes less attractive and will be used less by consumers.[68]

Consumers of course are harmed directly by the higher "prices" they face, but merchants and overall efficiency can be harmed as well if consumers shift to other payment mechanisms that are less efficient from the point of view of the merchant or less efficient generally. Because debit provides benefits to merchants compared with alternative payment methods, reduced usage of debit will harm merchants and overall economic efficiency.

The growing provision of rewards, which have been common for credit cards for many years, to debit cardholders suggests how interchange rate regulation that limits interchange to a level that compensates issuers for only a portion of the cost of processing an additional transaction would result in less attractive debit products offered to cardholders. The revenue earned through interchange provides issuers with the incentive to induce consumers to use debit rather than alternative payment mechanisms such as checks. Debit rewards provide a mechanism for issuers to do so in addition to the incentives provided by reduced cardholder fees. Limiting the interchange fee will mean that issuers' costs to provide benefits to cardholders and merchants will be financed in other ways, in particular, through increased prices charged to cardholders for use of debit cards (by imposing explicit fees and/or reducing rewards and other benefits and by reducing service quality).[69] Although increasing the direct costs to cardholders for using debit

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[68] When I discuss the potential for regulation to reduce debit use if the Board fails to consider how interchange rates motivate cardholder adoption and use of debit, I am not claiming that debit use will necessarily decline absolutely, but rather that growth in debit use will slow relative to growth if interchange rates were unregulated or a higher proportionality factor were selected.
[69] Some issuers will be more successful than others in raising other fees to compensate for lost revenue. In particular, banks that complete largely with small local banks that qualify for the $10 billion exemption may be

might not seem to be harmful from the perspective of an individual merchant, slowing or reversing the movement by consumers toward use of debit could harm merchants by causing consumers to shift to payment methods that are more costly for merchants.

B. Cardholders Respond to Debit Fees and Rewards

The quantitative impact of price controls depends on the elasticity of response on the constrained side of the market (the elasticity of supply in the case of a price ceiling). In order to understand the likely impact of the FRB's Proposal, it is necessary to evaluate the response of issuers and cardholders to the lower revenues received (issuers) and higher fees paid (cardholders).

Given the benefits of debit compared with checks, it is helpful to understand how debit has been "priced" to consumers. Debit cards are linked to a cardholder's Demand Deposit Account ("DDA"). In general, debit cards are provided to cardholders without an incremental annual fee or any explicit cost of use, even though issuers incur costs to attract and service users of debit cards. Under the FRB's Proposal, interchange rates would be limited to a level that does not compensate issuers for any of their activities to recruit cardholders and encourage debit use (the level of fees does not even cover the narrow costs associated with an individual transaction).[70]

Consequently, issuers either will reduce those efforts, and thereby cause a reduction in debit use, or increase fees to consumers, to the extent possible, in order to finance those efforts, and thereby also reduce the usage of debit by reducing its attractiveness to consumers. As a matter of economic theory, this impact will be larger (a) the greater the elasticity of cardholder

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constrained from raising other fees to consumers. This constraint does not change the fact that the Amendment and reduction in debit interchange will generate substantial harm and reduce the use of debit to the detriment of consumers and overall efficiency.

[70] The FRB staff noted, "We also looked at whether we should have a more expansive definition of allowable costs that would go beyond authorization, clearing and settlement, and look at other costs that are specific to a transaction. Those are costs that the act is silent on on (sic) whether we can take into consideration or not. So things like the costs associated with rewards programs or if issuing banks — you know, the costs that they incur to handle card holder inquiries about particular transactions. But again, those are costs that if they were to have been incurred in the check context, the bank would not be able to get reimbursement of those costs from the payee's bank, so because of that we did not put them into the bucket of costs that would be considered in determining what the maximum interchange fee initially would be allowed to have. So that's really how we took that comparison with check into consideration." *See,* Transcript of Fed Governors-Staff Colloquy, p. 12.

demand for debit and (b) the greater the pass-through of interchange to cardholders through rewards and other benefits.

Empirical literature on the responsiveness of consumers' use of debit to the cost of use of such cards is limited, but one study found:

> ...a substantial price response for debit card use. Consumers respond strongly to fees charged for so-called PIN (personal identification number) debit transactions by using a signature rather than a PIN to secure transactions; however, the fee also reduces the likelihood that the consumer uses a debit card at all. On average, a 1.8% fee on a debit card transaction (nearly all of which are charged only on PIN transactions) is associated with a 12% decline in the likelihood of use. We believe this to be a conservative estimate of the response to payment price at the point of sale.[71]

Another study, using the same dataset, found that, in a hypothetical situation where a merchant decides not to accept debit, consumers select paper-based payment methods instead. The authors conclude that:

> ...dropping debit or checks shows little gain or a slight loss. These merchant incentives do not appear socially optimal, since dropping credit or debit card payments causes market share to shift away from electronic payments and toward paper-based payments, which may be more costly to society.[72]

Analysis has found that consumer choice between debit and alternative payment mechanisms of checks and credit cards is affected by the "price" (benefits) to consumers of the alternatives. A recent study found that the probability of using debit likely would decline if debit rewards were eliminated. The study evaluated the impact for two different sets of such consumers: "consumers who receive rewards on debit cards only [and] consumers who receive rewards on both credit and debit cards."[73] It found that "[a]t all types of stores except fast food, both groups of consumers would reduce their probability of choosing debit cards if rewards on debit cards were removed... [with reductions ranging from] 2.1 to 6 percentage points for consumers with DC [debit card] rewards only, and from 3.4 to 7.5 percentage points for

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[71] Borzekowski et al., p. 151.

[72] Ron Borzekowski and Elizabeth K. Kiser, "The choice at the checkout: Quantifying demand across payment instruments," *International Journal of Industrial Organization* 26 (2008) 889-902, p. 891.

[73] Andrew T. Ching and Fumiko Hayashi, "Payment card rewards programs and consumer payment choice," 34 *Journal of Banking & Finance* 34 (2010), 1773-1787 ("Ching and Hayashi"), p. 1783.

consumers with CC&DC [credit card and debit card] rewards" (or by about 10 percent on average, given the initial probability of using debit).[74]

C. The Level of Interchange Provides Incentives for Consumers and Merchants to Use Debit

The value of the payment guarantee from banks to merchants when debit cards are used provides a good example of the general importance of the functional differences between payment by debit and check. Assume (counterfactually) that this payment guarantee is the only difference between debit and checks. For most transactions, the payment guarantee is included as part of the debit transaction, while merchants must pay separately for that service for checks. If it costs issuers less to provide a payment guarantee as part of the debit transaction than it costs merchants to purchase a payment guarantee themselves, then all else equal (as I have assumed here) there will be an efficiency gain from shifting from checks to debit.

However, the transaction will shift to debit only if the issuer and cardholder jointly find it cheaper for themselves, ignoring the benefits to the merchant. If the merchant expects to save 50 basis points ("bps") on the transaction from the shift to debit (due to the provision of payment guarantee) but the net cost to the issuer (who absorbs some of the cost of the payment guarantee) and cardholder is 30 bps, then the transaction will be done by check even though there is a net 20 bps gain from shifting to debit. If the interchange fee is set so that the price of debit reflects the 50 bps value to the merchant, then the transaction will shift to debit if the costs to the issuer and consumer are less than 50 bps or, equivalently, when overall costs are reduced by shifting the transaction to debit.

This example illustrates why forcing debit users to pay for the benefits debit provides to merchants (as the FRB's proposed rules would do) would reduce efficiency and harm consumers and could harm merchants in the end. When consumers bear the cost but merchants receive the benefits, consumers will shift their payment choices to alternative payment methods such as cash, checks and credit. This hurts consumers directly, because they must pay more to use debit or switch to less desirable alternatives. Merchants will be harmed as well to the extent that

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[74] Ching and Hayashi, p. 1784.

consumers switch to payment methods that are more costly for merchants, such as checks or credit cards.

In contrast, when the fees charged to merchants more correctly reflect the value that they receive, the value to the merchant is reflected (through interchange) in the price paid by consumers and consumer payment choice will correctly reflect that value.

IV.   EVEN IF DEBIT INTERCHANGE RATES HAD BEEN INCREASING, THERE IS NO NEED FOR THE "KIND OF REGULATORY INTERVENTION IN WHICH A REGULATOR HAS TO INTERVENE IN A MARKET [TO] BETTER ALIGN PRICING WITH COSTS."[75]

In the discussion leading up to its unanimous vote to issue the Proposal for public comment, one of the FRB's Governors commented that "I think what we've heard in other comments around the table is this kind of regulatory intervention in which a regulator has to intervene in a market with [sic] better align pricing with costs, is unusual. In my mind the directive for this kind of intervention results from a market that is working less than competitively."[76] However, there is no evidence that the "market" for debit cards is not competitive.

A proper understanding of the economics of interchange fee determination in a competitive market shows that we observe exactly what is expected from competition – that the network sets interchange rates to balance the two sides of the platform. Competition also implies that reductions in network costs will lower the overall price of debit (to cardholders and merchants combined) but can lead to higher, rather than lower, interchange rates. However, even when interchange rates increase, the corresponding reduction in the costs to cardholders expands the use of debit by more than if interchange rates were forced down or prevented from rising. The increase in the interchange rate is the mechanism by which a competitive market induces consumers and merchants to expand the use of debit, enabling the market to take maximum advantage of the reduction in cost.

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[75] Transcript of Fed Governors-Staff Colloquy, p. 14.
[76] *See,* Governor Raskin's comments (Transcript of Fed Governors-Staff Colloquy, p. 14).

A. Balancing in a Two-Sided Market

In a two-sided market, such as debit cards, competition determines the full price of providing network services – the total price charged to participants on both sides of the platform (merchants and cardholders). Competition between payment card networks, and between payment cards and other payment methods, encourages efficiency, which can drive down the *total* costs to operate the network. But the network's choice whether to charge those costs to merchants or cardholders depends on how alternative ways of dividing the cost of financing the system between the two sides of the market affect total demand for the network. As the U.S. Government Accountability Office ("GAO") noted in its recent report on credit cards:

> …card networks use interchange fees as a way to balance demand from both consumers (who want to use cards to pay for goods) and merchants (who accept cards as payment for goods). As with newspapers, the costs to both sides of the card market are not borne equally. To attract a sufficient number of consumers to use their cards, card networks compete to attract financial institutions to issue them, and institutions in turn compete to find additional cardholders. Just as readers have a variety of sources from which they can receive their news, consumers also have a number of different methods (such as cash, check, or credit card) by which they can pay for a good or service. Because of the choices consumers have available, card networks and issuers want to minimize the costs for consumers to carry their cards to encourage greater acceptance and use. In contrast, merchants have less choice about card costs, particularly once a large number of consumers are using a particular network's cards. Whereas a consumer may not pay any fee or charge for using a card, card networks charge merchants for accepting cards through interchange and other network fees. Consumers' payment choices, such as using rewards cards with higher interchange fees, also affect merchants' costs for card acceptance. As a result, some academic researchers have argued that card networks can keep attracting cardholders by offering them increasingly attractive terms while increasing costs to merchants, whose ability to refuse to accept cards is more limited.[77]

The network's ability to expand use of a payment system by charging more to the side of the platform that has the least elastic demand (*i.e.*, the side that can pay for financing the service with the least impact on network output) is a sign of efficiency, and does not reflect lack of competition.

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[77] "Credit Cards – Rising Interchange Fees Have Increased Costs for Merchants, but Options for Reducing Fees Pose Challenges," United States Government Accountability Office Report to Congressional Addressees, November 2009, p. 19.

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The balancing by payment card networks in setting interchange fees was explained recently in a submission by a delegation of the United States to the OECD Competition Committee (found on the Federal Trade Commission website). The report noted that:

> A feature of many two-sided markets is a highly skewed pricing structure. That is, one group of customers pays a high price to use the platform, while the other group pays a very low or even negative price...In credit card systems, the transactional services (those services associated with the physical process of making a payment, as distinct from the supply of credit) are sometimes provided to cardholders for free. For credit cards that carry reward programs, the cost of the transactional services is subsidized by the rewards so that the effective price to a cardholder for using the card is negative. Merchants, on the other side of the market, however, often pay substantial fees for credit card transactions.[78]

The Submission explained that, "[i]n a two-sided market...a highly skewed pricing structure may be efficient...A basic feature of payment networks is that it may be efficient for price to be below marginal cost on one side of the market...and above marginal cost on the other side of the market."[79]

The services provided by payment cards to merchants and cardholders have the key characteristic of joint products – one cannot be provided without the other. The cardholder and merchant services provided by payment cards are created and consumed in strict proportion, because there is a single transaction with two participants – a cardholder that uses the network to remit payment and a merchant that uses it to receive payment.[80] The price of the product, in this case a transaction, is the total amount paid by both the merchant and cardholder for a transaction to take place.[81]

The competitive process does not require that fees collected from *one* side of the platform must equal or exceed the costs "incurred" on that side, but only that the *sum* of the fees collected

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[78] Delegation of the United States to the Competition Committee, "Roundtable on Two-Sided Markets," Organisation for Economic Co-Operation and Development, DAF/COMP/WD (2009)68, June 4, 2009 ("Roundtable on Two-Sided Markets"), ¶ 5.

[79] Roundtable on Two-Sided Markets, ¶¶ 6, 8.

[80] The classic example of a two-sided market characterized by fixed proportions is a dating service. Each match involves a pair consisting of one man and one woman, even though there may be different numbers of women and men participating in the services (just as there may be different numbers of cardholders and merchants in a payment system).

[81] Roundtable on Two-Sided Markets, ¶¶ 5-8.

from customers on both sides of the platform is greater than or equal to the sum of costs incurred.[82] A profit-maximizing network sets a combination of merchant and cardholder fees that maximizes network profits, taking into account the effect of fees on each side's willingness to participate in and utilize the platform as well as the effect of each side's participation and use on the willingness of the other side to participate and use the platform.

The pricing incentives facing payment card systems are not unique, but apply to any two-sided platform.[83] Adobe, a seller of proprietary software that both writes (Adobe Acrobat) and reads (Adobe Reader) documents that can be displayed on a computer screen, is one well-known example. The Adobe platform is two-sided – the number of users who wish to write documents with Adobe Acrobat depends on the number of users who can read documents with Adobe Reader, and the demand for Adobe Reader depends on how many documents are written with Adobe Acrobat. Fees collected from users on both "sides" of the Adobe platform must cover the cost of producing and distributing the two software components, but the fee charged to users of Adobe Reader need bear no relation to the costs of producing and distributing that component.

In fact, Adobe's successful pricing strategy is to distribute Reader free, while charging a fee for Acrobat. If users of Reader are more price sensitive than users of Acrobat, then balancing fees away from Reader and toward Acrobat raises the value of the platform by increasing the distribution and use of the Adobe technology. Adobe chooses not to obtain revenue from sales of Reader, so it must have concluded that a positive fee for Reader would lower Acrobat sales. In the case of Adobe, the total cost of producing and maintaining both products (Adobe Acrobat and Adobe Reader) is paid for by the buyers of Acrobat who benefit from the ability to distribute content to users of Acrobat Reader.

Newspapers are another two-sided platform, generating revenues from two sets of customers – advertisers and readers. Newspapers produce content and print advertising that is

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[82] To the extent that transactions are also joint products (*i.e.*, that cardholders choose cards expecting to make multiple transactions), the fees collected do not need to balance costs on a transaction level either.

[83] For a network with fixed proportions, per-unit fees on both sides of the market, and costs and revenues that are related only to network volume and the sum of the fees, the network will seek the combination of fees that maximizes network volume and thus generates the greatest profit given any total level of fees. When fees charged and costs incurred are not simply proportional to output, a network will not necessarily maximize volume since fees collected and costs might vary with other variables, such as the number of merchants or the number of cardholders.

attractive to readers, while advertisers value the platform based on the number of readers. Even though newspapers are highly competitive, advertising fees are not set simply to cover the incremental cost of printing ads, and readers typically do not pay the full incremental cost of creating and distributing the newspaper.[84] Instead, advertising fees cover much of the cost of *both* content and distribution, while readers get the newspaper at little or no cost. If readers are sensitive to the price they pay for the newspaper, while advertisers are less sensitive to the price they pay for newspaper advertising, it is efficient to "balance" pricing by making advertisers pay for both the cost of printing their ads as well as for the service the newspaper provides in recruiting and delivering readers who will see the ads and buy their products and services. If, instead, advertiser fees covered only the cost of printing advertisements, and the price of newspapers was increased to cover the full incremental cost of distribution, there would be fewer readers, and advertisers and readers collectively would be worse off.

More recent examples of two-sided platforms are OpenTable and Groupon. As described above, OpenTable, an online restaurant reservation system, attracts restaurants based on its ability to attract diners. Restaurants that join OpenTable pay a setup and monthly fee, as well as a per-diner fee averaging about $1.60 per seated diner in 2009, or 3.2 percent of the price of a $50 meal.[85] Diners are not charged. OpenTable balances the need to attract both merchants and diners by imposing the cost of operating the platform on merchants, whose demand is relatively inelastic, rather than consumers. "Group buying" programs like Groupon are another example of competitive two-sided markets where merchants pay fees to participate in a network that delivers customers (who pay no explicit fee).

I previously explained the economics of pricing in two-sided markets in a co-authored paper:

> In general, firms selling goods or services in two-sided markets to two different groups of consumers will tend to charge a lower price relative to marginal cost to the group that is more price sensitive (i.e., has a higher elasticity of demand) and generates greater marginal network effects (i.e., where increased quantity has a larger effect on the value of goods or services supplied on the other side of the market). If a supplier wishes to

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[84] The same is true of over-the-air broadcast television, where consumers pay nothing and the cost of running the network and acquiring or purchasing content is covered by advertising fees.

[85] *See,* footnote 44, above.

increase price, it will be more profitable to do so on the side of the market where the demand response and network effects are likely to be lower.[86]

B. It is Not "Perverse" for Interchange Rates to Increase when the Cost of Operating the Network Declines

An increase in debit interchange rates over time is not a "perverse" effect of competition to attract issuers and cardholders. It is neither unusual nor "perverse" for the "price" charged to one side of the platform (*e.g.*, merchants) to increase, even though the full price of operating the network declines. This can occur particularly when creating value on one side of the market (*e.g.*, cardholders) generates value for the other side (*e.g.*, merchants).

If the cost of providing debit declines and the full reduction in cost is transferred to cardholders through lower fees and/or greater incentives to use debit (such as by offering rewards), debit becomes a more attractive method of payment for consumers. This in turn increases merchants' incentive to accept debit and results in greater benefits to merchants as customers substitute debit for more costly payment methods such as checks. Cardholders receive the full amount of the reduction in the cost of operating the debit network through increased incentives for them to use debit. However, merchants also receive additional value, since consumers' increased desire to use debit makes the sales gain from debit acceptance greater than it was previously.

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[86] Benjamin Klein, Andres V. Lerner, Kevin M. Murphy and Lacey L. Plache, "Competition in Two-Sided Markets: The Antitrust Economics of Payment Card Interchange Fees," *Antitrust Law Journal*, Vol. 73 (2006), p. 571-626 at 579. Many economists have recognized the role of demand elasticity and network effects in addition to marginal costs on the two sides of the market in the determination of merchant and cardholder prices for payment card services. *See e.g.*, Howard H. Chang and David S. Evans, "The Competitive Effects of the Collective Setting of Interchange Fees by Payment Card Systems," *The Antitrust Bulletin*, Vol. 45, Iss. 3 (Fall 2000), p. 641; Jean-Charles Rochet and Jean Tirole, "Cooperation Among Competitors: Some Economics of Payment Card Associations," *RAND Journal of Economics*, Vol. 33, No. 4 (Winter 2002), p. 549; Richard Schmalensee, "Payment Systems and Interchange Fees," *The Journal of Industrial Economics*, Vol. 50, No. 2 (June 2002), p. 103; Sujit Chakravorti, "Theory of Credit Card Networks: A Survey of the Literature," *Review of Network Economics*, Vol. 2, Iss. 2 (June 2003), p. 50; Jean-Charles Rochet & Jean Tirole, "An Economic Analysis of the Determination of Interchange Fees in Payment Card Systems," *Review of Network Economics*, Vol. 2, Iss. 2 (June 2003), p. 69; Jean-Charles Rochet, "The Theory of Interchange Fees: A Synthesis of Recent Contributions," *Review of Network Economics*, Vol. 2, Iss. 2 (June 2003), p. 97; Julian Wright, "The Determinants of Optimal Interchange Fees in Payment Systems," *The Journal of Industrial Economics*, Vol. 52, No. 1 (March 2004), p. 1; David S. Evans and Richard Schmalensee, "The Economics of Interchange Fees and Their Regulation: An Overview," prepared for Federal Reserve Bank of Kansas City Interchange Fees in Credit and Debit Card Industries Conference, April 6, 2005, p. 73, available at http://www.kansascityfed.org/econres/PSR/psrconferences/2005/Evans-Schmalensee.pdf.

The fee to merchants can rise in equilibrium when the cost of the debit network declines, because merchants are getting more value from accepting debit when consumers have a stronger preference for debit use. The value created by reduced fees or increased rewards to consumers indirectly creates increased value for merchants. This is one reason more merchants have joined the debit systems, even as merchant discount rates have increased – the value merchants receive has increased faster than the cost of accepting debit.

V. THERE IS NO EVIDENCE THAT CUSTOMERS THAT PAY WITH CASH AND CHECKS ARE SUBSIDIZING DEBIT-CARD CUSTOMERS

Supporters of regulation to set debit interchange rates claim that consumers who pay with cash and checks subsidize those paying with debit (and credit) cards. The FRB Staff claims that "[c]onsumers that use cash or checks may pay more than if the cost of card acceptance were not reflected in the price of goods or services. So given reductions in interchange fees and in overall debit card acceptance cost, merchants could choose to pass the savings through which could benefit both the consumers that primarily pay with cash or checks, as well as debit card users. We expect this would be most likely to happen…in those markets with lower margins and intense price competition."[87]

The simple argument made by these critics that each debit transaction has an associated merchant fee (the MDR), while there is no fee associated with cash or checks (these payment methods are "free"), is wrong. Critics argue that, if debit accounts for 50 percent of a merchant's sales (and the per-transaction MDR is, say, 0.4 percent of the transaction amount) and cash and checks account for the remainder, then all the merchant's prices will increase by 0.2 percent, including prices paid by cash and check customers. Critics claim that, in this way, non-debit users subsidize the benefits (including rewards and convenience) that accrue only to debit users.

This argument has several important logical fallacies (as well as no empirical support). First, the argument made by cross-subsidization proponents is completely one sided – it masquerades as a cost-benefit analysis, but it addresses only the explicit costs (that can be found on a profit and loss statement ("P&L")) and only the costs of one of the relevant payment

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[87] Transcript of Fed Governors-Staff Colloquy, p. 5.

methods. As I explained above (and as quantified by Dr. Layne-Farrar for the QSR industry[88]), the costs associated with accepting cash and checks are substantial (although not as easily quantified and generally not segregated on a P&L), and may even exceed costs associated with debit. Indeed, the fact that airplanes no longer accept cash for in-flight sales of food, beverages and other items is further evidence of the substantial handling costs of cash. Although checks "clear at par," frequently posted signs and policies of retailers that discourage or prohibit checks, along with the explicit costs incurred by the merchant for check authorization, guarantee, etc., demonstrate that "par" is not relevant for understanding retailers' real economic costs for accepting checks. At a minimum, any discussion of cross subsidization must consider the full range of costs and benefits of debit and other payment mechanisms. As I point explain below, such an analysis indicates that debit is a low-cost rather than high-cost payment mechanism, which reverses the direction of any cross-subsidization.

Second, by focusing only on the easily quantifiable bank fees paid by the merchant for a debit transaction, this argument ignores all operational and competitive benefits that the merchant receives in exchange. As described by Dr. Layne-Farrar, evidence from debit's adoption by QSRs shows that chains like Sonic introduced debit to gain a competitive advantage. This is inconsistent with claims that, by doing so, they had to increase their prices to all their customers.[89] In particular, given the FRB Staff's position that lower debit interchange rates are most likely to be passed through to consumers in "those markets with intense price competition," the hyper-competitive fast-food industry would have introduced debit only if the benefits exceeded the costs.[90]

Third, critics focus on assumed cross-subsidization of debit, but they ignore the ubiquity of "cross-subsidization" in the economy and in retailing operations in particular, and thus the clear evidence that any distortion from cost averaging generally is economically meaningless. I discuss further below (when I address the fallacy in arguments about "transparency") that merchants incur many costs that benefit only a fraction of their customers, and thus result in

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[88] Layne-Farrar Report.

[89] Layne-Farrar Report.

[90] *See e.g.,* Spain, William, "Fast-food outlook: Intense competition, margin pressures," Market Watch, January 14, 2010. Available at www.marketwatch.com/story/story/print?guid=1CDC72ED-8DA6-487A-97BF-B280883D8DFC.

"cross-subsidy" of higher-cost customers by those imposing lower costs. For example, many department-store shoppers choose their own merchandise, while others rely heavily on time and advice from sales people. Yet, merchandise prices do not vary according to whether or not sales assistance was provided (even though some retailers pay sales people explicit commissions for assisting customers). Many other merchant amenities have the same feature. But no one claims that averaging these costs across customers creates competitive harm, or amounts to a cross subsidy, and indeed such an argument would be absurd.

Finally, critics ignore the impact on merchants' sales from offering debit. If customers purchase more than they otherwise would have purchased because a merchant accepts debit, then the margin on these incremental sales is a benefit of accepting debit that will factor into the merchant's pricing decisions. The result could be lower prices across the board, including prices charged to cash and check customers.

Even if arguments regarding the importance or implications of alleged cross-subsidization were relevant, any cross-subsidization likely goes in the opposite direction from that claimed by critics – the transaction costs savings and other merchant benefits when consumers use debit are more likely to "cross-subsidize" cash and check users. This means that a reduction in debit use because of regulatory interference that lowers interchange rates and results in less incentive for consumers to use debit could cause merchants to raise prices. Certainly, the market evidence that merchants, even in highly competitive segments like QSR, freely adopt debit refutes concern about market distortion from interchange fees.

VI.   THE "TRANSPARENCY" OF THE INTERCHANGE FEE TO CONSUMERS IS NOT RELEVANT TO UNDERSTANDING WHETHER DEBIT INTERCHANGE FEES ARE "TOO HIGH" AND WHETHER COMPETITION IS ENHANCED BY LOWERING DEBIT INTERCHANGE FEES THROUGH REGULATION

Critics of debit interchange rates claim that they compromise competition because they are "too high" and they are not transparent to debit cardholders.[91] Yet critics provide no valid

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[91] For example, Professor Steven Salop, who submitted comments on behalf of the MPC, claims that "market efficiency will be enhanced, because the price of debit card usage will become more transparent as the consumers using the product will pay for it as opposed to the current system that externalizes those costs to all consumers."

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economic explanation for why lack of transparency either demonstrates or contributes to an absence of competition. FRB Governor Raskin claimed that:

> First of all, the interchange fee system is one that is pretty much hidden from consumers and the public, and most people have no idea that interchange fees exist and that they're paying for services that they may not even use…In addition to potentially higher prices, the nontransparent nature of the interchange fee suggests that these interchange fees may or may not be in line with the cost to banks that are offering these debit cards, and I think what this rule making is doing with, what this process is doing, is it's an attempt to ascertain these costs and determine whether, in fact, they're reasonable.[92]

Yet, Governor Raskin does not explain how greater transparency would change outcomes or benefit merchants or consumers.

Indeed, claims by merchants, evidently accepted by Governor Raskin and perhaps other Governors, that the interchange fee system is "hidden" and that "the public's" lack of understanding about how interchange works affects competition and harms consumers is inconsistent with economics and is without any support.[93]

Most merchant costs are not explicitly itemized for consumers. Importantly, customers are not informed about the costs incurred by merchants to accept checks, including bad-check losses, cost to purchase payment guarantees from a third party, the cost of additional time required by cashiers to handle check payments (including request identification, asking the customer to write his or her telephone number on the check, etc.). Neither are they informed about the pilferage costs associated with use of cash. Yet, neither merchants nor the government argues that customers must be provided with and consider these costs as they make their purchases, or else they cannot make appropriate decisions.

Proponents of transparency, including merchants, the FRB, Congress and other analysts, do not explain how competition will be enhanced if the interchange fee system that debit networks use to balance demand on the two sides of the debit platform is made more transparent,

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See, Salop, Steven C. et. al. "Economic Analysis of Debit Card Regulation Under Section 920," Charles River Associates, On Behalf of the Merchants Payments Coalition, ¶80.

[92] Transcript of Fed Governors-Staff Colloquy, p. 14.

[93] The MPC alleges, "Consumers pay swipe fees right now in the form of higher prices even though the fees are hidden from them." *See,* MPC Letter to Senator Crapo.

while the costs associated with other payment methods remain "hidden." Economic theory shows that the "transparency" that merchants and the FRB seek is more likely to distort than to improve the efficiency of consumers' choices. A consumer simply informed about the debit MDR incurred by a merchant likely will ignore this information. Moreover, to the extent the consumer is forced to pay higher bank fees for the use of debit as a result of the lower interchange rates, the consumer might select another payment method. Given the disadvantages of payment methods such as checks, and the even higher interchange fees associated with credit cards, transparent debit interchange fee but no additional transparency in costs of other payment methods likely would lead to less efficient choices among payment methods (*e.g.*, more use of checks) and potentially result in higher bank fees for the merchant (*e.g.*, credit card fees). This is an implication of economic theory – what appears to be a "second best," but not perfect, option (providing information about the interchange fees associated with debit, but providing no information about costs to the merchant of other payment methods) can reduce, rather than improve, consumers' choices relative to the status quo.

The claim that there is something nefarious because consumers are not provided explicit information about merchant discount fees makes no economic sense, based on even a rudimentary understanding of retailing. Merchants face a variety of different costs. Retailers' greatest expense likely is for acquiring merchandise, yet with very limited exceptions retailers need not and do not disclose their wholesale costs. Consumers likely would be very surprised, and might even adjust their purchases,[94] if they understood that retailers earn higher margins on many private-label products (*e.g.*, private-label over-the-counter pain relievers) at stores like Walgreens than they do on brand names like Tylenol, Advil, etc.[95] Yet merchants do not claim that retailing would be more competitive, and that consumers would be better off, if Walgreens posted both the retail and wholesale price of each product (including any rebates to which it

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[94] Retail price is a signal for quality – more expensive products are considered to be higher quality. A consumer who understood that the retailer's margin on private label products was higher than on brand-name products could decide that product quality differences were greater than the consumer previously believed, and change its purchasing decisions accordingly.
[95] Studies have found that retailers' gross margins on private label products often exceed their gross margins on comparable branded products. *See e.g.,* Mills, David E. "Why Retailers Sell Private Labels" *Journal of Economics & Management Strategy,* Vol. 4, No. 3 Fall 1995, 509-528, at 511 and 522. A White Paper by Weatherchem reports that "[t]he profitability of private label is substantial, with margins that are generally 6% to 10% higher than national brands." *See,* "Branding and Packaging of Private Label" Weatherchem White Paper.

might be entitled if it met certain volume targets) so that consumers could make choices based on a full understanding of cost.

The fact that merchants spread costs incurred to serve some but not all customers across all their customers reinforces the economic logic that cost transparency is not expected in competition and that greater transparency need not benefit consumers. Many amenities offered by a merchant benefit some, but not all, of its customers. A merchant provides free parking, even though some customers walk or take public transportation to the store. A retailer provides shopping carts even though some customers purchase only one or two items. Merchants may advertise, even though advertising attracts only some, but not all, customers. A retailer may train its sales staff, and may hire only experienced personnel that command a higher market wage than average, even though some customers do not use the sales staff's services.

None of these costs are itemized to customers, and customers are not offered a discount if they do not use the parking lot, a shopping cart, or the time of the sales staff. While all these costs may influence the merchant's pricing, it violates common sense to accuse a retailer of "cross-subsidizing" certain customers by not itemizing each cost and then letting the customer decide, for example, whether or not the assistance provided by a sales person is worth the cost.[96]

Similarly, merchants do not add a surcharge to purchases made with a check to compensate for the extra time spent by the cashier to process a check transaction or itemize the cost of the armored truck or employee time to transport cash to the bank. Competition is not limited and consumers are not harmed because merchants do not itemize each cost incurred to serve each individual customer. Indeed, since the FRB regards many retail markets as highly competitive, evidence that retailers themselves engage in widespread "cross-subsidization" in those markets refutes the FRB's claim that cross subsidization reflects a lack of competition and/or the exercise of market power.

Finally, it is ironic that merchants' concerns about transparency relate only to the cost of interchange fees, and not to transparency regarding the benefits they obtain from accepting debit.

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[96] Data from the Bureau of Labor Statistics indicate that the median wage for a retail salesperson was $9.74 in May 2009. If a salesperson assists a customer for 15 minutes, this is equivalent to $2.44 per customer. *See*, "Occupational Employment and Wages, May 2009 41-2031 Retail Salespersons," Bureau of Labor Statistics. Available at www.bls.gov/oes/2009/may/0es412031.htm.

These cost savings (reduced transaction time, virtually immediate transfer of funds) also are "hidden," and are not easily identified on merchants' profit and loss statements, and merchants may take them for granted. To the extent that merchants claim that consumers' choices are distorted by lack of transparency, they also should recognize that their own preference among payment methods is distorted by their failure to take account of the "hidden" benefits debit provides.

VII. THE SMALL NUMBER AND LARGE SIZE OF DEBIT NETWORKS DOES NOT MEAN THAT RESULTING MERCHANT DISCOUNT RATES ARE HIGHER THAN IF THERE WERE MORE OR SMALLER NETWORKS

Critics often claim that the level of debit fees reflects the exercise of market power and a lack of competition in the debit marketplace. They point to the scale of Visa and MasterCard as evidence that these networks must charge supracompetitive rates. However, this is wrong as a matter of economics and it is contradicted by empirical evidence. Proper economic analysis shows that there is no reason why the level of interchange fees would be lower if there were more networks, and empirical evidence indicates that there is no such relationship between network size and the magnitude of bank fees.

Based on at least three benchmarks, debit fees are not unreasonably high. First, as I stressed above, they are low relative to the value of the services provided. Second, they are low relative to what merchants pay for other services that expand sales and provide value to consumers (such as OpenTable and Groupon). Services such as OpenTable and Groupon charged substantial fees (much higher than those charged by the major debit networks) from their inception, even though those services could not have had market power. Third, the FRB has provided no evidence that debit fees are high relative to the full economic cost of servicing debit transactions. In particular, the provision of debit requires many costs not covered by the FRB proposed fee structure.

A. The Merchant Acceptance Decision is Independent of Network Size

Merchants accept debit cards if the benefits of acceptance outweigh the actual (or potential) loss from not accepting a card. The question of whether a merchants gains from card acceptance is independent of the size of the network. The merchant will accept a card when the

gain from added sales (*dS*) times the margin (*M*) on those sales exceeds the incremental fees paid (*f*S*), where *f* is the net fee paid on a given network's transactions and *S* is the merchant's sales on the given card network in question:

$$(1) \; ds * M > f * S,$$

which can be rewritten as:

$$(2) \frac{ds}{S} > \frac{f}{M}$$

Equation (2) compares the ratio of the change in sales over total sales to the ratio of the card fee divided by the merchant's margin, and shows that a small network that generates an additional \$100 in sales (*dS* = \$100) for a merchant with \$10,000 in total sales on the card network (*S* = \$10,000) would have the same attractiveness as a much larger network generating an additional \$10,000 in sales (*dS* = \$10,000) on a network with \$1,000,000 in total sales (*S*=\$1,000,000). In both cases, the merchant loses one percent of customers presenting the card if it does not accept the card in question, so it is better off accepting the card if the ratio of lost sales to total sales on the network is greater than the ratio of the network fee to the merchant's margin. The total size of the network, and whether there are more or fewer networks, does not affect this decision.

This illustrates the critical point that *it is the strength of the cardholder's loyalty to its network that determines whether a network can charge higher fees*, not the size of the network. Fleet cards (used by long haul truckers) generally carry a higher merchant fee than typical debit cards,[97] likely because fleet-card users typically are willing to drive to a different supplier where they know their card is accepted (and therefore the ratio *dS/S* is quite large). The same considerations also likely explain why merchants accept cards from very small networks (such as university identification cards), even though those cards may have relatively high merchant discount rates. The Indiana University Southeast "UCARD" debit card is one example. The UCARD program charges participating merchants a fee equal to five percent of the retail

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[97] For example, some fleet cards offer transaction fees on a sliding scale from \$0.20 to \$0.48 plus 1.25 percent of the transaction total, depending on the level of service. *See e.g.,* Keller, Maura, "Fueling Commercial Transactions," NPN, National Petroleum News, June 2007, Vol. 99, Iss. 6, pp. 34-38.

transaction, which far exceeds the MDR typically charged retailers for participation in the major debit networks, even though UCARD represents a far smaller network. The key economic principle this illustrates is that it is attractive for local area merchants to accept UCARD, despite the relatively high merchant fee, because many students have a strong desire to use their university card for purchases at local merchants and thus merchants that do not accept the card would be at a competitive disadvantage relative to merchants that accept UCARD.[98]

B. Available International Evidence Indicates that Merchant Fees are Independent of Network Size

Experience in foreign countries provides no evidence that debit fees would be lower if there were more card networks in the United States. Japan, for example, historically had fragmented card issuance, with merchants able to join 12 or more networks. Yet, research shows that Japanese merchant discounts typically ranged from 3-3.5 percent, and occasionally exceeded five percent, compared to fees of less than two percent in the United States.[99] Even though Japan has many competing card networks, fees there have not been lower than the rates that prevail in the United States.

C. Network Growth is not Associated with Increases in Merchant Fees

As discussed above, OpenTable has maintained the same fee structure as the number of participating merchants and cardholders has grown dramatically. Table 1 shows the substantial growth in OpenTable's diners and restaurants from 2005 through 2009. While OpenTable's per diner fee remained constant at $1.00 over the period, average fees per diner actually decline somewhat.

The example of OpenTable illustrates the key point outlined above. Even though the size of the OpenTable network increased roughly five fold from 2005 to 2009, the per-diner fees charged to merchants remained the same and average fees declined. OpenTable's pricing strategy is inconsistent with the theory that fees are higher than the competitive level because networks are large and therefore are "must have" for merchants. Indeed, the FRB has not

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[98] *See,* "IU Southeast UCARD – Frequently Asked Questions." Available at www.ius.edu/ucard/pdf/MerchantFAQs.pdf.
[99] Ronald J. Mann, "Credit Cards and Debit Cards in the United States and Japan," *Monetary and Economic Studies,* January 2002, pp. 149-151.

presented any evidence linking network size or the number of networks to the level of merchant fees. The underlying economic theory does not predict such a relationship, and the FRB provides no evidence that such a relationship exists.

Table 1
OpenTable – Diners, Restaurants, and Revenues
(2005 – 2009)

	2005	2006	2007	2008	2009	CAGR (2005-2009)
Seated Diners *(thousands)*	8,332	15,255	24,858	34,178	42,866	**51%**
Restaurants *(thousands)*	3.944	5.787	7.861	10.335	12.351	**33%**
Revenues *(thousands)*	$16,715	$27,168	$41,148	$55,844	$68,596	**42%**
Revenue per Diner	$2.01	$1.78	$1.66	$1.63	$1.60	**-5%**

Source: OpenTable 2009 Annual Report, p. 31.

VIII. EVEN IF THE U.S. DEBIT SYSTEM SURVIVES THE PROPOSED RATES AND REGULATORY STRUCTURE, THE DEBIT NETWORKS, CONSUMERS AND ECONOMIC EFFICIENCY WILL SUFFER

Proponents of the Durbin Amendment and the FRB's Proposal claim that debit systems in other countries have survived regulation that forced down interchange rates. Even if this is true, economics does not support regulatory interference just because the negative impact is sufficiently modest to avoid destroying a payment system. For example, government could make it illegal for theater owners to charge for admission to movies. Theatrical movie exhibition would continue, because theater operators would find alternative ways to support their businesses – inserting commercials into movies, for example, or requiring each moviegoer to purchase a large popcorn and large drink or a meal. But the fact that the industry would survive does not make this a benign restriction. Since the movie itself has value, it should be exhibited for any patron willing to pay to see it, and requiring that this value is collected in other ways will distort provision of both movies and the other goods and services "taxed" to finance movie exhibition. The result will be less movie viewing and less efficient outcomes.

Debit provides value to merchants, and the efficient way to collect for that value is to do so directly from the merchants that benefit. Using regulation to force banks to collect the value

provided to merchants from demand-deposit holders generally, or even from other bank customers or through a "tax" on other bank services, is inefficient.

The regulation contemplated by the Durbin Amendment and proposed by the FRB will cause great economic harm without any substantial offsetting benefit. These interventions do not satisfy any of the criteria economics identifies as warranting market intervention. In particular, any such interference with market pricing should be supported by (a) a clear identification of a market failure that the regulation is intended to address, (b) a thorough analysis of the regulation's benefits and costs, and (c) a thorough analysis to ascertain whether similar regulatory intervention elsewhere had unintended consequences and the likelihood that the impact of the proposed regulation is accurately predicted. The Durbin Amendment and the FRB's Proposal meet none of these criteria.

A. No Identified Market Failure

Debit's critics have provided no evidence of a "market failure" that requires regulatory intervention. I explained above that the fact that fees to operate the system and balance demand on the two sides of the platform are imposed on merchants, rather than consumers, does not reflect a lack of competition. This way of pricing is common in two-sided markets, and it does not originate when a network becomes "ubiquitous" and well established. The economics that explains pricing of debit is common across competitive markets, and the hallmark of a competitive outcome is evident here – the tremendous success of debit and resulting displacement of less attractive (and less competitive) alternatives.

B. Costs of Regulation Vastly Exceed the Claimed Benefits

The Durbin Amendment exempts banks with less than $10 billion in assets from the proposed restrictions on the interchange rate. I understand that this was not supported by any economic analysis, but rather by political considerations. One way of interpreting this exemption is that it acknowledges that inefficient smaller institutions could not adapt to additional inefficiency from the regulation of interchange rates. Otherwise, it is unclear why the supposed market failure that motivated the Amendment can be addressed while exempting the overwhelming majority of financial institutions.

A two-tiered interchange system, which Visa announced it will implement (at least initially[100]), will create distortions and promote inefficient bank operations. Large efficient banks will be forced by competitive pressures to try to increase other fees in order to recover lost interchange revenue. Imposing costs of operating their debit operations – including the incremental costs "with respect to the transaction" that the FRB wrongly ignored in preparing its Proposal, fixed costs of providing debit,[101] fraud prevention costs, etc. – on demand-deposit customers generally and even on other bank customers will distort choices. The FRB Staff acknowledges that costs will be shifted and that "it's hard to anticipate what the overall effect on consumers will be,"[102] and yet it ignored these effects in recommending an extreme form of regulation that must shrink the debit system because the price cuts are clearly below cost and the proposed rates do not reflect the benefits provided to merchants.

Smaller banks will remain free to support their debit programs with interchange fees that exceed the cap proposed by the FRB (as long as Visa and MasterCard maintain a two-tiered interchange schedule). However, these institutions likely are small because they are relatively inefficient and have higher costs. If customers switch from large banks to smaller, less efficient ones, there will be harm to competition and consumers. The shift will not be motivated by appropriate price signals, but rather by the fact that large institutions lost their freedom to price efficiently. The result will be a less efficient banking industry – expanding the output of less efficient suppliers and reducing output of the most efficient ones. The end result will be that debit services generally will be supplied at a higher cost, there will be less usage of debit than would exist under the current system, and likely less use of other bank services that now will be implicitly taxed (such as demand deposit accounts, which now may not be "free") as well.

From an economic perspective, a subsidy that allows one group to survive and expand in ways that would not be efficient absent the subsidy is worse than simply transferring money to the inefficient group. If the exemption for small institutions was motivated by concern that they might not be viable (as debit issuers at least) if their interchange revenue were reduced to the

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[100] Visa has announced that it will implement a two-tier system, while MasterCard has yet to make an announcement. *See,* "Visa Commits to a Two-Tier Debit Card Interchange Structure," Digital Transactions, January 7, 2011. Available at www.digitaltransactions.net/news/story/2861.

[101] There may be no fixed costs under an appropriate economic definition of incremental costs.

[102] Transcript of Fed Governors-Staff Colloquy, p. 5.

level proposed for larger banks, then regulation will create more harm than if lump-sum transfers were made to small institutions (thereby avoiding the distortion).

Finally, an important impact of the proposed debit interchange regulations likely will be to make certain business models uneconomic and potentially cause harm to certain demographic groups. In particular, the free-checking model that TCF has followed successfully to become the twelfth largest issuer of Visa debit cards (although it is only the 47th largest commercial bank) likely will not be viable.[103] As explained by Dr. Layne Farrar, TCF has been able to serve low- and middle-income customers who otherwise might not have checking accounts,[104] and thus might rely instead on currency exchanges, less convenient cash transactions, etc. The loss of business models, such as TCF's, may reduce consumer welfare.

C. Unintended Consequences are Likely Given the Magnitude of the Changes Required

By their very nature, predicting "unintended consequences" is difficult, decidedly so when regulators substitute their judgment for market prices. However, the likelihood that regulators will create unintended (and harmful) consequences increases with the magnitude of the changes imposed by regulation. Here, two features of the FRB Proposal are dramatic when compared with changes in debit and credit regulation in other countries. First, the Proposal would reduce debit interchange rates by about 80 percent, which the FRB acknowledges results in fees that do not compensate even for the most limited per-transaction cost.[105] The reduction exceeds that imposed in Australia and other countries that regulated debit rates. The larger the reduction in the controlled price, and thus the greater the shift to recovering costs from a bank's other operations, the greater the resulting distortion and inefficiency.[106]

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[103] TCF National Bank v. Bernake et. al. Complaint, ¶27.

[104] Exhibit A to the Declaration of Anne Layne-Farrar in the matter of TCF National Bank v. Bernake et. al., November 3, 2010, ¶¶ 8, 18, 66.

[105] As the FRB Staff noted, "And so taking those both — those considerations both into account, that's how we determined that we should probably limit the allowable costs just to those functions that were specifically mentioned in the statute: Authorization, clearing and settlement." *See*, Transcript of Fed Governors-Staff Colloquy, p. 12.

[106] Indeed, a well know result in economics is that the resulting distortion increases with the square of the price change, which would imply that an 80 percent reduction in debit fees would generate roughly 16 times the distortion of a 20 percent reduction.

Second, based on my review of regulatory intervention in credit and debit networks in other countries, regulators have never exempted a group of small banks from regulation of interchange rates and thereby created a two-tier system that distorts usage within the banking industry. Given the substantial and unprecedented proposed regulations, considerably greater analysis and evaluation should be performed and made available for review by interested parties in order to avoid potentially great harm to efficiency and consumers.

IX. CONCLUSION

A sound economic approach to formulating regulation to remedy a claimed market failure should be implemented as follows. First, it is essential to clearly identify the nature and scope of the alleged market failure that the regulation's supporters claim exists. Market participants have incentives to attempt to reduce competition through regulation, so a critical first step is to perform a thorough economic evaluation to understand whether the alleged "market failure" instead results from vigorous competition. Here, as I explain, the outcome that we see for debit networks as well as many other two-sided platforms reflects precisely the outcome that economics predicts results from vigorous competition. There is no evidence of market failure, and thus no need for regulation such as required by the Durbin Amendment and implemented provisionally by the FRB.

Second, if a sound economic analysis identifies a market failure, and not just a competitive outcome that certain market participants dislike, then any regulation should target the specific market failure, and not be more general than necessary, while considering both the costs and benefits of such a remedy. Even if there were a "market failure" in the debit system, it is possible that any proposed remedy would create greater costs than benefits. If a cost-benefit analysis shows that there is no way to "remedy" a market failure without creating greater harm to efficiency and consumers, then regulation should be avoided.

Third, even if a remedy can be devised that static analysis suggests creates more benefits than harm, it is important to consider the likelihood of unintended consequences, including the possibility of unforeseen consequences (which almost inevitably occur). It also is important to consider that unintended and unforeseen consequences become more likely the greater the magnitude of regulatory interference. Here, experience with intervention in foreign countries

should be considered thoroughly, both to confirm that the expected and claimed benefits were achieved, but more importantly to understand whether the FRB's proposal is sufficiently similar to regulation in those countries that it is reasonable to predict the consequences if the FRB Proposal is adopted.

Thus, the key economic principles to guide future consideration of the wisdom of the Durbin Amendment and the FRB's proposed implementation is whether there is a market failure to solve (and there is not), whether the proposed rule does more good than harm (it does not), and whether there is a likelihood of harmful unintended consequences (there is). Thus, the consequence of the current proposal likely will be substantial loss of efficiency and harm to consumers.

Curriculum Vitae

Kevin M. Murphy

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Business Address:

University of Chicago
Booth School of Business
5807 South Woodlawn Avenue
Chicago, Illinois 60637
email: murphy@chicagogsb.edu

Home Address:

1810 Pennington Court
New Lenox, Illinois 60451
Phone: (815)463-4756
Fax: (815)463-4758

Current Positions

July 2005-Present: George J. Stigler Distinguished Service Professor of Economics, Department of Economics and Booth School of Business, University of Chicago

Faculty Research Associate, National Bureau of Economic Research

Education

University of California, Los Angeles, A.B., Economics, 1981

University of Chicago, Ph.D., 1986

Thesis Topic: *Specialization and Human Capital*

Previous Research and Academic Positions

2002-2005: George J. Stigler Professor of Economics, Department of Economics and Booth School of Business, University of Chicago

1993 – 2002: George Pratt Shultz Professor of Business Economics and Industrial Relations, University of Chicago

1989 – 1993: Professor of Business Economics and Industrial Relations, University of Chicago

1988 – 1989: Associate Professor of Business Economics and Industrial Relations, University of Chicago

1986 – 1988: Assistant Professor of Business Economics and Industrial Relations, University of Chicago

1983 – 1986: Lecturer, Booth School of Business, University of Chicago

1982 – 1983: Teaching Associate, Department of Economics, University of Chicago

1979 – 1981: Research Assistant, Unicon Research Corporation, Santa Monica, California

Honors and Awards

2008: John von Neumann Lecture Award, Rajk College, Corvinus University, Budapest

2007: Kenneth J. Arrow Award (with Robert H. Topel)

October 2005: Garfield Research Prize (with Robert H. Topel)

September 2005: MacArthur Foundation Fellow

1998: Elected to the American Academy of Arts & Sciences

1997: John Bates Clark Medalist

1993: Fellow of The Econometric Society

1989 – 1991: Sloan Foundation Fellowship, University of Chicago

1983 – 1984: Earhart Foundation Fellowship, University of Chicago

1981 – 1983: Fellowship, Friedman Fund, University of Chicago

1980 – 1981: Phi Beta Kappa, University of California, Los Angeles

1980 – 1981: Earhart Foundation Fellowship, University of California, Los Angeles

1979 – 1981: Department Scholar, Department of Economics, University of California, Los Angeles

Publications

Books

Social Economics: Market Behavior in a Social Environment with Gary S. Becker, Cambridge, MA: Harvard University Press (2000).

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