Board of Governors of the Federal Reserve System

2009 Interchange Revenue, Covered Issuer Cost, and Covered Issuer and Merchant Fraud Loss Related to Debit Card Transactions

June 2011

I. Overview

Section 920 of the Electronic Fund Transfer Act (as added by Section 1075 of the Dodd-Frank Wall Street Reform and Consumer Protection Act) requires the Board to disclose "… aggregate or summary information concerning the costs incurred, and the interchange transaction fees charged or received, by issuers or payment card networks in connection with the authorization, clearance or settlement of electronic debit transactions as the Board considers appropriate and in the public interest."[1] The Act authorizes the Board to collect such information from issuers and payment card networks as may be necessary to implement the debit-card interchange fee standards required under that section.

In September 2010, the Board surveyed issuers that would be subject to the interchange fee standard and payment card networks to gather information to assist the Board in developing its proposed rule to implement Section 920.[2] Industry participants, including payment card networks, depository institutions, merchants, and their trade groups, commented on preliminary versions of the survey instruments, through both written submissions and a series of drop-in calls. In response to the comments, the survey instruments were modified, as appropriate.[3]

The network survey was distributed to 16 networks that process debit card transactions, all of which provided responses. The network survey asked for information related to the volume and value of debit card transactions, interchange fees charged by networks to merchant acquirers and paid to issuers, including information on historical interchange fees, and network

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[1] EFTA § 920(a)(3)(B), 12 USC § 1693o-2(a)(3)(B).

[2] The Board also surveyed the nine largest merchant acquirers, all of whom responded to the survey and provided information on the number and volume of debit card transactions that they processed, the number of merchants that accepted various types of debit cards, fraud losses, fraud prevention activities and costs, and exclusivity arrangements and routing procedures.

[3] The card issuer, payment card network, and merchant acquirer surveys are respectively available at http://www.federalreserve.gov/newsevents/files/card_issuer_survey_20100920.pdf, http://www.federalreserve.gov/newsevents/files/payment_card_network_survey_20100920.pdf, and http://www.federalreserve.gov/newsevents/files/merchant_acquirer_survey_20100920.pdf.

fees charged by networks to both issuers and acquirers. The survey also asked for information regarding fraud losses, fraud prevention activities and costs, and exclusivity arrangements and routing procedures.

The card issuer survey was distributed to 131 financial institutions that, together with affiliates, had assets of $10 billion or more as of year-end 2009. These institutions include bank and thrift holding companies with assets of at least $10 billion, independent commercial banks, thrifts, and credit unions with assets of at least $10 billion, and FDIC-insured U.S. branches and agencies of foreign banking organizations with worldwide assets of at least $10 billion.[4]

The card issuer survey asked for information related to the volume and value of debit card transactions processed, interchange fee revenue, and various costs associated with processing debit card transactions and operating a debit card program. The survey also asked for information regarding fraud losses and fraud prevention activities and costs. The reporting period for the survey was calendar year 2009.

Of the 131 covered financial institutions, 89 returned a card issuer survey, 13 indicated that they did not issue debit cards, 3 indicated they issued a small number of cards and declined to respond otherwise, and 26 provided no response at all. Out of the 89 responses, 66 issuers reported purchase transactions volumes and values, which are critical data elements for many of the estimates provided. The 66 respondents to the card issuer survey represent only a small fraction of an estimated 12,400 debit card issuers in the United States, but account for about 57 percent of total debit card transaction volume and 60 percent of total debit card transactions

[4] Assets were computed using the Consolidated Financial Statements for Bank Holding Companies (FR Y-9C; OMB No. 7100-0128), the Consolidated Reports of Condition and Income (Call Reports) for independent commercial banks (FFIEC 031 & 041; OMB No. 7100-0036) and for U.S. branches and agencies of foreign banks (FFIEC 002; OMB No. 7100-0032), the Thrift Financial Reports (OTS 1313; OMB No. 1550-0023) for thrift holding companies and thrift institutions, and the Credit Union Reports of Condition and Income (NCUA 5300/5300S; OMB No. 3133-0004) for credit unions. The ownership structure of banking organizations was established using the FFIEC's National Information Center structure database.

value as reported in the network survey.[5] The issuer respondents range from the largest debit card issuers in the country to issuers with very small debit card programs.[6]

In general, the surveys instructed respondents to provide the requested information separately for signature debit, PIN (personal identification number) debit, and prepaid card operations. For the purposes of the survey, a signature debit card program provides access to funds in a cardholder's asset account for point-of-sale or other purchase transactions through use of a debit card, payment code, or other device, in which the access is not authorized through the use of a PIN. A PIN debit card program provides access to funds in a cardholder's asset account for point-of-sale or other purchase transactions through use of a debit card, payment code, or other device, in which the access is generally authorized through the use of a personal identification number or code. Cards that can access only ATM networks and cannot be used to make point-of-sale transactions were excluded from the survey.

The survey requested information on prepaid card programs, which provide access to prepaid funds held in an account that may be used for point-of-sale or other purchase transactions through use of a prepaid card, payment code, or other device. The survey collected data for general-use reloadable and non-reloadable prepaid cards and for government and non-government prepaid programs; therefore, the survey information includes data for certain programs that are exempt from the interchange fee standard. For purposes of prepaid card programs that use an omnibus account, the survey instructed respondents that an "account" refers to each cardholder's sub-account and not to the omnibus account in which funds for each of the sub-accounts are held.

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[5] The estimate of 12,400 debit card issuers was based on information provided by the recently released 2010 Federal Reserve Payments Study (http://frbservices.org/communications/payment_system_research.html).

[6] Issuers with very small debit card programs were covered by the survey because the size of their affiliates was sufficient to push these programs over the $10 billion or more of consolidated assets.

The Board compiled the survey responses in a central database and reviewed the submissions for completeness, consistency, and anomalous responses. Inconsistencies existed in some reported data within individual responses and across responses. Where possible, minor problems were resolved, but responses with major problems were not used.

The number of usable responses for a given cost calculation varied from one third to two thirds, but in general, about half of the returned surveys contained sufficient information to compute the summary statistics reported below. Although the response rates for the surveys were high, most respondents did not provide information on every data element requested in the surveys. For example, most respondents provided cost data at an aggregate level, but some were unable to provide cost data at the level of detail requested in the surveys. The summary statistics reported below are based on subsets with different compositions of respondents, and the data for the component parts may not sum to the total within a particular category. Likewise, the summary statistics generally cannot be combined or compared across tables due to differences in the composition of respondents.

The Board provided preliminary data on the items that follow in its discussion of its proposed Regulation II.[7] Since that time, Board staff has further analyzed the data and resolved a number of minor problems, changing the number of usable responses for some of the calculations. Therefore, in certain instances, some data reported in the initial proposal have changed. In most instances, these changes are minor. Any major differences will be noted in the text.

II. Card Use

As mentioned above, each of the surveys asked for information pertaining to the number and value of debit card transactions. These calculations exclude ATM transactions, chargebacks,

[7] 75 FR 81724-81726 and 81740-81742 (December 28, 2010).

and any event in which value was not transferred between a cardholder and a merchant, such as denials, errors, or authorizations that did not clear or were not presented for settlement. For prepaid cards, these calculations exclude funds loads to cards.

Table 1 provides summary information on the total volume, total value, and average value of both purchase and return transactions as reported by the networks.[8,9] There were approximately 37.6 billion debit and prepaid card purchase transactions in 2009, with an aggregate value of more than $1.4 trillion. Signature-based transactions accounted for 22.5 billion or 60 percent of all purchase transactions, and $837 billion or 59 percent of transaction value. PIN-based debit transactions totaled 13.9 billion or 37 percent of purchase transactions, and $555 billion or 39 percent of transaction value. Prepaid transactions represented 1.2 billion or 3 percent of purchase transactions and $38 billion or 3 percent of purchase transaction value.[10]

The average value of all purchase transactions was $38.03, with the average values of signature debit, PIN debit, and prepaid card transactions being $37.15, $40.03, and $31.47, respectively.

There were more than 320 million returns, or less than 1 percent of all purchase transactions in 2009, with a total value of $17.3 billion or about 1.2 percent of the value of all purchases. About 88 percent of the total value of returns was signature debit returns. Approximately 1.2 percent of all signature purchases were returned, compared to about 0.3

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[8] In a purchase transaction, value is transferred from the cardholder to the merchant in exchange for goods or services. In a return transaction, the merchant reverses a purchase transaction (due, for example, to the return of goods by the cardholder), and value is transferred from the merchant to the cardholder.

[9] Three signature networks and thirteen PIN networks, including the affiliated PIN network of each of the signature networks, responded to the survey. Four signature and PIN networks reported data on prepaid cards. All networks reported information on transaction volume. However, one small PIN network did not provide information on transaction value. The average transaction value in Table 1 is based on the complete responses for volume and value.

[10] The recently released 2010 Federal Reserve Payments Study (http://frbservices.org/communications/payment_system_research.html) reported 6.0 billion prepaid card transactions in 2009, of which 1.3 billion were general purpose prepaid card transactions and 4.7 billion were private label prepaid card and electronic benefit transfer card transactions that were not included in the Board survey.

percent of all PIN purchase transactions, and 1 percent of all prepaid purchases. About 1.8 percent of all signature purchase value, 0.3 percent of all PIN purchase value, and 1 percent of all prepaid value were returned.

Table 2 presents the proportion of transaction volume and value as reported by payment card networks where the card was present and not present.[11] More than 90 percent of all transactions, and 80 percent of the value, are card-present transactions. Only 1 percent of PIN debit transactions were card-not-present transactions, representing about 4 percent of related transaction value.[12] In contrast, about 14 percent of all signature transactions and 17 percent of all prepaid transactions, and about 30 percent and 32 percent of the value of these transactions, respectively, are in the card-not-present environment.

III. Interchange Fees

Interchange fees are those fees set by the network, charged to acquirers and received by debit card issuers as part of a debit card transaction. The acquirer typically passes these fees on to the merchants, so interchange fees can be thought of as a cost to merchants and as revenue to debit card issuers.

Table 3 provides summary information about interchange fees received by issuers, as reported by payment card networks.[13] Networks reported that debit card (and prepaid card) interchange fees totaled $16.2 billion in 2009. Of this interchange-fee revenue, $12.5 billion was for signature debit transactions, $3.2 billion was for PIN debit transactions, and $0.5 billion was for prepaid card transactions.

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[11] Card-present transactions are those in which the card was physically present at the time of purchase, including both in-person and automated kiosk transactions. Card-not-present transactions are those in which the card was not physically present at the time of purchase. Most card-not-present transactions are Internet, telephone, or mail order transactions.

[12] Most Internet, telephone, and mail merchants do not accept PIN debit transactions. PIN acceptance on the Internet is mostly limited to online payments of utility and other recurring bills.

[13] Interchange fees as a percentage of transaction value excludes the one PIN debit network that did not report transaction values.

The average interchange fee for all debit transactions was 44 cents per transaction, or 1.15 percent of the transaction amount. The average interchange fee for a signature debit transaction was 56 cents, or 1.53 percent of the transaction amount. The average interchange fee for a PIN debit transaction was significantly lower, at 23 cents per transaction, or 0.58 percent of the transaction amount. Prepaid card interchange fees were more similar to those of signature debit, averaging 40 cents per transaction, or 1.28 percent of the transaction amount.[14]

IV. Processing Costs

Issuers reported their processing costs related to authorization, clearance, and settlement of a transaction.[15] The issuer survey instructed respondents to separate costs into fixed cost and variable cost components.[16] Respondents were asked to report separately network fees related to processing.[17] For each cost component, the ratio of processing costs to purchase transactions yielded a per transaction value of that cost component for each issuer.

Table 4 presents various statistics for the processing costs related to signature, PIN, and prepaid transactions, and processing costs of all three types of transactions combined. The statistics include a mean per transaction, a mean per respondent, the standard deviation related to the mean per respondent, and various percentiles for each card program's fixed, variable,

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[14] Some of these numbers differ from those published in the *Federal Register* notice of proposed Regulation II (75 FR 81725, December 28, 2010) because several networks subsequently submitted corrections to previously provided data. In one instance, a network corrected the number of prepaid transactions and PIN debit transactions.

[15] The survey instructions included as authorization costs the total costs of authorizing transactions, including data processing, connectivity, and voice authorization/referral inquiries costs. The survey instructions included as clearance and settlement costs 1) the costs of interbank clearing and settlement, defined as the total costs associated with receiving, verifying, reconciling, and settling transactions with other financial institutions, and 2) the total costs associated with posting transactions to cardholders' accounts. Issuers were instructed to also report processing costs associated with chargebacks and errors.

[16] The survey defined fixed costs as costs that do not vary with changes in the number or value of transactions over the course of the reporting period. For example, the cost of connectivity typically would be a fixed cost over the course of the reporting period, as would service subscription fees. The survey defined variable costs as costs that directly vary with the number or value of transactions.

[17] Network fees are switch fees or other fees charged by card networks for services that are required for the processing of transactions. They do not include any fees for optional services related to transaction processing that may be provided by a card network or an affiliate of a card network, nor do they include any network fees that are not directly linked to the processing of transactions, such as membership or license fees.

network, and total processing costs.[18] Because the number of respondents varies across the categories, the sum of the various cost components often does not add up to the total processing costs.[19]

The mean per transaction total processing cost for all types of debit card (including prepaid card) transactions was 8 cents, the mean per respondent was 17 cents, and the median was 11 cents. For signature debit, the mean per transaction, mean per respondent, and median were 8, 18, and 13 cents, respectively. For PIN debit, the comparable values were 5, 13, and 8 cents, respectively. Prepaid card transactions had the highest costs, with the mean per transaction at 22 cents, the mean per respondent at 96 cents, and the median at 61 cents.

The survey asked issuers to separately report their processing costs that were incurred in-house and costs associated with services provided by a third party.[20] Table 5 provides responding issuer average costs associated with in-house activities, and those outsourced to a third-party processor. It also provides cost information related to network fees and total processing costs. Overall, in-house costs incurred by the issuer represent 39 percent of total

[18] The mean per transaction is defined as the sum of all respondents' reported costs for a particular cost category divided by the sum of all respondents' reported purchase transactions. This calculation corresponds to the weighted average of costs across respondents, where the weight for each respondent is its share of total volume. The mean per respondent is the average ratio of each respondent's reported cost for a particular category to its purchase transactions. The standard deviation is around the mean per respondent. The percentiles are based on each respondent's ratio of reported cost for a particular category to its purchase transactions.

[19] For example, some issuers reported total processing costs for all payment instruments, but did not separately report fixed and variable costs. A number of issuers of prepaid cards reported that they did not know the specific costs associated with their prepaid card program. In some cases those issuers provided more complete data for their signature and PIN programs. In those cases, for "All Transaction Types" in the tables below, the issuer's signature and PIN purchase transactions and costs are included, but its prepaid purchase transactions and costs are excluded.

[20] The survey defined third-party fees as payments by the issuer to external service providers for processing activities that are performed by those service providers on behalf of the issuer. Service providers may include card networks or affiliates of card networks to the extent that an issuer contracts with such parties for provision of optional services related to transaction processing. Respondents were instructed not to include switch fees or other fees charged by a card network for services that are required for the processing of transactions; these costs should have been reported as network processing fees. In-house costs are defined to be costs incurred for processing activities that are not outsourced to third parties.

processing costs; transaction processing fees paid to third-party processors and networks represent 29 and 33 percent of the total processing costs, respectively.

V. Card Program Costs (Other than Authorization, Clearance, and Settlement Costs)

The issuer survey also asked respondents to report debit card program costs other than processing costs, such as the costs of card production and delivery, cardholder inquiries, rewards and other incentives, network fees unrelated to processing transactions, research and development, nonsufficient funds handling, and compliance.[21] Table 6 presents various statistics on these card program costs related to signature, PIN, and prepaid debit cards, and all three types of transactions combined. As in Table 4, the statistics include a mean per transaction, a mean per respondent, the standard deviation related to the mean per respondent, and various percentiles for each card program's other costs.

The two categories of program costs that typically had the highest mean per transaction and mean per respondent costs were cardholder inquiries (7 cents and 4 cents, respectively, for all types of debit card transactions) and rewards and other incentives (4 cents and 5 cents, respectively, for all types of debit card transactions). Costs associated with rewards and other

[21] Card production and delivery costs are those costs associated with producing and delivering cards to cardholders and include costs for issuance of cards to new cardholders and routine reissuance of cards to existing cardholders. Costs associated with cardholder inquiries are limited to costs associated with inquiries regarding specific transactions, including inquiries associated with fee waivers, transaction details, transaction fees, cardholder disputes, and other issues related to card transaction activity. It does not include costs of chargeback processes that result from cardholder inquiries or the costs of handling general card or account inquiries. Rewards and other incentives costs relate to the costs associated with cardholder reward programs or other incentive payment programs that result from activity of debit card programs. Included are the costs of program administration, rewards, and affinity partner revenue-sharing. Network fees unrelated to the processing of transactions include membership or license fees, but exclude network fees that are directly attributable to transactions processing, which are reported separately. Research and development costs include the costs related to product enhancements, process improvements, product development, and testing. They do not include any research and development costs associated with fraud prevention activities, which are reported separately. Costs associated with nonsufficient funds handling are the costs resulting from an account having insufficient funds to settle an authorized debit card transaction. They include customer service costs, costs of collection activities, and costs of reporting the account to credit agencies. They do not include the amount of or losses from such transactions. Compliance costs are the costs of compliance with Federal, state, or local regulations applicable to debit and/or prepaid cards. They do not include compliance costs that are required of the issuer but are not specific to the provision of a debit card, such as compliance with anti-money laundering and Bank Secrecy Act regulations.

incentives were higher for signature debit (mean per transaction cost of 5 cents) than for PIN debit (mean per transaction cost of 2 cents). Card production and delivery costs were higher for prepaid transactions than either signature or PIN transactions, with a mean per transaction cost of 11 cents and a mean per respondent cost of 39 cents. These high costs likely reflect the distribution channel for many prepaid cards through various merchant locations. Nonsufficient funds handling costs were also high for prepaid transactions with a mean cost of 7 cents per transaction.

VI. Network Fees

The payment card networks reported various network fees that they charge to all issuers and all acquirers (including issuers and acquirers not surveyed). The survey distinguished between fees that are charged on a per-transaction basis ("transaction fees") and those that are not ("non-transaction fees"). Table 7 summarizes network fees and incentives or discounts paid by networks to issuers and acquirers. Total network fees were over $4.1 billion. Networks charged issuers over $2.3 billion in fees and charged acquirers over $1.8 billion in fees. Almost 76 percent of the total fees paid, or $3.1 billion, were charged by signature debit networks. More than $3.4 billion, or 82 percent of total fees paid, were transaction-related fees.

Networks paid issuers almost $700 million and acquirers more than $300 million in discounts and incentives. Of the total incentives or discounts paid by networks, 81 percent were paid by signature networks.

Table 8 presents per transaction averages for transaction fees, non-transaction fees, total fees, and incentives or discounts paid to issuers from networks. In general, the proportion of fees paid by each party varied by network type.

Aggregating all network fees, the average per transaction network fee was 6 cents for issuers and 5 cents for acquirers. The average network fee for signature debit transactions was 8 cents for issuers and 6 cents for acquirers. Thus, about 60 percent of signature debit network fees were paid by issuers and 40 percent were paid by acquirers. The average network fee for PIN debit transactions was 2 cents for issuers and 4 cents for acquirers. Thus, about 33 percent of PIN debit network fees were paid by issuers and 67 percent by acquirers. For prepaid, the average network fee was 7 cents for issuers and 5 cents for acquirers. Thus, about 58 percent of prepaid network fees were paid by issuers and 42 percent were paid by acquirers.

Incentives and other discounts averaged 2 cents per transaction for issuers and 1 cent per transaction for acquirers. Signature debit networks provided average incentives and discounts of 3 cents per transaction to issuers and 1 cent per transaction to acquirers. Thus, 75 percent of signature debit network incentives and discounts were provided to issuers and 25 percent to acquirers. PIN debit networks provided average incentives and discounts of 1 cent per transaction to issuers but less than one half of one cent per transaction to acquirers.

VII. Fraud Losses

The surveys requested information related to fraud losses from both issuers and payment card networks. The Board estimates that industry-wide fraud losses to all parties of debit card transactions were approximately $1.34 billion in 2009.[22] About $1.11 billion of these losses arose from signature debit card transactions, about $181 million arose from PIN debit card transactions and almost $18 million arose from prepaid card transactions.[23]

[22] Industry-wide fraud losses were extrapolated from data reported in the issuer and network surveys. Of the 89 issuers that responded to the issuer survey, 52 issuers provided data on total fraud losses related to their electronic debit card transactions in the Gross Fraud Losses (4) part of the fraud loss section of the debit card issuer survey. These issuers reported $726 million in total fraud losses to all parties to card transactions and represented 54 percent of the total transactions reported by networks.

[23] Revisions in the data plus the inclusion of prepaid card fraud have led to changes to some of the industry-wide fraud loss estimates that were included in the December 2010 proposal (75 FR 81740-81741, December 28, 2010).

Table 9 presents various statistics for the total fraud losses to issuers and merchants related to signature debit, PIN debit, prepaid, and all transactions types combined.[24] Fifty-two issuers provided data on total fraud losses relating to their electronic debit and prepaid card transactions; they reported $726 million in total debit card fraud losses to all parties. For all transaction types, about 0.04 percent of purchase transactions were fraudulent transactions, with 0.06 percent of signature debit, 0.01 percent of PIN debit, and 0.03 percent of prepaid purchase transactions reported as fraudulent. The average loss per purchase transaction was about 4 cents, and represented about 9 basis points of transaction value. For signature, the average loss per purchase transaction was 5 cents, and represented about 13 basis points of transaction value. For PIN debit, the average loss per transaction was 1 cent, or about 3 basis points of transaction value. Thus, on a per-dollar basis, signature debit fraud losses are approximately 4 times PIN debit fraud losses.[25] For prepaid, the average loss per transaction was 1 cent, and represented about 4 basis points of transaction value.

Table 10 has similar summary information on fraud losses that are absorbed by issuers.[26] For all transaction types, the average loss per transaction (and also the fraud loss incurred by the median issuer) was 2 cents, or around 5 basis points of the value of transactions. Issuers lost an average of 2 cents per transaction, or 6 basis points, with signature transactions; 1 cent per transaction, or 2 basis points, with PIN transactions; and 1 cent, or almost 3 basis points, with prepaid transactions.

The higher losses for signature debit card transactions result from both a higher rate of fraud and higher transaction volume for signature debit card transactions. The sum of card program fraud losses will not equal the industry-wide fraud losses due to different sample sizes and rounding.

[24] According to our surveys, fraud losses to networks and acquirers are negligible. In addition, many issuers provide cardholders with liability protection against fraudulent transactions where the cardholder liability is zero or a small amount.

[25] In the December proposal, it was reported that signature debit fraud losses were about 3.75 times PIN debit fraud losses. The new number is a result of data revisions.

[26] These data are from the Net Fraud Losses (7) part of the fraud loss section of the debit card issuer survey.

The most commonly-reported and highest cost fraud types were counterfeit card fraud; lost and stolen card fraud; and mail, telephone and Internet order fraud (i.e, card-not-present fraud).[27] Table 11 breaks out some of the fraud loss data by these three most commonly-reported fraud types.[28] Counterfeit card fraud had the highest basis point loss for both signature debit and PIN debit transactions, at 4.5 and 1 basis points, respectively. Counterfeit card fraud and lost and stolen card fraud combined was about three and a half times larger for signature debit than it was for PIN debit transactions. Fraud related to mail, telephone, and Internet orders was 4 basis points for signature debit transactions, but was immaterial for PIN transactions, largely because virtually all mail, telephone, and Internet debit card transactions are routed over signature debit networks.

Only a small number of responses provided information for fraud from card-present and card-not-present transactions for signature and PIN. [29] Respondents reported that for signature debit transactions, fraud losses for card-not-present transactions were higher than fraud losses for card-present transactions.[30] On a transactions-weighted average, card-not-present fraud losses were estimated to be 17 basis points of the value of card-not-present transactions; card-present fraud losses represented an estimated 11 basis points of the value of card-present signature debit

[27] Some issuers reported ATM fraud which was out of the scope of debit card transaction fraud and so was excluded from fraud totals.

[28] For Table 10, fraud losses for a particular transaction type were divided by all purchase transactions for that transaction type. For example, for signature debit, fraud loss per transaction related to lost and stolen cards is the ratio of the total fraud loss due to lost and stolen cards divided by the total number of signature debit purchase transactions.

[29] For the purposes of this estimation, card-not-present fraud losses were limited to respondents' reporting of fraud related to mail, telephone, and Internet orders. All other debit card fraud, including fraud reported as counterfeit card and lost-or-stolen card, were assumed to be card-present fraud. Many respondents were not able to both break out fraud losses this way, and identify card-present and card-not-present transactions.

[30] There is no table in this document for the estimates that follow.

transactions.[31] Card-present fraud losses were more than three times greater for signature transactions than card-present fraud losses for PIN.[32]

Table 12 presents the percentage of fraud losses borne by issuers and merchants.[33] Across all types of transactions, 62 percent of reported fraud losses were borne by issuers and 38 percent were borne by merchants. The distribution of fraud losses between issuers and merchants differs based on the authorization method used in a debit card transaction. Issuers reported that nearly all the fraud losses associated with PIN debit card transactions (96 percent) were borne by issuers. In contrast, reported fraud losses were distributed more evenly between issuers and merchants for signature debit and prepaid card transactions. Specifically, issuers and merchants bore 59 percent and 41 percent of signature debit fraud losses, respectively. Further, issuers and merchants bore 67 percent and 33 percent of prepaid fraud losses, respectively.

In general, merchants are subject to greater liability for fraud in card-not-present transactions than in card-present transactions. According to the survey data, merchants assume approximately 74 percent of signature debit card fraud for card-not-present transactions, compared to 23 percent for all other types of signature debit card fraud.

VIII. Fraud Prevention Activities and Costs

The survey asked for cost data from specified categories of fraud-prevention activities, and asked respondents to list any additional activities and associated costs related to combating debit card fraud. Issuers identified numerous categories of activities used to detect, prevent, and mitigate fraud and reported the costs associated with these activities as they relate to debit card

[31] These estimates were projected out to all respondents that reported fraud losses based on a smaller sample of respondents that broke out both fraud losses and transactions into card-present and card-not-present components.
[32] Card-present fraud losses were estimated to be about 3 basis points per card-present transaction for PIN.
[33] Most issuers reported that they offer greater liability protection to their cardholders than required by regulation, such that the fraud loss borne by cardholders is negligible. See 15 U.S.C. § 1693g and 12 CFR § 205.6. Payment card networks and acquirers also reported that they absorb very limited fraud losses.

transactions. The categories of fraud-prevention and data security activities included the following: transaction monitoring, merchant blocking, card activation and authentication systems, PIN customization, system and application security measures such as firewalls and virus protection software, and ongoing research and development aiming to make fraud-prevention practices more effective. Table 13 provides summary information related to fraud-prevention activities and data security.

When all fraud-prevention activities reported by issuers except data security are included, the mean per transaction was 1.6 cents, the mean per respondent was 2.9 cents, and the median was 1.7 cents. The most commonly reported fraud-prevention activity was transaction monitoring. This activity generally is an input to the authorization of a particular debit card transaction, such as the use of neural networks and fraud risk scoring systems that may lead to the denial of a suspicious transaction. For transactions monitoring, the mean per transaction was 0.6 cents, the mean per respondent was 1.1 cents, and the median was 0.7 cents. The costs associated with research and development, card activation systems, PIN customization, merchant blocking, and card authentication systems were all small when measured on a per-transaction basis, typically less than one-tenth of a cent each.

The survey asked issuers to separately report their data-security activities and costs. For all data-security costs reported by issuers in the card issuer survey, the mean per transaction was 0.1 cents, the mean per respondent was 0.3 cents, and the median was 0.1 cents.

IX. Costs Included in Setting the Interchange Fee Standard

Table 14 provides summary statistics for the costs included in setting the interchange fee standards.[34] Issuers that provided data on their total processing costs and broke out their transactions monitoring costs for all debit card transaction types were included in the sample that

[34] See 12 C.F.R. § 235.3.

was used to determine the base component of the interchange fee standard.[35] The summary statistics are derived from the sum of each issuer's total processing costs and transactions monitoring costs.[36] Issuers that provided data on their fraud losses net of chargebacks and recoveries for all debit card transaction types were included in the sample that was used to determine the ad valorem component.[37]

The mean per transaction for the base cost component was 8 cents, the mean per respondent was 18 cents, and the median was 11 cents. The 80th percentile of the base component was 21 cents. The mean per transaction of the issuer fraud loss ad valorem component was about 5 basis points. The mean per respondent was 7 basis points and the median was 5 basis points.

[35] Issuers that did not have or did not explicitly break out their prepaid transactions data, but did have signature and PIN data, were included. In all, 43 issuers provided sufficient data to be included in this sample.
[36] Because of differences in sample size and rounding, the sum of the relevant components in Tables 4 and 13 will not add up precisely to the totals in Table 14.
[37] In all, 51 issuers provided sufficient data to be included in this sample.

Table 1: Volume and Value of Purchase and Return Transactions over Payment Card Networks [1]

	Transaction volume (billions)	Transaction value ($, billions)	Average transaction value ($)
Purchase Transactions			
Signature Debit	22.52 (60%)	836.53 (59%)	37.15
PIN Debit	13.87 (37%)	554.97 (39%)	40.03
Prepaid	1.20 (3%)	37.62 (3%)	31.47
All Transaction Types	*37.58*	*1,429.12*	*38.03*
Return Transactions			
Signature Debit	0.27 (84%)	15.20 (88%)	56.94
PIN Debit	0.04 (13%)	1.72 (10%)	41.72
Prepaid	0.01 (3%)	0.38 (2%)	43.08
All Transaction Types	*0.32*	*17.30*	*54.58*

[1] Numbers may not total due to rounding.

Table 2: Percentage of Card-present and Card-not-present Transaction Volume and Value over Payment Card Networks [1]

	Transaction Volume		Transaction Value	
	Card-present (%)	**Card-not-present (%)**	**Card-present (%)**	**Card-not-present (%)**
Signature Debit	85.6	14.4	70.1	29.9
PIN Debit	98.6	1.4	95.8	4.2
Prepaid	83.2	16.7	68.2	31.6
All Transaction Types	*90.2*	*9.8*	*80.1*	*19.8*

[1] Numbers may not total due to rounding.

Table 3: Interchange Fees Received by Debit Card Issuers [1]

	Total Interchange Fees ($, billions)	Per Transaction Interchange Fees ($)	Interchange Fees as Percentage of Transaction Value (%)
Signature Debit	12.5	0.56	1.53
PIN Debit	3.2	0.23	0.58
Prepaid	0.5	0.40	1.28
All Transaction Types	*16.2*	*0.44*	*1.15*

[1] Numbers may not total due to rounding.

Table 4: Processing Costs [1 2 3] ($)

	Mean per Transaction	Mean per Respondent	Standard Deviation	25th Percentile	Median	75th Percentile	80th Percentile	85th Percentile	90th Percentile
Signature Debit									
Fixed Costs	0.01	0.03	0.05	0.01	0.01	0.02	0.03	0.07	0.09
Variable Costs	0.04	0.08	0.09	0.03	0.06	0.10	0.10	0.11	0.14
Network Fees	0.03	0.06	0.05	0.02	0.05	0.08	0.10	0.10	0.13
Total Processing	*0.08*	*0.18*	*0.14*	*0.10*	*0.13*	*0.19*	*0.21*	*0.26*	*0.44*
PIN Debit									
Fixed Costs	0.01	0.03	0.04	0.00	0.01	0.02	0.03	0.05	0.08
Variable Costs	0.03	0.06	0.06	0.02	0.05	0.09	0.09	0.10	0.13
Network Fees	0.02	0.05	0.11	0.01	0.02	0.03	0.04	0.04	0.07
Total Processing	*0.05*	*0.13*	*0.16*	*0.05*	*0.08*	*0.12*	*0.14*	*0.17*	*0.27*
Prepaid									
Fixed Costs	0.03	0.24	0.38	0.01	0.06	0.23	0.33	0.64	1.17
Variable Costs	0.14	0.51	0.57	0.13	0.30	0.69	0.75	0.96	1.33
Network Fees	0.06	0.14	0.27	0.03	0.07	0.10	0.12	0.14	0.39
Total Processing	*0.22*	*0.96*	*0.94*	*0.31*	*0.61*	*1.23*	*1.52*	*2.20*	*2.69*
All Transaction Types									
Fixed Costs	0.01	0.05	0.15	0.00	0.01	0.03	0.04	0.07	0.09
Variable Costs	0.04	0.12	0.28	0.02	0.06	0.10	0.11	0.12	0.21
Network Fees	0.03	0.06	0.10	0.01	0.04	0.07	0.07	0.08	0.09
Total Processing	*0.08*	*0.17*	*0.14*	*0.09*	*0.11*	*0.18*	*0.19*	*0.32*	*0.41*

[1] Processing costs are those related to authorization, clearance, and settlement of a debit card transaction. It includes costs related to routine and nonroutine transactions. It does not include transaction monitoring related to fraud prevention, which is reported separately in Table 13.
[2] The mean per transaction is defined as the sum of all respondents' reported costs for a particular cost category divided by the sum of the same respondents' reported purchase transactions. This calculation corresponds to the weighted average of costs across respondents, where the weight for each respondent is its share of total volume. The mean per respondent is the average of each respondent's ratio of reported cost for a particular category to its purchase transactions. The percentiles are based on each respondent's ratio of reported cost for a particular category to its purchase transactions. The standard deviation is around the mean per respondent.
[3] Individual cost components may not sum to the totals for a given product type and summary statistic because of differences in the set of respondents across cost components and because certain summary statistics are not able to be summed (e.g., the percentile of a sum does not generally equal the sum of the percentiles).

Table 5: In-house, Third-party, and Network Processing Costs for Responding Issuers [1] [2] ($)

	Mean per transaction	Mean per respondent
Signature Debit		
In-house	0.03 (37%)	0.05 (27%)
Third-Party	0.03 (30%)	0.08 (45%)
Network	0.03 (36%)	0.06 (32%)
Total Processing	*0.08*	*0.18*
PIN Debit		
In-house	0.02 (48%)	0.04 (32%)
Third-Party	0.01 (24%)	0.06 (46%)
Network	0.02 (32%)	0.05 (37%)
Total Processing	*0.05*	*0.13*
Prepaid		
In-house	0.04 (18%)	0.24 (25%)
Third-Party	0.13 (58%)	0.56 (59%)
Network	0.06 (25%)	0.14 (14%)
Total Processing	*0.22*	*0.96*
All Transaction Types		
In-house	0.03 (39%)	0.05 (29%)
Third-Party	0.02 (29%)	0.14 (78%)
Network	0.03 (33%)	0.06 (35%)
Total Processing	*0.08*	*0.17*

[1] The mean per transaction is defined as the sum of all respondents' reported costs for a particular cost category divided by the sum of the same respondents' reported purchase transactions. This calculation corresponds to the weighted average of costs across respondents, where the weight for each respondent is its share of total volume. The mean per respondent is the average of each respondent's ratio of reported cost for a particular category to its purchase transactions.
[2] Dollar value and percentages may not total due to rounding and because of differences in the set of respondents across cost components.

Table 6: Card Program Costs, Other than Authorization, Clearance, and Settlement Costs [1] ($)

	Mean per Transaction	Mean per Respondent	Standard Deviation	25th Percentile	Median	75th Percentile	80th Percentile	85th Percentile	90th Percentile
Signature Debit									
Card Production and Delivery	0.02	0.04	0.12	0.01	0.01	0.03	0.03	0.05	0.07
Cardholder Inquiries	0.06	0.04	0.03	0.01	0.03	0.05	0.06	0.07	0.09
Rewards and Other Incentives	0.05	0.09	0.23	0.01	0.03	0.08	0.10	0.19	0.25
Network non-transaction-processing fees	0.02	0.02	0.02	0.00	0.01	0.04	0.04	0.05	0.05
Research and Development	0.00	0.01	0.02	0.00	0.00	0.01	0.01	0.02	0.03
Nonsufficient Funds Handling	0.02	0.02	0.02	0.00	0.01	0.02	0.03	0.04	0.04
Compliance	0.01	0.01	0.03	0.00	0.00	0.01	0.01	0.02	0.03
PIN Debit									
Card Production and Delivery	0.01	0.03	0.05	0.01	0.01	0.02	0.03	0.06	0.06
Cardholder Inquiries	0.07	0.04	0.05	0.01	0.03	0.05	0.07	0.09	0.10
Rewards and Other Incentives	0.02	0.02	0.02	0.01	0.02	0.03	0.04	0.05	0.05
Network non-transaction-processing fees	0.01	0.02	0.03	0.00	0.00	0.02	0.03	0.03	0.04
Research and Development	0.00	0.01	0.02	0.00	0.00	0.01	0.01	0.01	0.01
Nonsufficient Funds Handling[2]	.	.	.	.	.	.	.	.	.
Compliance	0.01	0.01	0.02	0.00	0.00	0.01	0.02	0.02	0.03
Prepaid									
Card Production and Delivery	0.11	0.39	0.63	0.09	0.26	0.47	0.54	0.60	0.65
Cardholder Inquiries	0.11	0.17	0.14	0.10	0.12	0.26	0.28	0.30	0.35
Rewards and Other Incentives[3]	.	.	.	.	.	.	.	.	.
Network non-transaction-processing fees	0.01	0.07	0.16	0.00	0.02	0.05	0.05	0.07	0.10
Research and Development	0.03	0.32	0.74	0.01	0.03	0.21	0.25	0.50	1.25
Nonsufficient Funds Handling	0.07	0.11	0.22	0.00	0.02	0.03	0.03	0.56	0.56
Compliance	0.03	0.08	0.22	0.00	0.01	0.04	0.04	0.04	0.04
All Transaction Types									
Card Production and Delivery	0.02	0.05	0.11	0.01	0.02	0.03	0.04	0.06	0.10
Cardholder Inquiries	0.07	0.04	0.04	0.01	0.03	0.04	0.06	0.09	0.10
Rewards and Other Incentives	0.04	0.05	0.07	0.01	0.02	0.06	0.09	0.13	0.16
Network non-transaction-processing fees	0.01	0.02	0.02	0.00	0.01	0.03	0.03	0.04	0.04
Research and Development	0.01	0.01	0.02	0.00	0.01	0.01	0.01	0.02	0.04
Nonsufficient Funds Handling	0.01	0.01	0.01	0.00	0.01	0.02	0.02	0.02	0.03
Compliance	0.01	0.01	0.03	0.00	0.00	0.01	0.02	0.02	0.03

[1] The mean per transaction is defined as the sum of all respondents' reported costs for a particular cost category divided by the sum of the same respondents' reported purchase transactions. This calculation corresponds to the weighted average of costs across respondents, where the weight for each respondent is its share of total volume. The mean per respondent is the average of each respondent's ratio of reported cost for a particular category to its purchase transactions. The percentiles are based on each respondent's ratio of reported cost for a particular category to its purchase transactions. The standard deviation is around the mean per respondent.

[2] Nonsufficient funds handling cost data for PIN programs were not collected in the survey.

[3] Rewards cost data are not included for prepaid card programs because of confidentiality concerns due to only one relevant response; these data are included in the costs for all transaction types combined.

Table 7: Network Fees and Incentives [1] ***($, billions)***

	Transaction Fees	Non-transaction Fees	Total Fees	Incentives or Discounts Paid
Signature Debit				
Issuers	1.51 (60%)	0.38 (94%)	1.88 (60%)	0.57 (68%)
Acquirers or Merchants	1.01 (40%)	0.02 (6%)	1.26 (40%)	0.26 (32%)
Total	*2.52*	*0.40*	*3.14*	*0.84*
PIN Debit				
Issuers	0.27 (35%)	0.07 (81%)	0.34 (39%)	0.09 (58%)
Acquirers or Merchants	0.50 (65%)	0.02 (19%)	0.52 (61%)	0.07 (42%)
Total	*0.77*	*0.09*	*0.86*	*0.16*
Prepaid				
Issuers	0.07 (61%)	0.02 (61%)	0.09 (61%)	0.03 (77%)
Acquirers or Merchants	0.05 (39%)	0.01 (39%)	0.06 (39%)	0.01 (23%)
Total	*0.12*	*0.03*	*0.14*	*0.04*
All Transaction Types				
Issuers	1.84 (54%)	0.46 (63%)	2.31 (56%)	0.70 (67%)
Acquirers or Merchants	1.56 (46%)	0.27 (37%)	1.84 (44%)	0.34 (33%)
Total	*3.41*	*0.74*	*4.14*	*1.04*

[1] Numbers may not total due to rounding.

Table 8: Payment Card Network Fees and Reimbursements, Average per Purchase Transaction [1] ***($)***

	Issuer	Acquirer	Total
Signature Debit			
Transaction Fees	0.07	0.04	0.11
Non-transaction Fees	0.02	0.01	0.03
Total Fees	0.08	0.06	0.14
Incentives or Discounts Paid	0.03	0.01	0.04
PIN Debit			
Transaction Fees	0.02	0.04	0.06
Non-transaction Fees	0.01	0.00	0.01
Total Fees	0.02	0.04	0.06
Incentives or Discounts Paid	0.01	0.00	0.01
Prepaid			
Transaction Fees	0.06	0.04	0.09
Non-transaction Fees	0.01	0.01	0.02
Total Fees	0.07	0.05	0.12
Incentives or Discounts Paid	0.02	0.01	0.03
All Transaction Types			
Transaction Fees	0.05	0.04	0.09
Non-transaction Fees	0.01	0.01	0.02
Total Fees	0.06	0.05	0.11
Incentives or Discounts Paid	0.02	0.01	0.03

[1] Numbers may not total due to rounding.

Table 9: Total Debit Card Fraud Losses Incurred by Both Issuers and Merchants [1 2]

	Mean per Transaction	Mean per Respondent	Standard Deviation	25th Percentile	Median	75th Percentile	80th Percentile	85th Percentile	90th Percentile
Signature Debit *($1.11 billion)*									
Incidence	0.06%	0.09%	0.22%	0.02%	0.04%	0.08%	0.09%	0.11%	0.15%
Loss per transaction	$0.05	$0.07	$0.06	$0.03	$0.05	$0.07	$0.08	$0.10	$0.13
Loss (BPS)	12.71	15.11	8.87	9.50	12.18	19.64	21.71	23.98	26.64
PIN Debit *($181 million)*									
Incidence	0.01%	0.01%	0.02%	0.00%	0.00%	0.02%	0.02%	0.02%	0.02%
Loss per transaction	$0.01	$0.02	$0.04	$0.01	$0.01	$0.02	$0.03	$0.04	$0.04
Loss (BPS)	3.19	5.07	10.05	1.55	2.82	4.85	6.23	7.58	8.68
Prepaid Debit *($18 million)*									
Incidence	0.03%	0.07%	0.12%	0.00%	0.01%	0.06%	0.07%	0.24%	0.28%
Loss per transaction	$0.01	$0.02	$0.02	$0.00	$0.01	$0.03	$0.04	$0.04	$0.05
Loss (BPS)	4.01	6.26	8.25	0.18	3.32	7.00	11.77	15.84	22.45
All Transaction Types *($1.34 billion)*									
Incidence	0.04%	0.06%	0.13%	0.01%	0.03%	0.05%	0.07%	0.07%	0.07%
Loss per transaction	$0.04	$0.05	$0.04	$0.03	$0.03	$0.05	$0.06	$0.08	$0.08
Loss (BPS)	9.03	10.09	5.16	6.60	9.39	12.26	13.55	16.81	18.07

[1] The mean per transaction is defined as the sum of all respondents' reported incidence or fraud losses divided by the sum of the same respondents' reported purchase transactions. This calculation corresponds to the weighted average of incidence or fraud losses across respondents, where the weight for each respondent is its share of total volume or value. The mean per respondent is the average of each respondent's ratio of reported incidence or fraud losses to its purchase transactions. The percentiles are based on each respondent's reported ratio of incidence or fraud losses to its purchase transactions. The standard deviation is around the mean per respondent.

[2] Incidence of loss is defined as the number of fraudulent transactions divided by the number of purchase transactions. Loss per transaction represents the dollar amount of fraud losses divided by the number of purchase transactions. Basis point (BPS) losses are the dollar value of fraud losses divided by the dollar value of purchase transactions.

Table 10: Issuer Fraud Losses [1] [2]

	Mean per Transaction	Mean per Respondent	Standard Deviation	25th Percentile	Median	75th Percentile	80th Percentile	85th Percentile	90th Percentile
Signature Debit									
Loss per transaction	$0.02	$0.05	$0.06	$0.02	$0.03	$0.05	$0.06	$0.07	$0.09
Loss (BPS)	6.41	9.57	7.88	4.05	6.68	12.54	14.28	16.12	16.84
PIN Debit									
Loss per transaction	$0.01	$0.02	$0.03	$0.00	$0.01	$0.02	$0.02	$0.03	$0.04
Loss (BPS)	2.41	4.19	7.35	1.11	2.18	4.03	4.56	6.59	8.00
Prepaid									
Loss per transaction	$0.01	$0.01	$0.02	$0.00	$0.01	$0.02	$0.02	$0.02	$0.03
Loss (BPS)	2.63	4.34	6.09	0.22	2.40	6.91	7.82	7.87	14.74
All Transactions Types									
Loss per transaction	$0.02	$0.03	$0.03	$0.01	$0.02	$0.03	$0.04	$0.06	$0.06
Loss (BPS)	4.85	6.56	4.84	3.53	4.74	7.64	9.11	12.70	13.62

[1] The mean per transaction is defined as the sum of all respondents' fraud losses divided by the sum of the same respondents' reported purchase transactions. This calculation corresponds to the weighted average of fraud losses across respondents, where the weight for each respondent is its share of total volume or value. The mean per respondent is the average of each respondent's ratio of reported fraud losses to its purchase transactions. The percentiles are based on each respondent's ratio of reported fraud losses to its purchase transactions. The standard deviation is around the mean per respondent.

[2] Loss per transaction represents the dollar amount of fraud losses divided by the number of purchase transactions. Basis point (BPS) losses are the dollar value of fraud losses divided by the dollar value of purchase transactions.

Table 11: Total Fraud Losses Incurred by Issuers and Merchants for Select Types of Debit Card Fraud [1 2]

	Mean per Transaction	Mean per Respondent	Standard Deviation	25th Percentile	Median	75th Percentile	80th Percentile	85th Percentile	90th Percentile
Signature Debit									
Lost or stolen									
Incidence	0.01%	0.01%	0.01%	0.00%	0.01%	0.01%	0.01%	0.02%	0.02%
Loss per transaction	$0.01	$0.02	$0.06	$0.00	$0.01	$0.01	$0.01	$0.02	$0.02
Loss (BPS)	1.70	3.21	6.34	1.23	1.74	2.21	2.71	3.04	3.95
Counterfeit									
Incidence	0.01%	0.01%	0.02%	0.00%	0.01%	0.01%	0.02%	0.03%	0.03%
Loss per transaction	$0.02	$0.02	$0.03	$0.01	$0.01	$0.03	$0.04	$0.04	$0.04
Loss (BPS)	4.52	4.73	4.78	1.50	3.02	7.47	8.45	9.28	9.57
Mail, telephone or internet order									
Incidence	0.02%	0.03%	0.09%	0.00%	0.01%	0.03%	0.04%	0.04%	0.04%
Loss per transaction	$0.02	$0.02	$0.01	$0.00	$0.01	$0.02	$0.03	$0.03	$0.03
Loss (BPS)	4.27	3.77	3.09	1.08	3.63	6.10	6.50	7.08	8.39
PIN Debit									
Lost or stolen									
Incidence	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%
Loss per transaction	$0.00	$0.01	$0.01	$0.00	$0.00	$0.01	$0.01	$0.01	$0.01
Loss (BPS)	0.74	1.45	1.83	0.19	0.79	1.61	2.71	2.91	3.44
Counterfeit									
Incidence	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Loss per transaction	$0.00	$0.01	$0.01	$0.00	$0.00	$0.01	$0.01	$0.01	$0.01
Loss (BPS)	0.97	1.13	1.78	0.06	0.82	1.26	1.49	2.19	2.84
Mail, telephone or internet order									
Incidence	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Loss per transaction	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Loss (BPS)	0.11	0.20	0.46	0.00	0.00	0.26	0.32	0.46	0.66
Prepaid									
Lost or stolen									
Incidence	0.01%	0.02%	0.07%	0.00%	0.00%	0.01%	0.03%	0.03%	0.06%
Loss per transaction	$0.01	$0.01	$0.02	$0.00	$0.00	$0.01	$0.02	$0.03	$0.05
Loss (BPS)	1.74	3.53	8.24	0.00	0.15	2.38	2.61	3.69	25.77
Counterfeit									
Incidence	0.01%	0.01%	0.04%	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%
Loss per transaction	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.01
Loss (BPS)	0.75	0.39	0.75	0.00	0.00	0.33	0.75	0.94	2.10
Mail, telephone or internet order									
Incidence	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Loss per transaction	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.01
Loss (BPS)	0.20	0.50	1.06	0.00	0.00	0.41	0.69	0.97	1.86
All Transactions Types									
Lost or stolen									
Incidence	0.00%	0.01%	0.01%	0.00%	0.01%	0.01%	0.02%	0.02%	0.02%
Loss per transaction	$0.01	$0.02	$0.04	$0.00	$0.01	$0.01	$0.02	$0.02	$0.03
Loss (BPS)	1.45	2.82	4.69	1.09	1.37	2.14	3.44	3.61	8.21
Counterfeit									
Incidence	0.01%	0.01%	0.01%	0.00%	0.00%	0.02%	0.02%	0.02%	0.04%
Loss per transaction	$0.02	$0.02	$0.02	$0.00	$0.01	$0.02	$0.02	$0.03	$0.04
Loss (BPS)	4.29	3.45	3.51	0.91	2.52	5.50	5.68	6.25	7.45
Mail, telephone or internet order									
Incidence	0.01%	0.02%	0.06%	0.00%	0.00%	0.02%	0.02%	0.03%	0.03%
Loss per transaction	$0.01	$0.01	$0.01	$0.00	$0.01	$0.02	$0.02	$0.02	$0.02
Loss (BPS)	1.84	2.04	1.97	0.04	1.86	2.83	3.92	4.32	4.75

[1] The mean per transaction is defined as the sum of all respondents' reported incidence or fraud losses divided by the sum of the same respondents' reported purchase transactions. This calculation corresponds to the weighted average of incidence or fraud losses across respondents, where the weight for each respondent is its share of total volume or value. The mean per respondent is the average of each respondent's ratio of reported incidence or fraud losses to its purchase transactions. The percentiles are based on each respondent's reported ratio of incidence or fraud losses to its purchase transactions. The standard deviation is around the mean per respondent.

[2] Incidence of loss is defined as the number of fraudulent transactions divided by the number of purchase transactions. Loss per transaction represents the dollar amount of fraud losses divided by the number of purchase transactions. Basis point (BPS) losses are the dollar value of fraud losses divided by the dollar value of purchase transactions.

Table 12: Issuer and Merchant Shares of Fraud Loss [1]

	Merchant Loss: Mean per Fraud Loss (%)	Issuer Loss: Mean per Fraud Loss (%)	Merchant Loss: Mean per Respondent (%)	Issuer Loss: Mean per Respondent (%)	Merchant Loss: Median (%)	Issuer Loss: Median (%)
Signature Debit						
Total	41	59	33	67	39	61
Card Not Present						
Mail, Telephone or Internet Order	74	26	54	46	61	39
Card Present	23	77	21	79	15	85
Lost or Stolen	26	74	25	75	18	82
Counterfeit	18	82	14	86	9	91
PIN Debit						
Total	4	96	12	88	0	100
Card Not Present						
Mail, Telephone or Internet Order	56	44	48	52	44	56
Card Present	2	98	10	90	0	100
Lost or Stolen	5	95	13	87	0	100
Counterfeit	2	98	7	93	0	100
Prepaid						
Total	33	67	31	69	35	65
Card Not Present						
Mail, Telephone or Internet Order	23	77	35	65	35	65
Card Present	35	65	29	71	33	67
Lost or Stolen	18	82	26	74	20	80
Counterfeit	21	79	29	71	20	80
All Transactions Types						
Total	38	62	31	69	34	66
Card Not Present						
Mail, Telephone or Internet Order	64	36	54	46	49	51
Card Present	19	81	16	84	13	87
Lost or Stolen	21	79	20	80	17	83
Counterfeit	15	85	11	89	7	93

[1] Merchant Loss: Mean per Fraud Loss is the sum of all respondents' reported fraud-related chargebacks to merchants divided by the sum of the same respondents' reported combined fraud losses for merchants and issuers. Mean per Respondent is the average of each respondent's ratio of reported fraud-related chargebacks to merchants over its reported combined fraud losses for merchants and issuers. Issuer Loss: Mean per Fraud Loss and Mean per Respondent are defined similarly using issuers' net fraud losses instead of fraud related chargebacks to merchants.

Table 13: Issuer Fraud Prevention Costs ($) [1 2]

	Mean per Transaction	Mean per Respondent	Standard Deviation	25th Percentile	Median	75th Percentile	80th Percentile	85th Percentile	90th Percentile
All Transaction Types									
Fraud Prevention	0.016	0.029	0.061	0.011	0.017	0.026	0.031	0.038	0.045
Transaction Monitoring	0.006	0.011	0.016	0.003	0.007	0.010	0.012	0.014	0.028
Data Security	0.001	0.003	0.008	0.000	0.001	0.002	0.004	0.005	0.005

[1] The mean per transaction is defined as the sum of all respondents' reported costs for a particular cost category divided by the sum of the same respondents' reported purchase transactions. This calculation corresponds to the weighted average of costs across respondents, where the weight for each respondent is its share of total volume. The mean per respondent is the average of each respondent's ratio of reported cost for a particular category to its purchase transactions. The percentiles are based on each respondent's ratio of reported cost for a particular category to its purchase transactions. The standard deviation is around the mean per respondent.
[2] Transaction monitoring is a subset of fraud prevention.

Table 14: Costs Included in Setting the Interchange Fee Standard [1] [2]

	Mean per Transaction	Mean per Respondent	Standard Deviation	25th Percentile	Median	75th Percentile	80th Percentile	85th Percentile	90th Percentile	Number of Respondents in Sample
All Transaction Types										
Base component ($)	0.08	0.18	0.15	0.09	0.11	0.18	0.21	0.41	0.43	43
Ad valorem component (BPS)	4.85	6.56	4.84	3.53	4.74	7.64	9.11	12.70	13.62	51

[1] Base component includes total authorization, clearing, and settlement costs, and transaction monitoring costs related to authorization.
[2] Ad valorem component is the issuer's fraud losses in basis points (BPS).