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Chargebacks: Another Payment Card Acceptance Cost for Merchants

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Abstract

Although chargebacks are perceived as one of the major cost components for merchants to accept card payments, little research has been conducted on them. To fill that gap, this paper describes the current chargeback landscape by generating detailed statistics on chargebacks for signature-based transactions. Our data are from merchant processors, which, altogether, processed more than 20 percent of all signature-based transactions in the United States. For Visa and MasterCard transactions, chargebacks merchants receive are, on average, 1.6 basis points (bps) of sales number and 6.5 bps of sales value. About 70 to 80 percent of chargebacks are resolved as merchant liability. The most common chargeback reason is fraud, which accounts for about 50 percent of the total chargebacks. The merchant fraud loss rate is 0.7 bps in number and 2.6 bps in value. For American Express and Discover transactions, the total and fraud chargeback rates are somewhat lower. For all of the four networks, the total and fraud chargeback rates are significantly higher for card-not-present transactions than for card-present transactions. They also vary by merchant category. Our fraud results are generally consistent with other available fraud statistics.

JEL Classification: E42, L81

Keywords: Chargebacks, Fraud, Payment cards

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1. Introduction

When consumers make purchases with a credit, debit, or prepaid card at merchants, the merchants typically receive funds of those payment card transactions a few days after the transaction date. However, even after merchants received the funds, those funds are not necessarily guaranteed for the merchants due to chargebacks. Chargebacks are full reversal of transactions by card issuers. When a card issuer initiates a chargeback to the merchant, the merchant processor, which is an entity that provides payment card processing services for the merchant, returns the funds to the issuer from the merchant's account. The funds may again be deposited to the merchant account if the merchant successfully reclaims the funds by disputing the chargeback.

When a cardholder disputes a transaction on his payment card statement, either his card issuer or the merchant at whom the transaction was made typically incurs the loss. The issuer initiates a chargeback to the merchant if the issuer believes the merchant is financially liable for the cardholder's dispute according to rules set out by the card network, such as Visa, MasterCard, American Express, and Discover. Merchants respond to chargebacks by either accepting the chargebacks or disputing the chargebacks and reclaiming the transaction funds. Ultimately, if the issuer and the merchant are in disagreement, the card network determines which party is financially liable.

There are many reasons for, and reason codes associated with, chargebacks. When an issuer files a chargeback, it needs to include a chargeback reason code. One of the most common reasons for chargebacks is a fraudulent use of a payment card account. Fraud reason codes are associated with chargebacks of transactions that were reported as being unauthorized by

cardholders. Other common reasons include processing errors, problems related to authorization or cancelation, product quality, and non-receipt of goods and services.

Chargebacks are perceived as one of the major cost components for merchants to accept card payments; nevertheless, little research has been conducted on them.[1] Unlike interchange or merchant discount fees, which are presumably the largest cost for U.S. merchants to accept payment cards, the number and value of chargebacks merchants have received and the number and value of losses merchants have incurred as a result of chargebacks have not been well documented.[2]

To fill that gap, this paper describes the current chargeback landscape by generating detailed statistics on chargebacks. The detailed chargeback statistics are useful not only for merchants but also for policymakers. Chargeback rates (i.e., the number or value of chargebacks relative to the number or value of sales transactions) by merchant category allow merchants to compare their own chargeback rates against the category's averages. Chargeback rates by transaction channel, such as card-present, e-Commerce, or mail/telephone orders, may also help merchants to predict their chargeback rates as their businesses shift from one channel to another. Chargeback rates by reason code category enable merchants to review and refine their payment card processing practices. Detailed fraud chargeback statistics would be especially helpful for policymakers as they consider security of the payments system. For example, fraud chargeback rates inform fraud loss distribution between issuers and merchants, which affects issuers' and merchants' incentives to invest in the payments security. As the United States migrates to a

[1] The Government Accountability Office (GAO) cited chargebacks accepted by a card network as a percentage of sales on that network's cards ranged from 0.1 percent to 0.2 percent from December 2006 through June 2009, according to a large issuer (GAO 2009).

[2] Merchants pay a merchant discount fee for each card transaction. One of the components of the merchant discount fee is an interchange fee, which is set by the card network and received by the card issuer. Merchant discount fees for American Express transactions do not include interchange fees. See Hayashi (2012) for details about those fees.

chip-card technology standard (referred to as EMV), which is more secure than the currently used magnetic-stripe card technology, detailed fraud chargeback statistics also enable policymakers to examine the effect of the EMV migration on the fraud losses.[3]

To generate chargeback statistics, we collected chargeback and sales data from merchant processors. Both chargeback and sales data are for one year period from October 1, 2013 to September 30, 2014. The data focus on signature-based general-purpose card transactions (i.e., general-purpose credit and signature debit or prepaid card transactions). PIN debit card transactions are excluded. The processors participating in this study, altogether, processed more than 20 percent of signature-based purchase transactions in terms of value (the total value of signature-based purchase transactions in 2014 was estimated to be $4,055 billion, of which $3,243 billion were Visa and MasterCard transactions, and $814 billion were American Express and Discover transactions).[4]

Our results suggest that the total chargeback rate is 1.6 basis points (bps, or 0.016 percent) in number and 6.5 bps in value for Visa and MasterCard transactions combined. Merchant losses account for about 70 to 80 percent of those chargebacks, implying 20 to 30 percent of chargebacks were resolved as issuers' liability. The most common chargeback reason is fraud, which accounts for about 50 percent of the total chargebacks. Both the total and fraud chargeback rates vary by transaction channels and by merchant category. For card-not-present (CNP) transactions, the total and fraud chargeback rates are significantly higher than those for card-present (CP) transactions. The travel industry tends to have higher total and fraud chargeback rates, even for CP transactions. The statistics are somewhat different for American

[3] EMV stands for Europay, MasterCard, and Visa, the three card networks which originally created the standard.
[4] The total value of American Express and Discover purchase transactions is from the Nilson Report, Issue 1057. The total value of Visa and MasterCard signature-based purchase transactions is the authors' estimation using the purchase transactions reported in the Nilson Report, Issues 1034 and 1057, and in the Federal Reserve Board of Governors (2014).

Express and Discover transactions combined, especially regarding their total and fraud chargeback rates, which are lower than those for Visa and MasterCard combined. However, due to the sample difference of our data for Visa and MasterCard and for American Express and Discover, we cannot confirm whether the total and fraud chargeback rates are truly lower for American Express and Discover transactions combined.

The rest of this paper is organized as follows: Section 2 describes chargeback lifecycle and reason codes. Section 3 explains our data. Section 4 provides the results and discusses how our fraud results are compared with other available fraud statistics and what our results' implications are. Section 5 concludes.

2. Chargeback process

Cardholders can dispute their payment card transactions for various reasons. Not all transactions disputed by cardholders result in a chargeback, and not all chargebacks filed by issuers result in merchant losses. To better understand for what reasons cardholders can dispute their transactions and how the liability of cardholders' disputed transactions is distributed between issuers and merchants, this section explains chargeback reason codes and describes the chargeback lifecycle.

2.1 Chargeback reason codes

There are no common chargeback reason codes in the industry; instead, each card network defines its own reason codes. Thus, a reason code of one network does not necessarily match with a reason code of another network. Each network's reason codes, however, can be divided into seven basic categories: (1) fraud; (2) non-receipt goods and services; (3) product quality; (4) cancellation; (5) non-receipt information; (6) processing errors; and (7) authorization.

Fraud related reason codes are associated with chargebacks of transactions that were reported as being unauthorized by cardholders. Some card networks' fraud reason codes identify sources of fraud (e.g., counterfeit), transaction environment (e.g., CP vs. CNP), and whether multiple fraudulent transactions were made at a given merchant.

Non-receipt of goods or services reason codes are associated with chargebacks of transactions for which cardholders reported not receiving the merchandise or services they purchased. Product quality related reason codes are for situation where cardholders received goods and services but they are defective or not as described in the sales literature.

Cancellation related reason codes are used mainly for two cases. The first case is when a cardholder was charged a recurring payment (such as a utility bill automatically charged to the card every month) even though the cardholder had cancelled the contract or automatic payment arrangement using the card. The second case is when a cardholder has not received refunds for returned goods or cancelled services.

A chargeback using a non-receipt information reason code occurs when a cardholder does not recognize a transaction on his payment card statement. The cardholder must first request a copy of the sales receipt from the merchant through the issuer (this process is called retrieval). If the cardholder is not satisfied with the receipt, which may be because of an illegible account number or transaction amount, he contacts the issuer to initiate a chargeback.

Chargebacks initiated by card issuers with processing error and authorization issue reason codes do not involve cardholder disputes. Processing error related reason codes include duplicate processing, incorrect transaction amount, credit posted as debit, paid with other payment methods, charged in the wrong currency, and late presentment (i.e., merchants did not deposit sales receipt within the time frame specified by network rules). Some of the authorization issue

related reason codes are declined authorization or no authorization: the issuer received a transaction for which authorization was declined or not (properly) obtained. Other authorization issue related reason codes include transactions completed with an expired card, with an account number which does not match with any existing account, or with an account number included in the lost or stolen account file.

2.2 Chargeback lifecycle

Figure 1 illustrates the lifecycle of chargebacks which are generated due to cardholders' disputes and are reversible by merchants.[5] Five distinct parties are involved in the chargeback process: cardholder, card issuer, card network, merchant acquirer, and merchant. Typically, either card issuer or merchant incurs the financial liability of a cardholder's disputed transaction, and cardholders are rarely liable due to consumer protection laws and the zero liability rules of card networks.[6] Card networks' rules determine whether the issuer can initiate a chargeback for a cardholder's disputed transaction. For example, issuers cannot initiate chargebacks for fraudulent transactions made in the CP environment with a counterfeit card as long as merchants received transaction approval by the card issuers, obtained signature by the card users' and properly authenticated their cards. Issuers can initiate chargebacks for CNP fraud more easily because it is more difficult for merchants to authenticate cardholders and their payment devices when transactions are made remotely.[7]

In the figure, boxes represent a party's action or decision and ovals represent financial liability outcomes. Steps 1 through 7 of the chargeback lifecycle are common across card

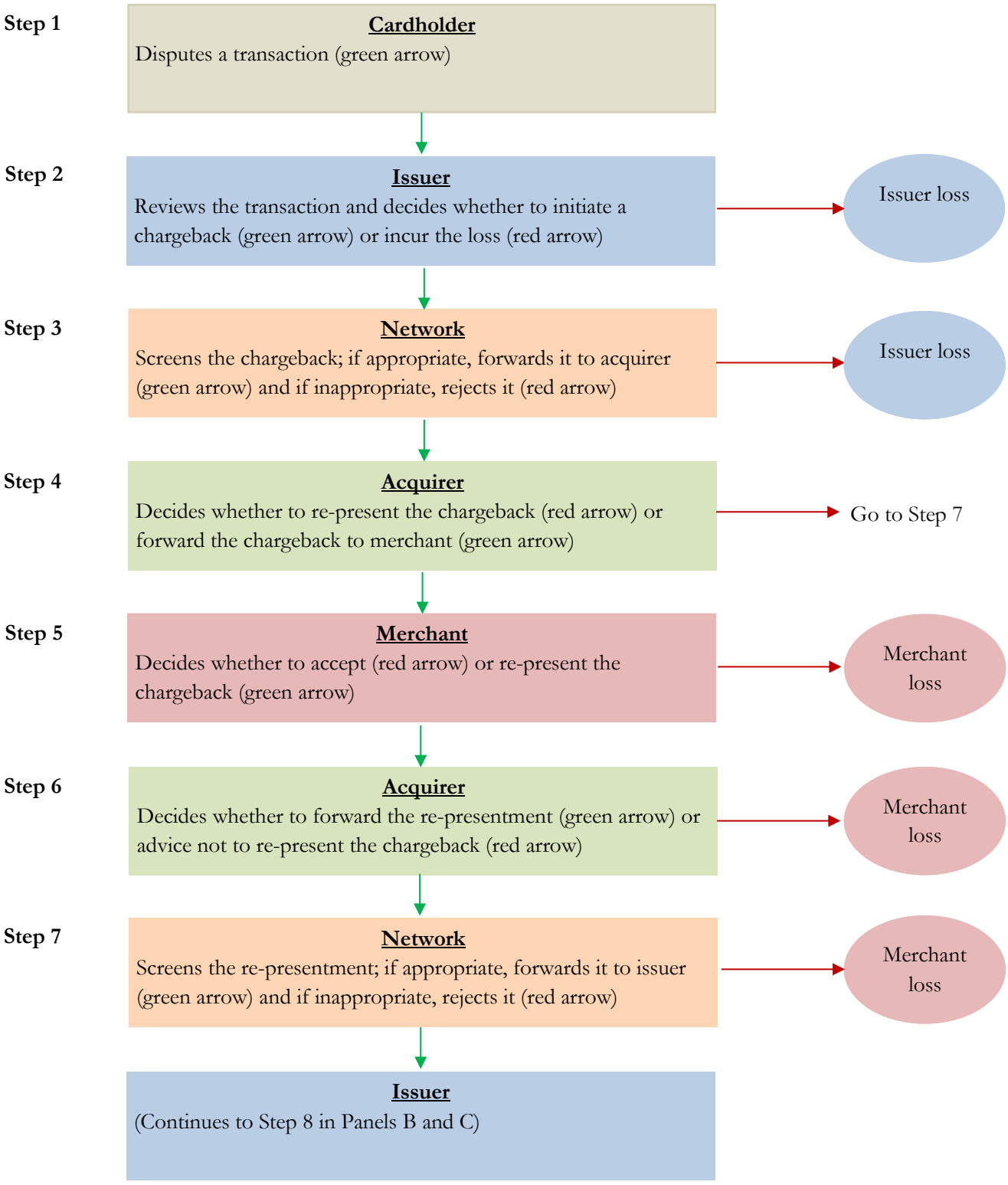
[5] Card networks do not allow merchants to dispute chargebacks with certain reason codes.
[6] Regulations Z limits consumer liability for credit card transactions and Regulation E limits consumer liability for debit and some prepaid card transactions.
[7] When 3D Secure, such as Verified-by-Visa and MasterCard Secure Code, is used to authenticate cardholders for online transactions, issuers are generally liable for fraudulent online transactions.

networks, while Step 8 and beyond vary slightly by card network—especially regarding who files for arbitration with the card network when the issuer and merchant cannot resolve the case.

Panel A of Figure 1 shows Steps 1 through 7. After a cardholder disputes a transaction and contacts his card issuer with disputed information (step 1), the issuer reviews eligibility of the transaction for a chargeback. If eligible, the issuer initiates a chargeback to the merchant through the card network and the merchant acquirer; otherwise, the issuer incurs the financial loss of the transaction (step 2). The card network screens the chargeback for technical criteria compliance and forwards it to the acquirer if it is appropriate (step 3). The acquirer reviews the chargeback and re-presents the chargeback to the network if it has adequate proof to do so; otherwise, it forwards the chargeback to the merchant (step 4). The merchant decides whether to accept the chargeback and incur the financial loss or dispute the cardholder's claim and re-present the chargeback to the acquirer (step 5). The acquirer forwards the re-presented item to the card network after reviewing the item (step 6). The card network screens the re-presentment for technical criteria compliance and forwards it to the issuer if it is appropriate (step 7).

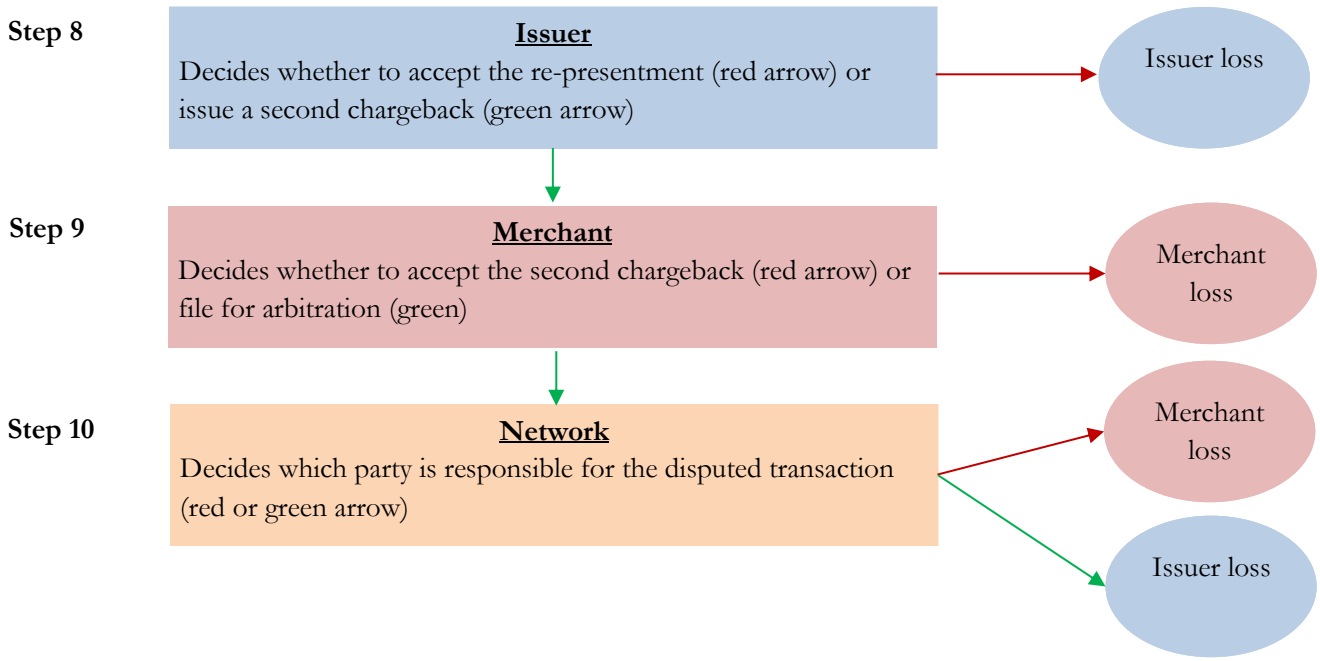
Figure 1: Chargeback lifecycle

Panel A: Steps 1 through 7

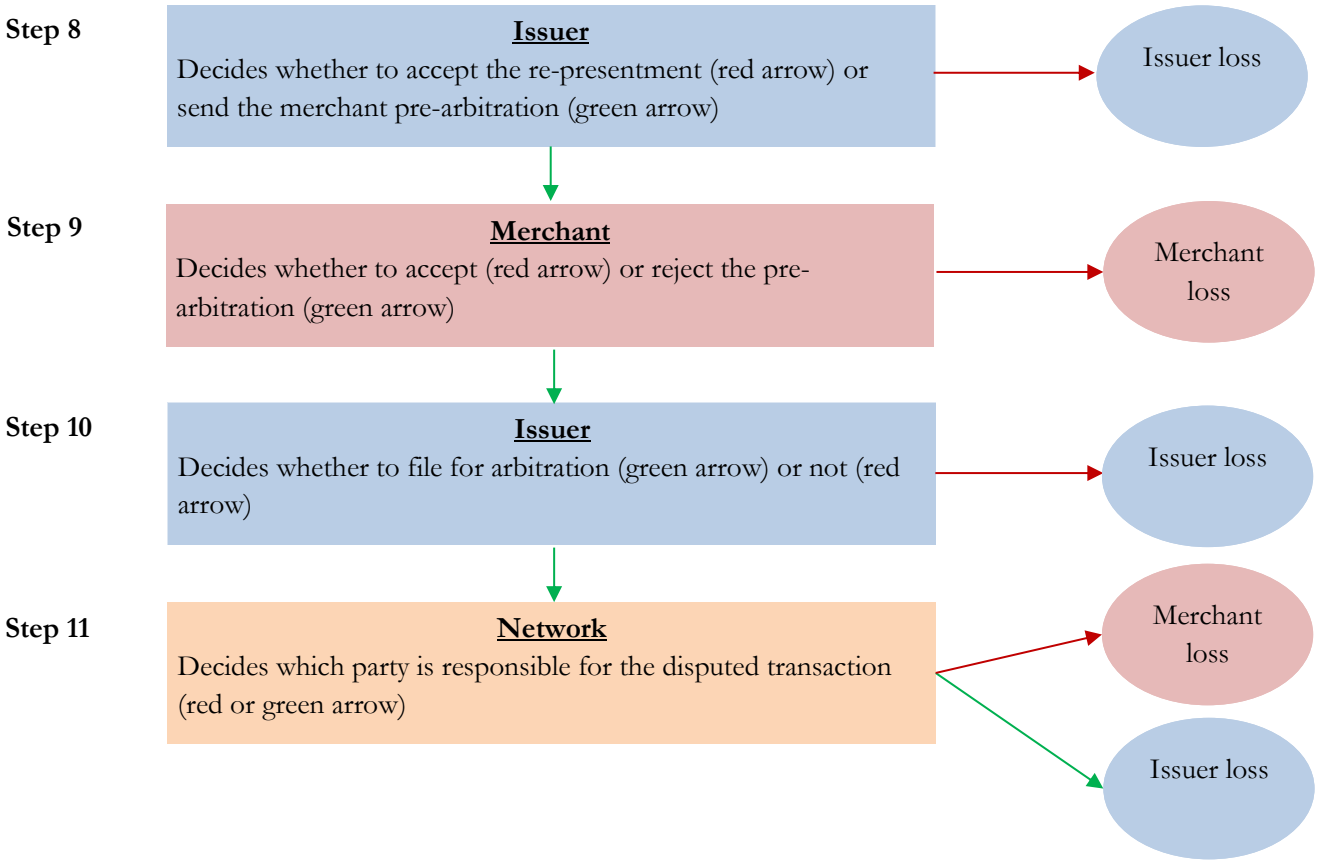


Panels B and C show Steps 8 and after for MasterCard and for Visa, respectively. For a MasterCard transaction, after receiving the re-presentment, the issuer decides whether to accept it and incur the financial loss or issue a second chargeback to the merchant, which is sent through the network and the acquirer (step 8 in Panel B). The merchant decides whether to accept the second chargeback and incur the financial loss or file for arbitration with the network (step 9 in Panel B). In arbitration, the network decides which party—the issuer or the merchant—is financially responsible for the disputed transaction (step 10 in Panel B). For a Visa transaction, after receiving the re-presentment, the issuer decides whether to accept it or send a pre-arbitration notice to the merchant via the network and the acquirer (step 8 in Panel C). The merchant decides whether to accept the pre-arbitration and incur the financial loss or reject the pre-arbitration (step 9 in Panel C). After receiving the merchant's rejection of pre-arbitration, the issuer decides whether to file for arbitration with the network (step 10 in Panel C). The network decides which party has financial liability for the disputed transaction (step 11 in Panel C).

Panel B: Steps 8 through 10 for MasterCard



Panel C: Steps 8 through 11 for Visa



3. Data

We collected chargeback and sales data from several merchant processors, and their merchant clients are from a wide variety of merchant categories. Both chargeback and sales data are for a one-year period from October 1, 2013 to September 30, 2014. To measure chargeback rates accurately, it is ideal to keep track of chargebacks for sales transactions made in a certain period of time (say, the calendar year 2014). However, since some chargebacks take more than a year to resolve, we, instead, collected data on chargebacks received by the processors and sales made by their merchants for the same one-year period. As for the one-year period, from the beginning of the fourth quarter 2013 to the end of the third quarter 2014 was chosen, instead of

the calendar year 2014, to avoid potentially biased chargeback statistics due to the holiday shopping season.[8]

The data focus on general-purpose signature-based card transactions (i.e., credit and signature debit or prepaid card transactions) and PIN debit card transactions are excluded from this study for a few reasons. First, PIN debit networks typically do not have a chargeback process; rather funds of transactions are reversed as adjustments. Second, adjustments are quite rare.[9] Third, merchants are allowed to directly return transaction funds to their customers with cash and thus processors and networks cannot observe some of the reversed PIN debit transaction funds.

To examine the number and value of chargebacks merchants receive and the number and value of losses merchants incur from chargebacks relative to sales transactions, we asked merchant processors to provide the number and value of chargebacks received on behalf of their merchant customers. We also asked for the number and value of chargebacks which were subsequently disputed by the processor or the merchants, and of which how many/much of them the card issuers initiate second chargebacks (or pre-arbitration).

To generate detailed chargeback statistics, we asked for the number and value of chargebacks by card network, by transaction channel, by reason code category, and by merchant category. For Visa and MasterCard transactions, merchant acquirers or their outsourced processors process chargebacks for their merchant customers of all size. In contrast, for

[8] Since retail sales during the holiday shopping season typically account for 20 percent of retail sales during the entire year, the treatment of holiday shopping sales and their chargebacks is important. Our chargeback and sales data exclude chargebacks and sales during the holiday shopping season in 2014 but include those in 2013. If we use the calendar year 2014 as for the one year period, many chargebacks for transactions made during the holiday shopping season in 2014 would not be in the chargeback data, but those in 2013 would. In contrast, sales transactions made during the holiday shopping season in 2014 would be in the sales data, but those in 2013 would not. This may cause underestimation of chargeback rates because holiday retail sales in 2014 increased by 4.5 percent from that in 2013.

[9] According to the authors' interviews with industry experts.

American Express and Discover chargebacks, merchant processors process for their mid- and small-size merchants since large merchants often work directly with the card networks. To avoid potential bias of chargeback rates created from small versus large merchants, we generate chargeback statistics for four-party schemes (Visa and MasterCard) and three-party schemes (American Express and Discover) separately.[10]

In our data, the number and value of chargebacks by card network are separated into three transaction channels—card-present (CP), e-Commerce, and other card-not-present (CNP) such as telephone and mail orders. Many countries have reported higher fraud rates for CNP transactions (which include e-Commerce and telephone/mail orders) than for CP transactions. Some countries, such as France and the United Kingdom, divide CNP fraud statistics into e-Commerce and other CNP.[11]

The numbers and values of chargebacks in our data are also divided into seven reason code categories—fraud, non-receipt goods and services, product quality, cancellation, non-receipt information, processing errors, and authorization issues.[12]

We asked merchant processors to provide the detailed numbers and values of chargebacks not only for all merchants they process but also by merchant category. Five major categories are selected. The first includes department, big box, and apparel stores; the second includes grocery, food, and drug stores; the third is petroleum (i.e., gas stations); the fourth

[10] Visa and MasterCard are called four-party schemes, because four types of entities—cardholders, card issuers, merchants, and merchant acquirers—play major roles besides the card network. American Express and Discover are called three-party schemes because originally three entities—cardholders, merchants, and the card network which acts as the card issuer and the merchant acquirer—were the major players. American Express and Discover now have third-party issuers and merchant acquirers.
[11] See Financial Fraud Action UK (2014) and Observatory for Payment Card Security (2014).
[12] See Appendix A for reason codes for each of the seven reason code categories.

includes restaurants, drinking places, and caterers, and the fifth is the travel industry including airline, car rentals and hotels.[13]

To calculate chargeback rates and merchant loss rates, detailed sales data are essential. We asked for the number and value of sales transactions divided by card network, by transaction channel, and by merchant category.

Several merchant processors furnished the detailed chargeback and sales data. To encourage participation and detailed responses, processors were assured anonymity. The processors who participated in this study, altogether, processed more than 20 percent of signature-based purchase transactions.

Although our data include not a small percentage of signature-based transactions, they may not be representative of all signature-based transactions. Although the processors who participated in our study, as a whole, have a wide variety of merchant clients, most of them have a client base that is skewed to some degree toward specific transaction channels (such as CP, e-Commerce, and other CNP), merchant categories and sizes. We cannot assess the representativeness of our data, since there are few publicly available statistics regarding how the signature-based transactions are distributed across channels, merchant categories and sizes.

4. Results

Almost all statistics vary across processors, and thus we calculate the weighted average using the number or value of sales transactions and the number or value of chargebacks each of the processors' merchants made or received. This section provides various statistics related to total chargebacks, which include all chargebacks regardless of reason codes, for all merchants and by merchant category. It then presents statistics related to fraud chargebacks, discusses

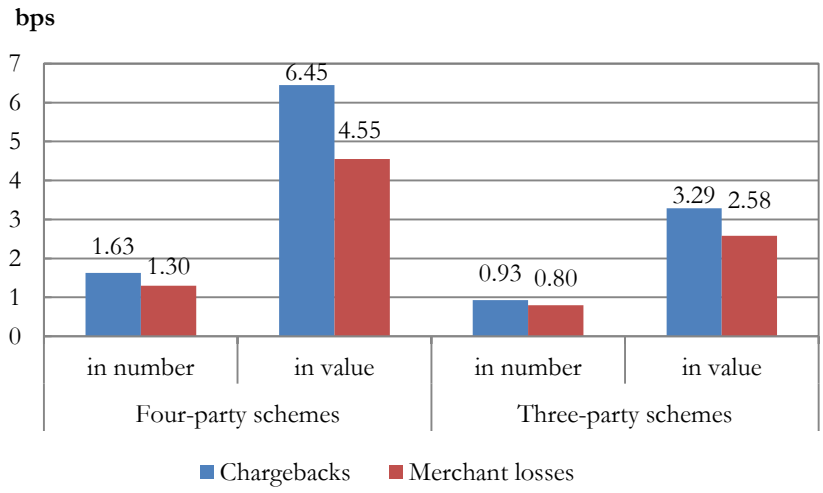
[13] See Appendix B for merchant category codes for each of the five merchant categories.

whether our fraud results are comparable to other available fraud statistics, and provides the implications of our fraud results.

4.1 Total chargebacks for all merchants

Chart 1 presents the weighted average chargeback rates and merchant loss rates for all merchants, regardless of their merchant category and transaction channels. For four-party schemes' signature-based transactions (i.e., Visa's and MasterCard's signature-based transactions combined), the weighted average chargeback rates—the number or value of chargebacks merchants receive from card issuers relative to the number or value of sales transactions they make—are 1.63 basis points (bps, or 0.0163 percent) in number and 6.45 bps in value. The weighted average merchant loss rates—the number or value of losses merchants incur from chargebacks relative to the number or value of sales transactions they make—are 1.30 bps in number and 4.55 bps in value, suggesting not all chargebacks resulted in merchant losses. The weighted average merchant loss to chargeback ratios are about 80 percent in number and 70 percent in value, implying 20 to 30 percent of chargebacks were resolved as being the issuers' liability.

Chart 1: Total chargeback rates and merchant loss rates



For three-party schemes' transactions (i.e., American Express's and Discover's signature-based transactions combined), the weighted average chargeback rates are 0.93 bps in number and 3.29 bps in value and the weighted average merchant loss rates are 0.8 bps in number and 2.58 bps in value. The weighted average merchant loss to chargeback ratios are about 90 percent in number and 80 percent in value.

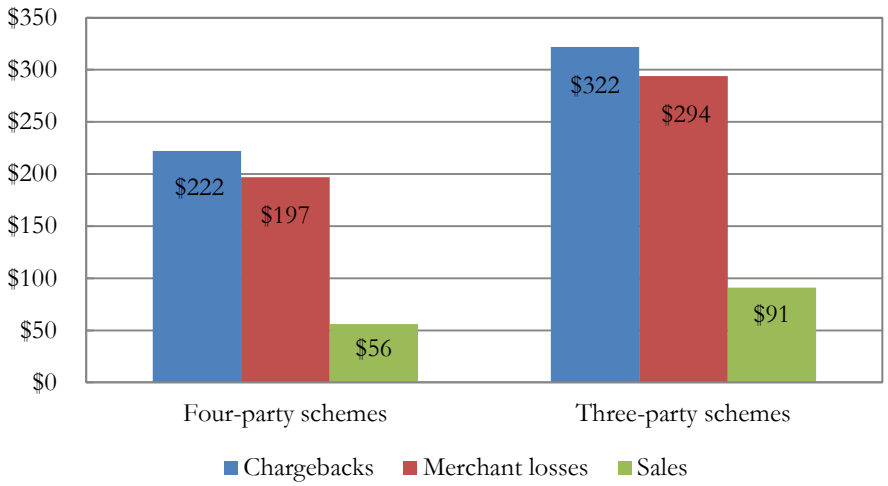
It is important to note that whether or not the three-party schemes have lower chargeback rates than the four-party schemes cannot be confirmed from our data because of the sample difference. As mentioned above, in our data, the three-party schemes' transactions were made at small- to mid-size merchants only, while those of the four-party schemes' were made at merchants of all sizes (i.e., transactions made at large merchants are also included).[14] It is possible that large merchants tend to receive more chargebacks than their smaller counterparts, if large merchants have relatively more sales through e-Commerce or telephone/mail orders. If this is the case, our results would underestimate the actual chargeback and merchant loss rates for three-party schemes. However, there is another possibility. Large merchants might tend to receive less chargebacks than smaller merchants if large merchants are more sophisticated to prevent fraudulent transactions or transactions that attract chargebacks. In this case, actual chargeback and merchant loss rates for the three-party schemes would be even lower than our results.

The higher chargeback rate in value than that in number in Chart 1 indicates the average value per chargeback is higher than the average value per sales transaction. Indeed, the average value per chargeback is $222 for four-party schemes and $322 for three-party schemes, while the average value per sales transaction is $56 for four-party schemes and $91 for three-party

[14] Because our data do not include information on merchant size, we cannot assess how severe the difference of merchant size in our data for four-party schemes and for three-party schemes.

schemes (Chart 2). The average value per transaction from which a merchant incurs a loss is slightly lower than the average value per chargeback, suggesting merchants are more likely to dispute chargebacks with higher value (and accept chargebacks with lower value).[15]

Chart 2: Average value per transaction

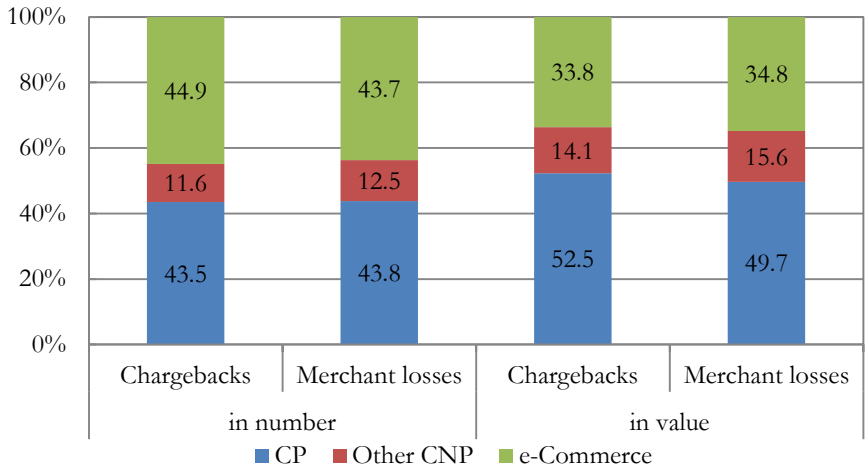


Chargebacks and merchant losses are distributed across three channels—CP, e-Commerce, and other CNP. Chart 3 shows those distributions for four-party schemes (Panel A) and three-party schemes (Panel B). For four-party schemes, the share of e-Commerce is about the same as that of CP in number, but it is smaller by 15 to 20 percentage points than that of CP in value, suggesting the average transaction value per e-Commerce chargeback is smaller than that per CP chargeback.[16] For three-party schemes, the CP share is stable around 60 percent, and the rest is almost evenly distributed between e-Commerce and CNP other.

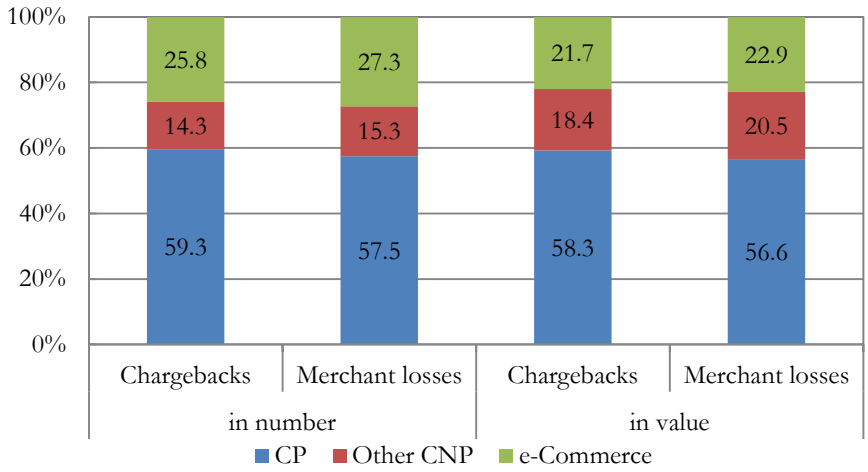
[15] A small value chargeback may not justify a merchant's cost of researching the transaction and submitting evidence to dispute the chargeback.
[16] In fact, the average transaction value per e-Commerce chargeback is $168, which is significantly smaller than the average value per CP chargeback of $268, for four-party schemes. See Chart C1 in Appendix C for more details.

Chart 3: Channel shares

A: Four-party schemes



B: Three-party schemes



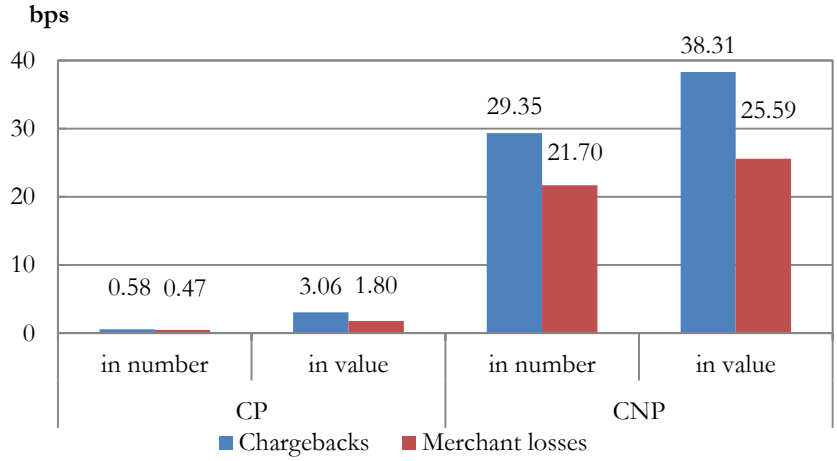
We use a subset of our data to calculate chargeback and merchant loss rates for CP versus CNP. This is because some processors were unable to distribute their sales data by channel, and processors who reported sales data by channel did not have sufficiently large sales transactions made in other CNP environment (e.g., mail and telephone orders).

Chargeback and merchant loss rates in the CNP environment are higher than those in the CP environment. The differences are remarkable for four-party schemes (Chart 4, Panel A). In

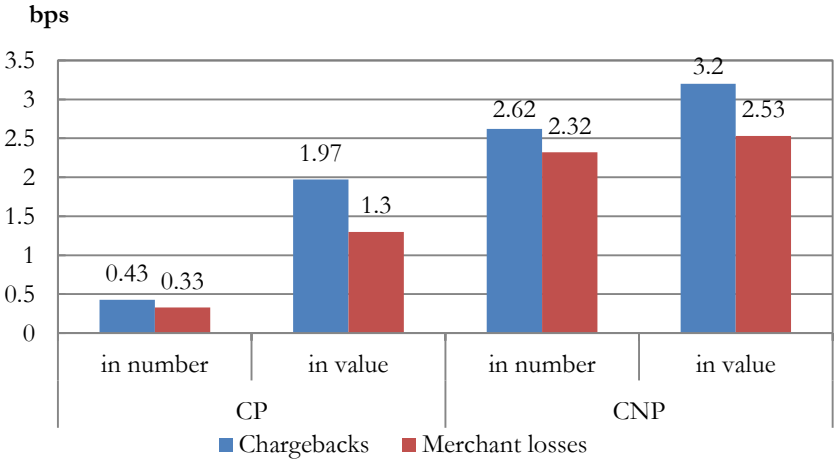
the CP environment, the chargeback rate is less than 1 basis point in number and about 3 bps in value. In contrast, in the CNP environment, the chargeback rate is about 30 bps in number and 38 bps in value. The differences are much smaller for three-party schemes (Chart 4, Panel B). Nevertheless, these results suggest merchants are much more likely to receive chargebacks and incur losses from CNP sales than from CP sales.

Chart 4: Chargeback and merchant loss rates for CP vs. CNP

A: Four-party schemes

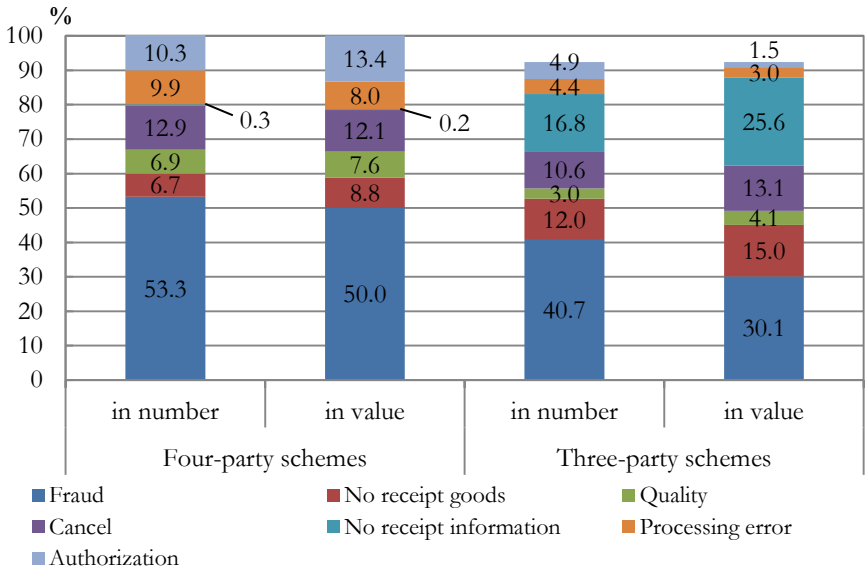


B: Three-party schemes



Chargebacks and merchant losses are also distributed across seven reason code categories. Chart 5 shows the reason code distribution in chargebacks in number and in value. The seven reason code categories do not add up to all chargebacks for three-party schemes, possibly because those schemes have chargeback reason codes that do not fall under the seven categories we defined. Fraud is the most common reason for chargebacks: About 40 to 50 percent of chargebacks were due to fraud. The second most common reason for three-party schemes is no-receipt information, while it is the least common reason for four-party schemes. Some of the chargebacks categorized as no-receipt information may include fraudulent transactions, especially for three-party schemes. Three-party scheme networks use a no-receipt information reason code if a retrieved sales draft did not include enough information for the cardholder to recognize the transaction. In contrast, four-party scheme networks recently discontinued at least one reason code in the no-receipt information category, so that issuers use a reason code that adequately describes the cardholders' original disputes. The other five reason code categories are more or less evenly distributed.

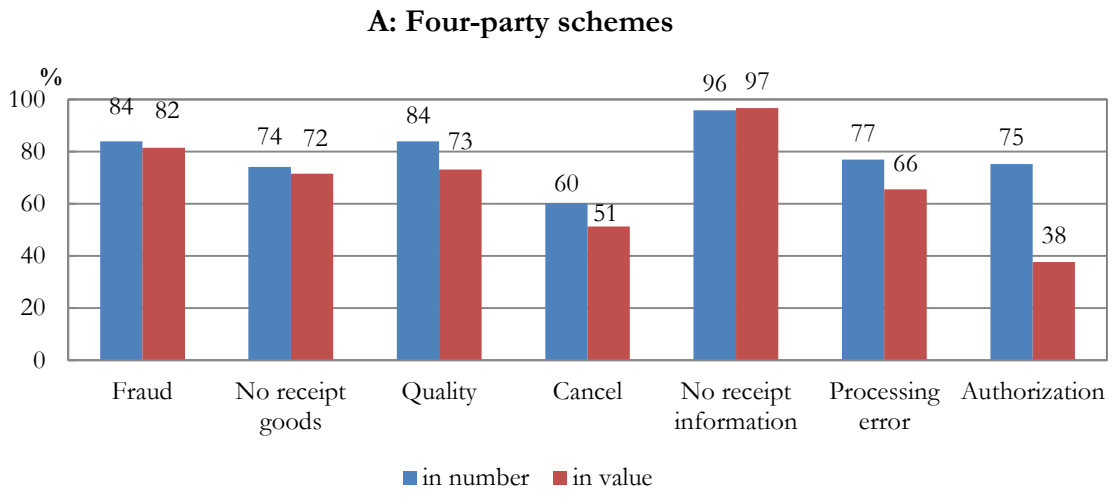
Chart 5: Reason code shares–Chargebacks



These reason code shares slightly change for different channels.[17] If limiting to the CP environment, the shares of processing error and authorization reason code categories become larger; the share of no-receipt information becomes larger for three-party schemes but smaller for four-party schemes; and the shares of the other four reason codes become smaller. In the CNP environment, the opposite is true.

How much merchants incur losses relative to the chargebacks varies by reason code category. Chart 6 shows the merchant loss to chargeback ratio by reason code category. No-receipt information reason code category has the highest ratio—close to 100 percent—for both four-party and three-party schemes.[18] Fraud reason category has the second highest ratio, suggesting 80 to 90 percent of fraud chargebacks were merchants' liability. Authorization reason category has the third highest ratio for three-party schemes, while it has one of the lowest ratios for four-party schemes. Cancel reason category has among the lowest ratios for both schemes.

Chart 6: Merchant loss to chargeback ratio by reason code category



[17] See Chart C3 in Appendix C.

[18] For three-party scheme transactions, the high merchant loss to chargeback ratio of the no-receipt information reason code category has a significant effect on the merchant losses because of the large share of this reason code category in chargebacks. In contrast, for four-party scheme transactions, this high ratio has little impact on the merchant losses.

B: Three-party schemes

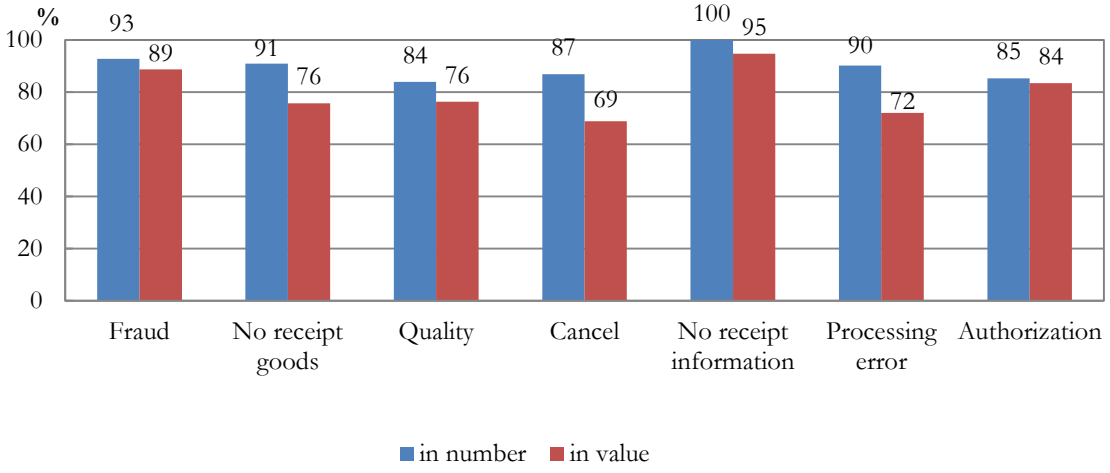
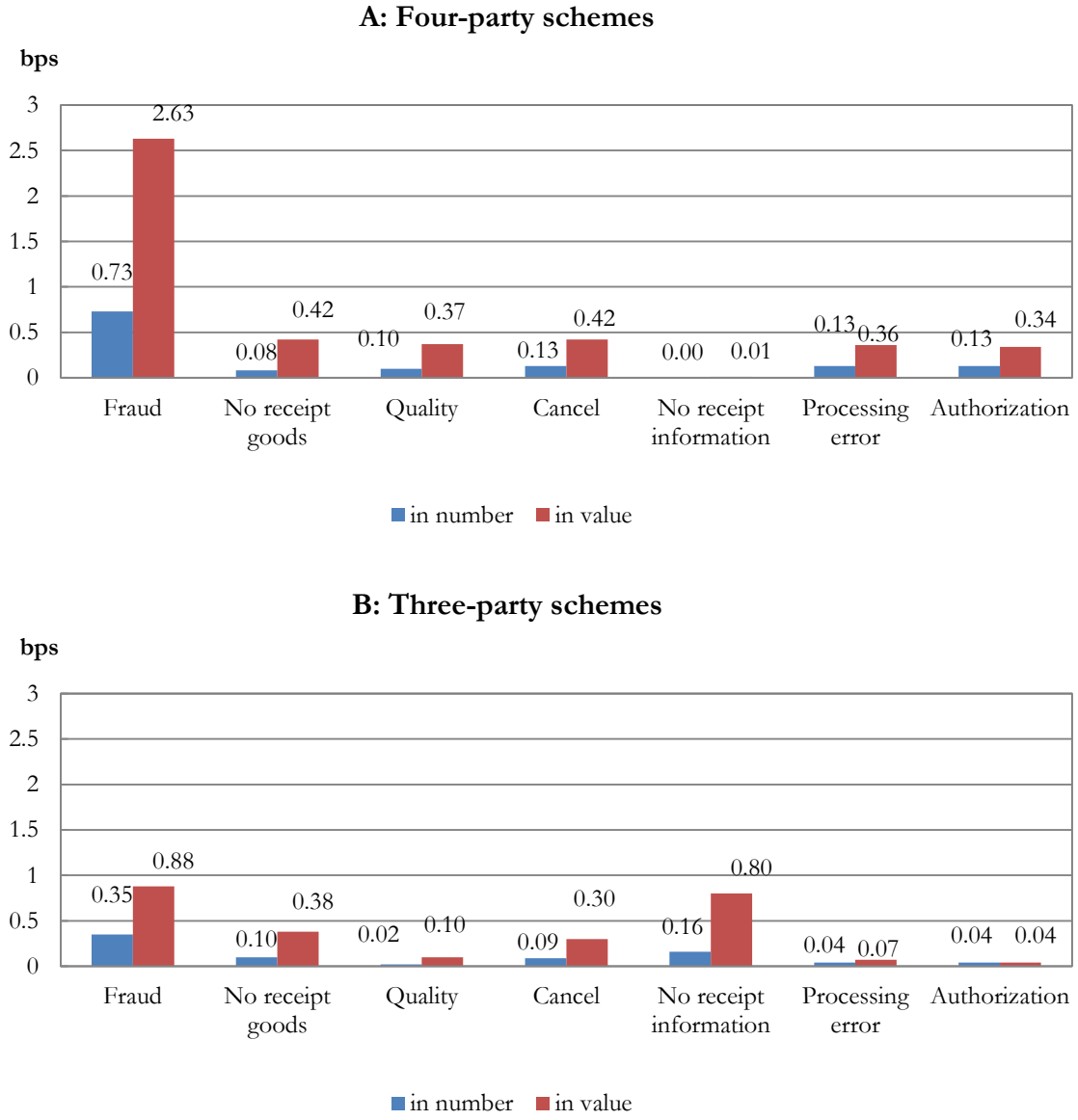


Chart 7 splits merchant loss rates into the seven reason code categories. Except for fraud and no-receipt information categories, merchant loss rates are surprisingly similar across categories for four-party schemes, while they have some variation for three-party schemes. For four-party schemes, merchants rarely incur losses from no-receipt information reason category, but for three-party schemes, this category causes merchants to lose 0.16 bps in sales transactions and 0.80 bps in sales value. For both types of schemes, merchants lose the most from fraud reason category, which will be examined more details later in this section.

Chart 7: Merchant loss rates divided into reason code categories



4.2 Total chargebacks by merchant category

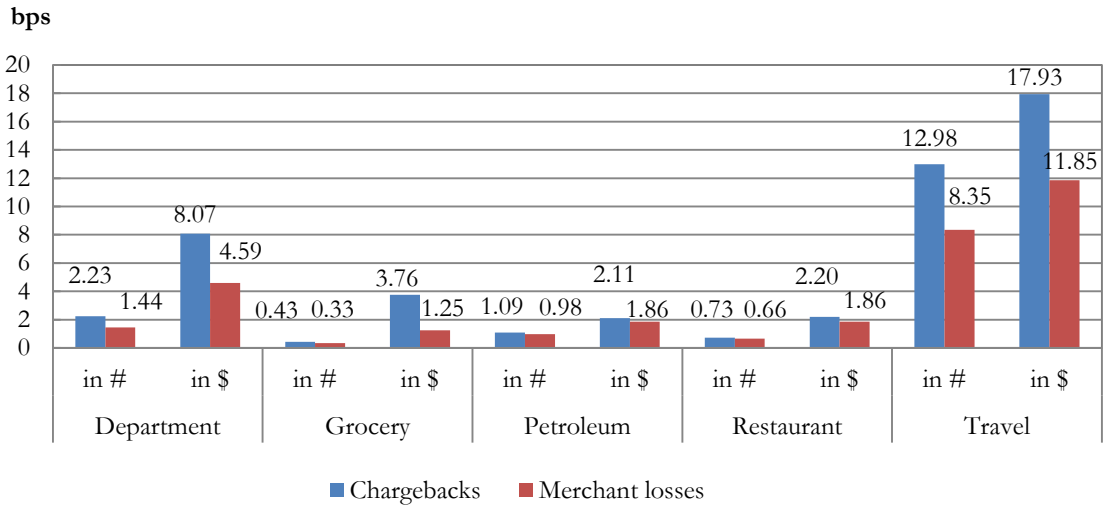
Our data include detailed numbers and values of chargebacks for each of the five major merchant categories. Those categories are department (also includes big box and apparel stores), grocery (also includes food and drug stores), petroleum, restaurant (also includes drinking places and caterers), and travel (including airlines, car rentals, and hotels). These five merchant

categories altogether received less than 50 percent of all chargebacks, but they generated more than 50 percent of all sales, suggesting they are relatively less likely to receive chargebacks than other merchant categories. In this subsection, some of the statistics are calculated from a subset of our data because some processors were unable to provide sales data by merchant category.

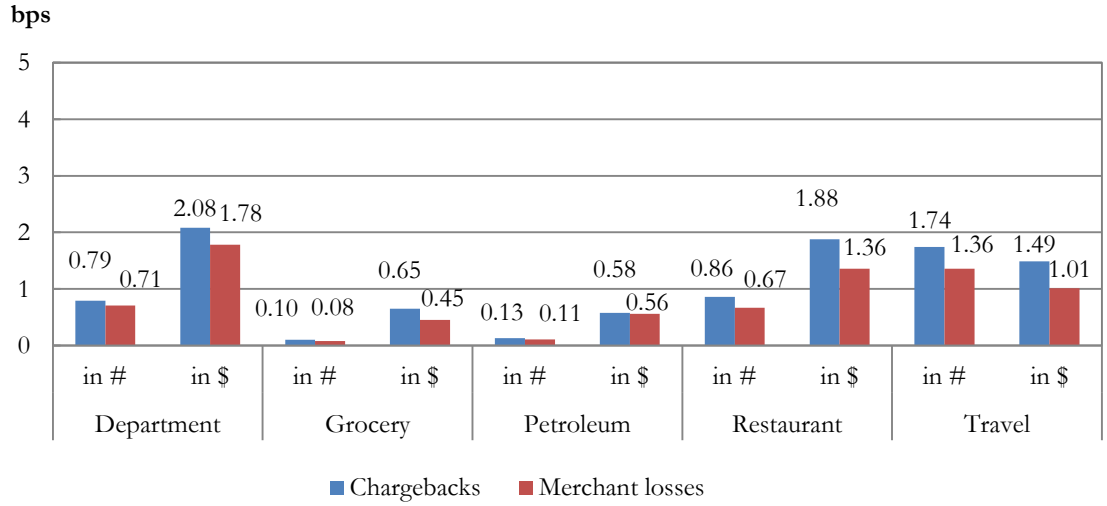
Chart 8 presents chargeback and merchant loss rates for each of the five merchant categories. For four-party schemes, the travel category has the highest chargeback and merchant loss rates, followed by the department category. These two categories have higher rates than the average chargeback and merchant loss rates of overall merchants shown in Chart 1. The grocery category has the lowest merchant loss rates and the restaurant and petroleum categories have the second lowest. For three-party schemes, no categories have higher rates than the average chargeback and merchant loss rates of overall merchants. The department category has the highest chargeback and merchant loss rates in terms of value, followed by the restaurant category. The travel category has the highest chargeback rate in terms of the number; however, it is less than 2 bps, which is a sharp contrast to almost 13 bps of the travel category for four-party schemes. This is because one of the two three-party schemes rarely requests chargebacks to the travel industry.

Chart 8: Chargeback and merchant loss rates by merchant category

A: Four-party schemes



B: Three-party schemes

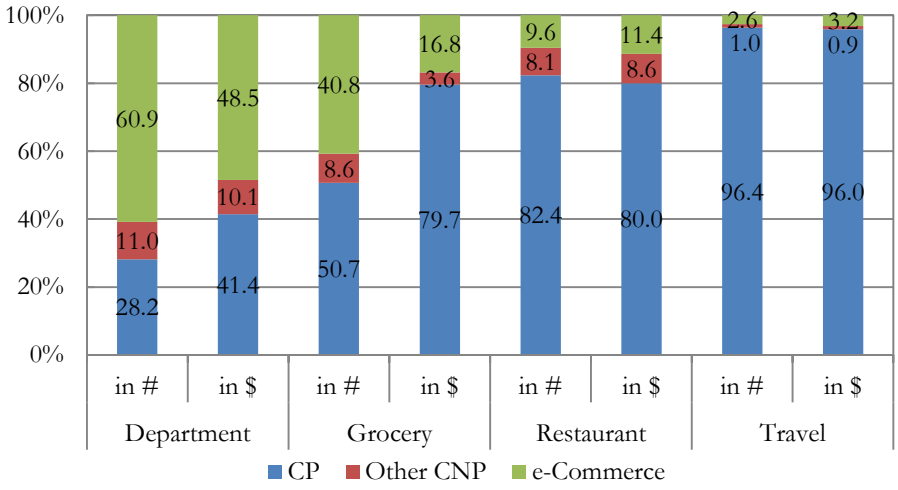


Are the higher chargeback or merchant loss rates of the department and travel categories explained by a greater CNP share in those categories? Chart 9 shows channel shares of chargebacks in the department, grocery, restaurant, and travel categories: The petroleum category is excluded from the chart because almost all chargebacks are CP chargebacks. The department category has a relatively greater CNP share in chargebacks, which may at least partly explain the category's higher chargeback rate. In contrast, the travel category has a very small

CNP share, and thus, the category's higher chargeback rate for four-party schemes may be contributed by other factors.[19] The results suggest even within the same channel, chargeback and merchant loss rates vary by merchant category.

Chart 9: Channel shares of chargebacks for four merchant categories

A: Four-party schemes



B: Three-party schemes

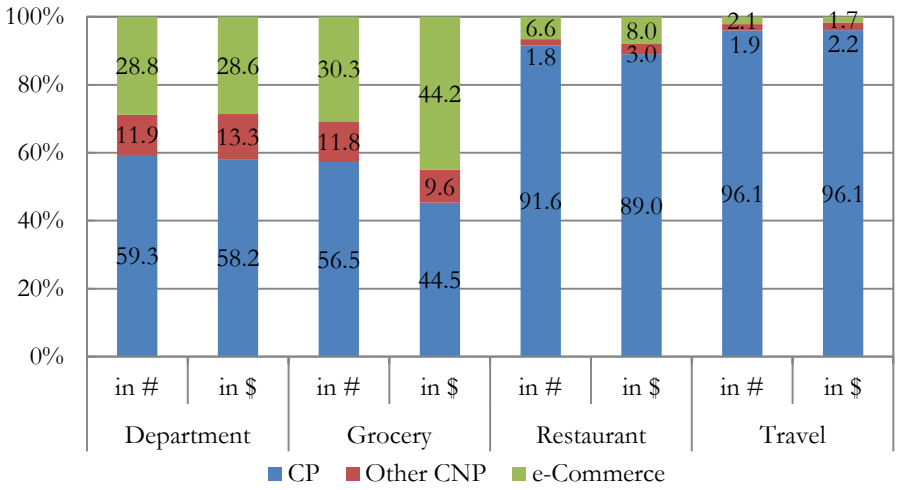
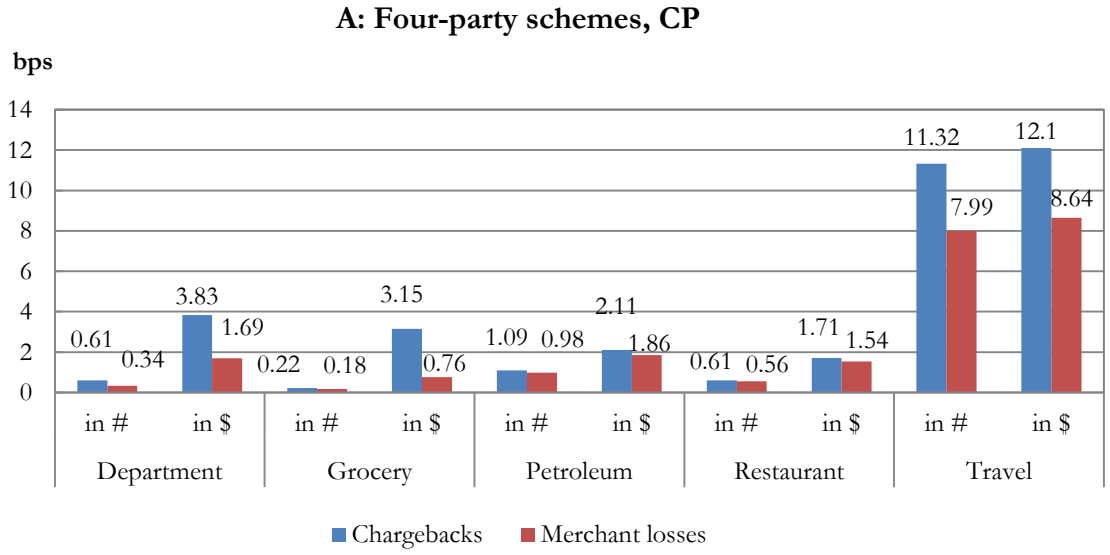


Chart 10 compares chargeback and merchant loss rates across merchant categories in the CP and CNP environment, separately. All panels provide evidence that even within the same CP,

[19] A very small CNP share of chargebacks in the travel category might be unique to some processors who participated in our study.

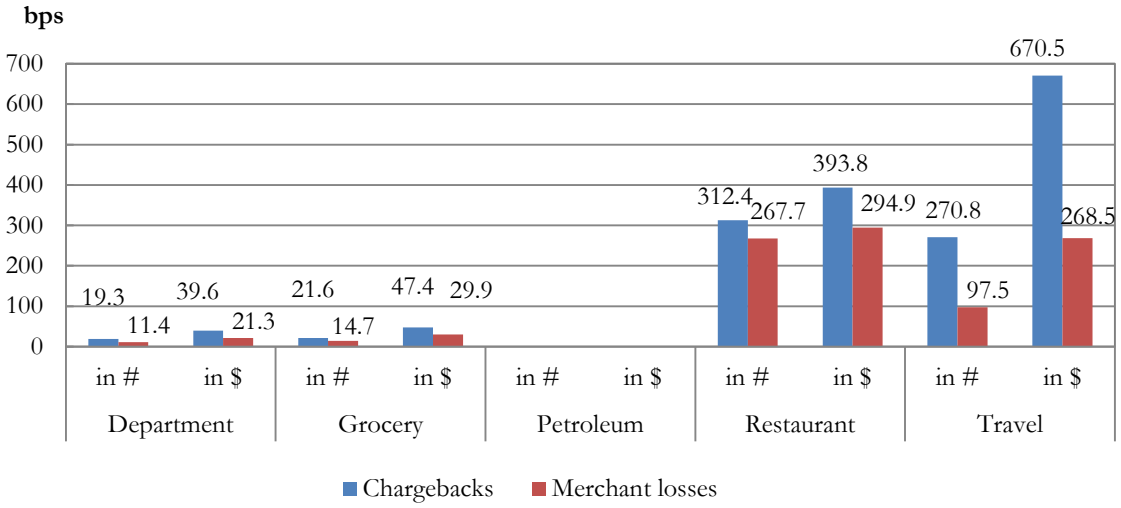
or CNP environment, chargeback and merchant loss rates vary across merchant categories. For four-party schemes, the travel category has significantly higher chargeback rates than the other four categories in the CP environment. The department category's chargeback and merchant loss rates are comparable to those of the petroleum category. In the CNP environment, although all four relevant categories have chargeback rates at least 10 times higher than those in the CP environment, the restaurant and travel categories have remarkably high chargeback rates—their CNP merchant loss rates in value are around 300 bps, implying they incur losses from chargebacks for 3 percent of their CNP sales value.[20] For three-party schemes, the chargeback rate variation across merchant categories is rather modest in the CP environment, but in the CNP environment, the restaurant category has much higher chargeback rates than the other three categories (around 20 bps vs. less than 10 bps).

Chart 10: Chargeback and merchant loss rates by merchant category for CP and CNP

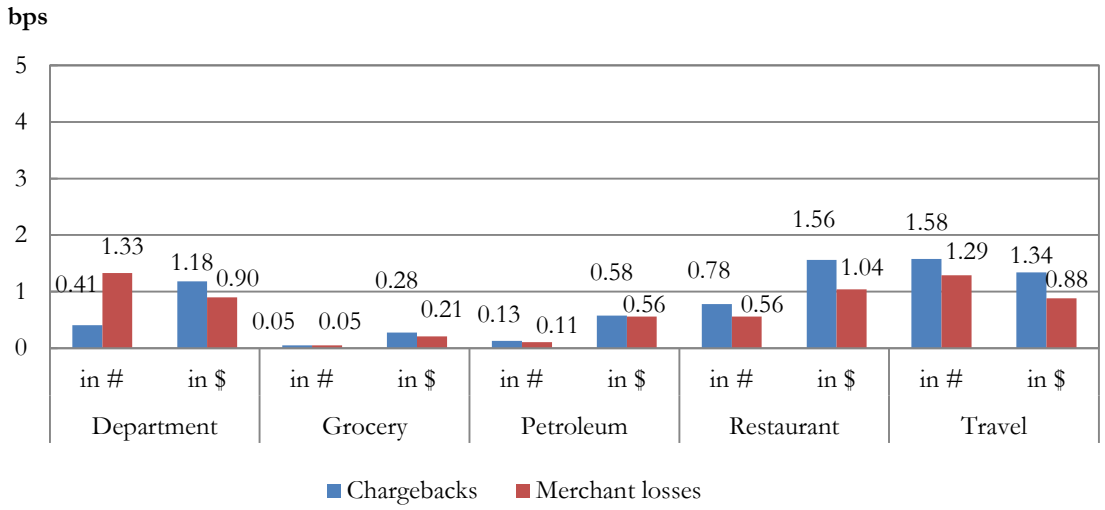


[20] These significantly high chargeback and merchant loss rates may be unique to some processors who participated in our study and may not represent the overall restaurant category or the overall travel category. Subsection 4.4 provides further discussion.

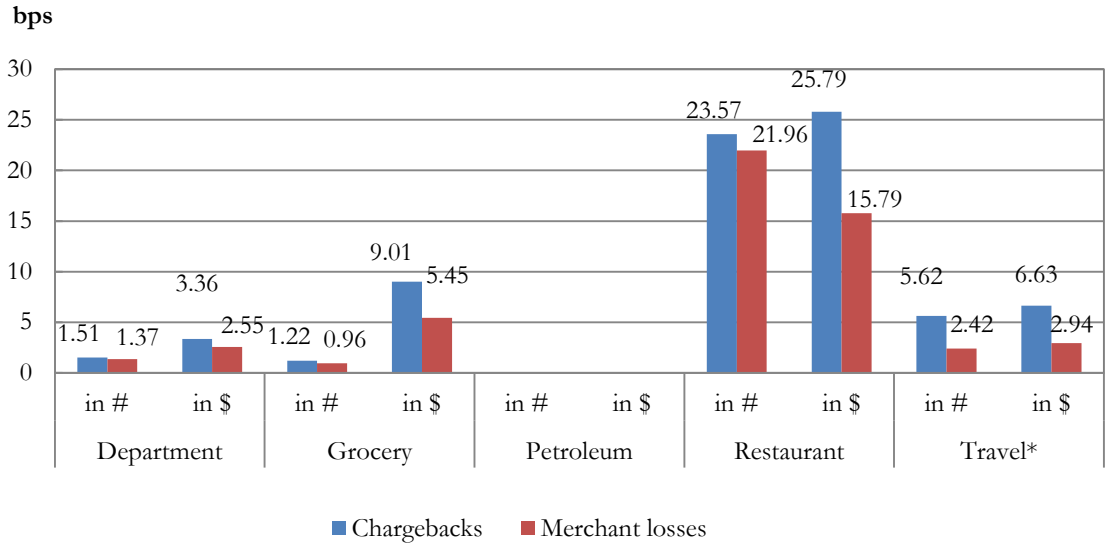
B: Four-party schemes, CNP



C: Three-party schemes, CP



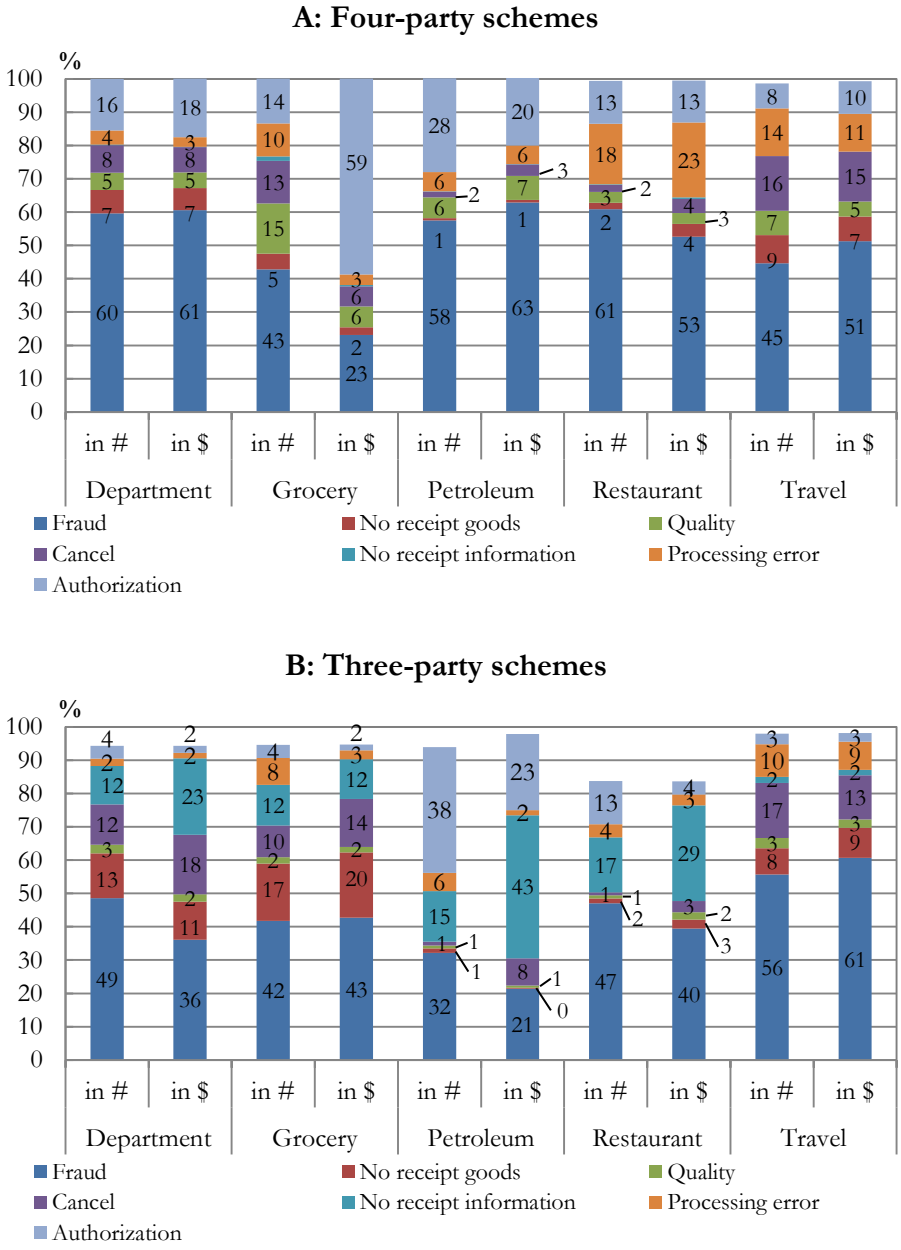
D: Three-party schemes, CNP



*: CNP sales transactions in the travel category for three-party schemes may not be sufficient (less than 100,000 transactions), and thus the rate may not be stable.

To some extent, the distribution of reason code categories varies by merchant category (Chart 11). However, merchants generally incur most losses from fraud. For four-party schemes, authorization is also a common reason for all the five merchant categories, and processing error is a common reason for the restaurant and travel merchant categories. For three-party schemes' chargebacks, no-receipt information reason is a common for the department, petroleum, and restaurant merchant categories. Other statistics, such as the merchant loss to chargeback ratio by merchant category, are shown in Appendix C.

Chart 11: Reason code shares of chargebacks by merchant category



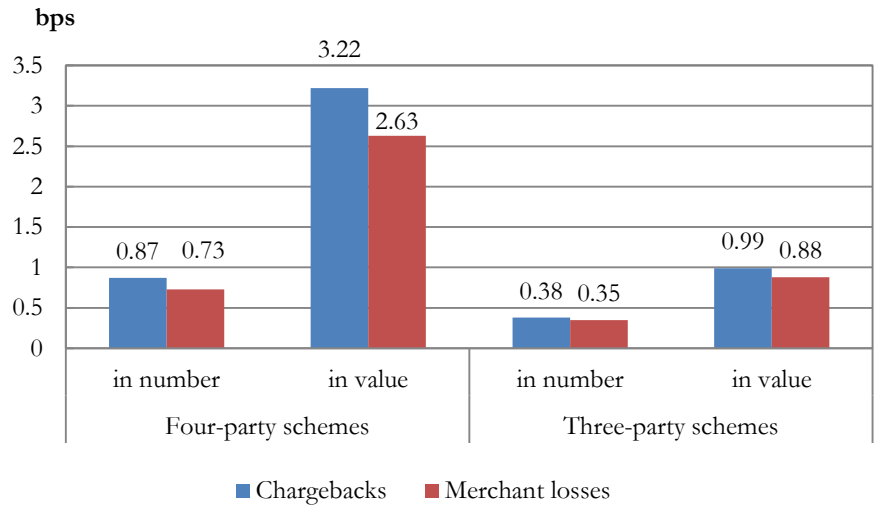
4.3 Fraud chargebacks

This subsection examines detailed statistics on fraud chargebacks for three reasons. First, fraud chargebacks are the most common reason for chargebacks. Second, as explained earlier, policymakers are particularly interested in fraud chargebacks and merchant fraud losses because they are key pieces of information to consider policy for the payments security and assess the

improvement of payments security. Third, unlike total chargebacks and merchant losses from them, we can compare fraud chargebacks and merchant fraud losses obtained from our data with other available fraud statistics.

Chart 12 shows the weighted average fraud chargeback and merchant loss rates for all merchants, regardless of merchant categories and transaction channels. For four-party schemes, the (weighted average) fraud chargeback rate is 0.87 bps in number and 3.22 bps in value, and the merchant loss rate is 0.73 bps in number and 2.63 bps in value. For three-party schemes, the fraud chargeback rate is 0.38 bps in number and 0.99 bps in value, and the merchant loss rate is 0.35 bps in number and 0.88 bps in value. It is important to remember that our three-party schemes' data only include transactions made at small- to mid-size merchants, while our four-party schemes' data include transactions made at merchants of all size. Thus, the lower rates for three-party schemes might be due to the sample difference.[21]

Chart 12: Fraud chargeback rates and merchant loss rates



[21] The lower rates may also be due to the use of no-receipt information reason codes for three-party scheme chargebacks.

The average values of a fraud chargeback and of a merchant losse are greater than $200, which are more than three and two times greater than the average value of a sales transaction for four-party schemes and for three-party schemes, respectively (Chart 13). Compared with the average values of a total chargeback and of a total merchant loss shown in Chart 2, the average values of a fraud chargeback and of a fraud merchant loss are much smaller for three-party schemes (about $230 vs. about $300) but are about the same for four-party schemes.

Chart 13: Average value per fraud chargeback, fraud merchant loss, and sales transaction

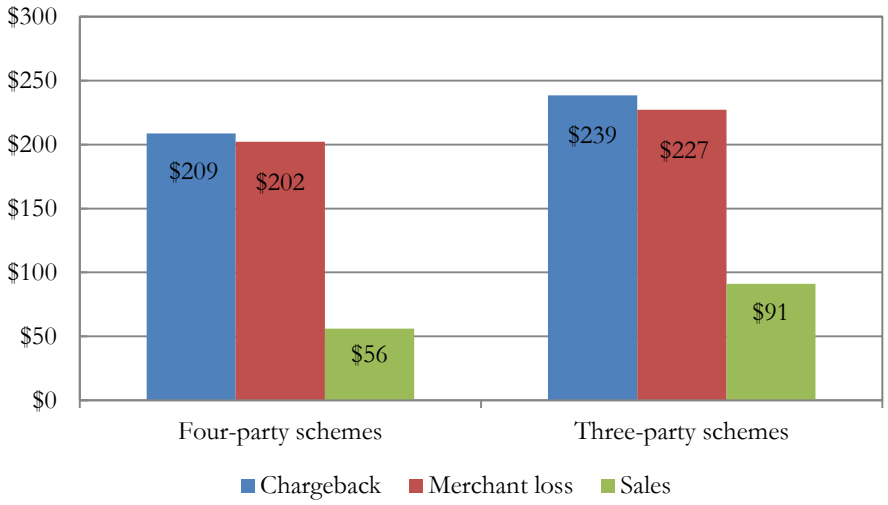
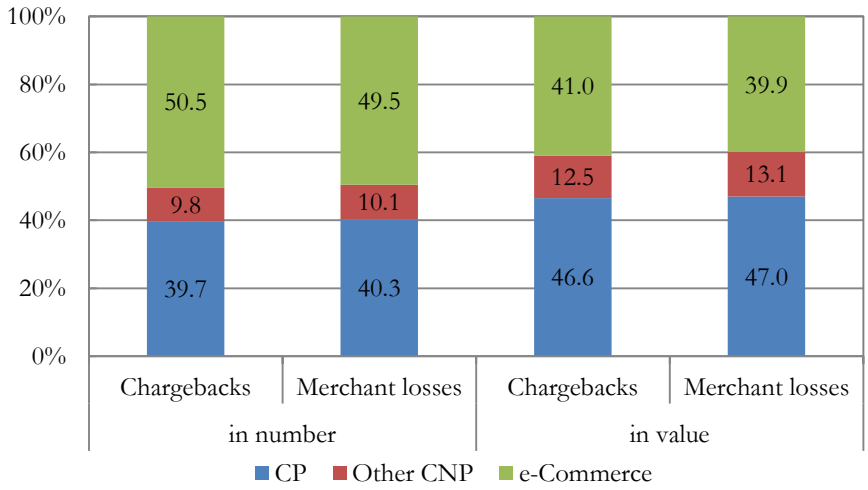


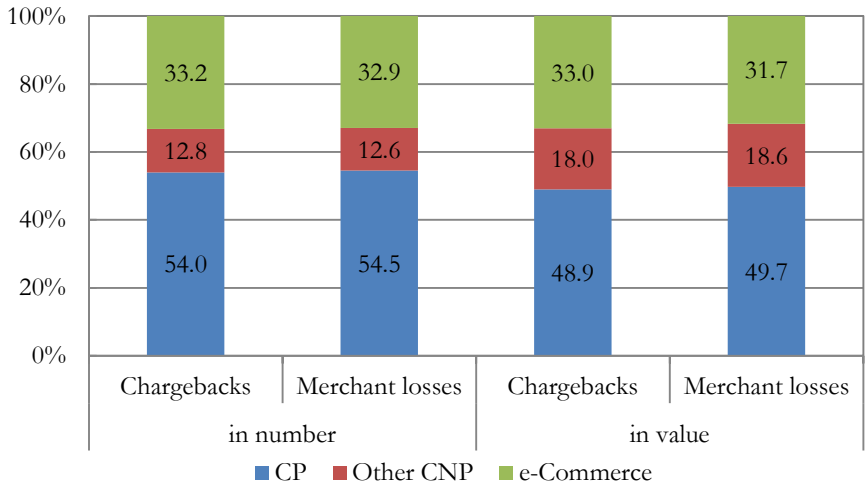
Chart 14 describes the distribution of fraud chargebacks and merchant losses across transaction channels. For four-party schemes, e-Commerce has the greatest share in number (around 50 percent), but CP has the greatest share in value (slightly smaller than 50 percent). For three-party schemes, CP has the greatest share in both number and value, although the CP share is slightly smaller in value than in number.

Chart 14: Channel shares of fraud chargebacks and merchant losses

A: Four-party schemes



B: Three-party schemes



The average value per fraud chargeback or fraud merchant loss transaction varies by channel (Chart 15). For four-party schemes, the average value is almost comparable between the CP and other CNP channels (around $250), but it is significantly lower for e-Commerce (around $165). For three-party schemes, the average value is significantly higher for other CNP (about $330) than for e-Commerce or CP (lower than $240).

Chart 15: Average value per fraud chargeback and merchant loss transaction by channel

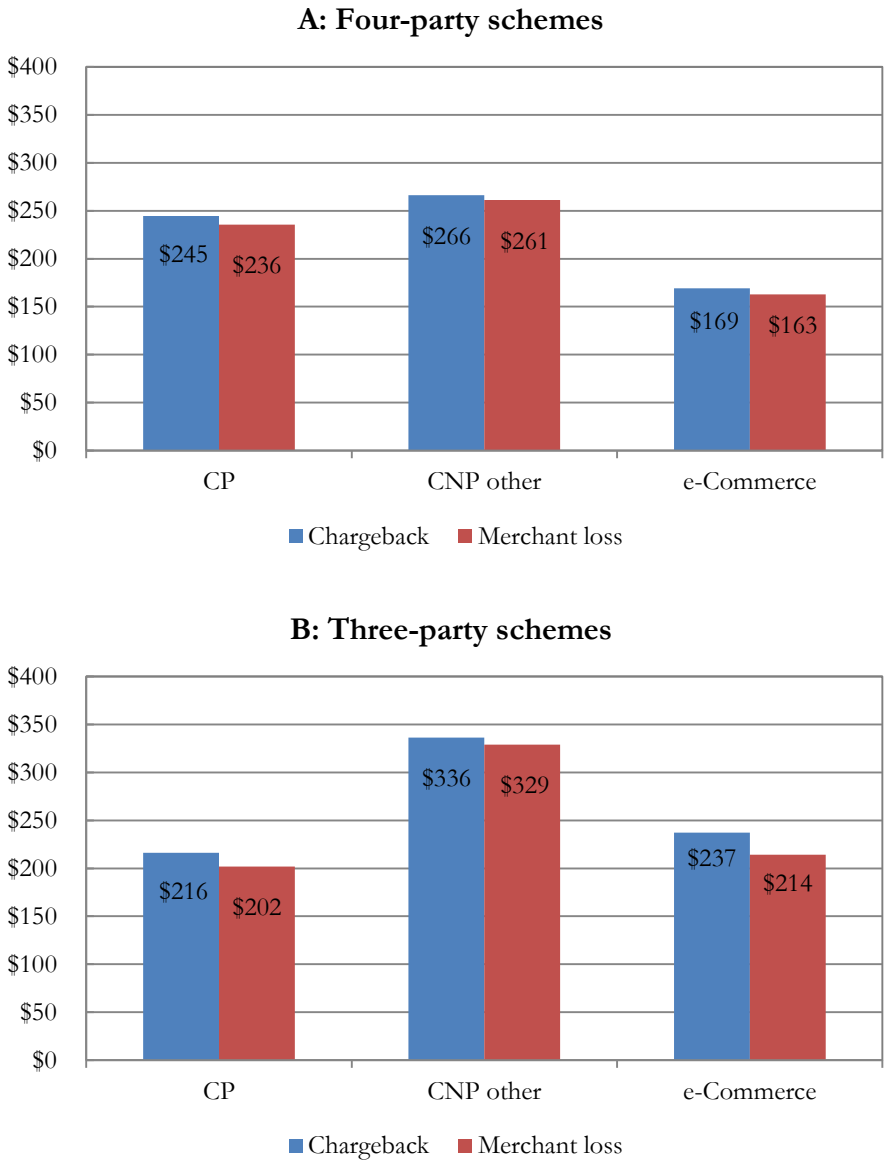
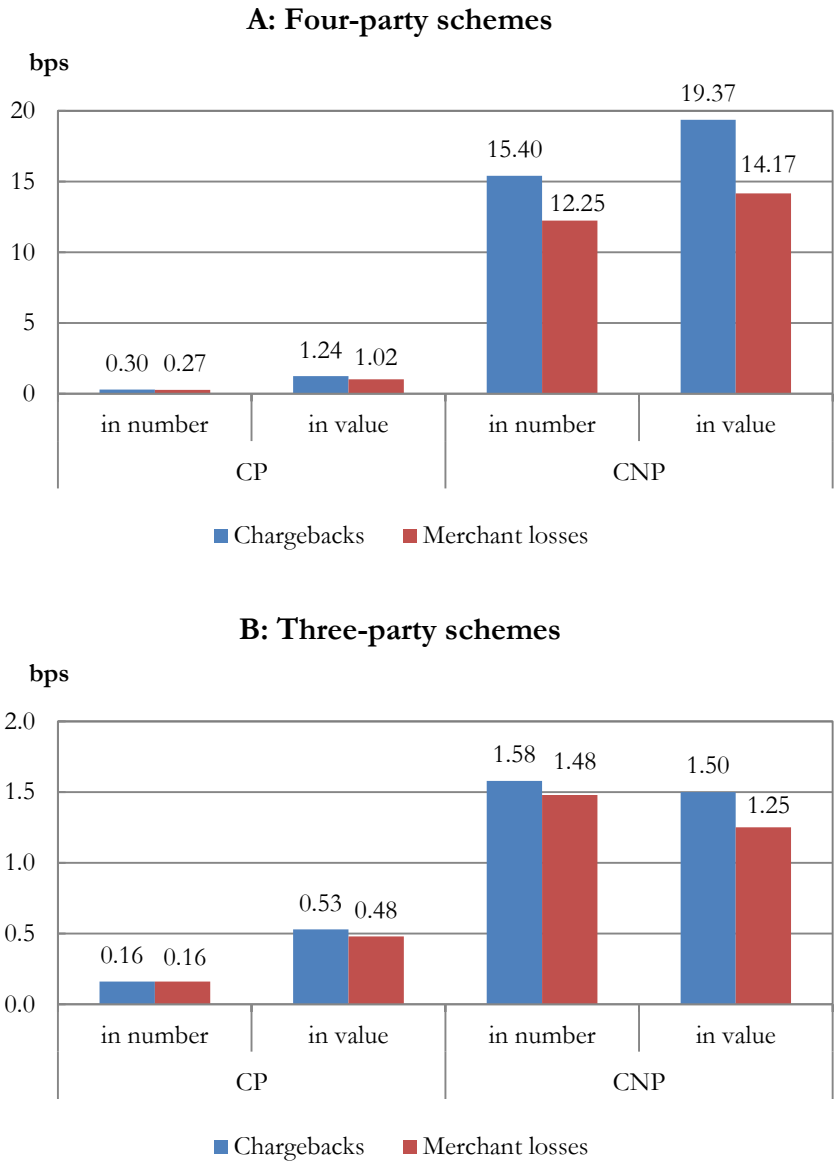


Chart 16 presents fraud chargeback and merchant loss rates for CP versus CNP. As explained above, we use a subset of our data to calculate these statistics due to some processors' missing sales data by channel. Clearly, the fraud chargeback and merchant loss rates are significantly higher for CNP than for CP. For example, the four-party schemes' fraud chargeback and merchant loss rates are 0.3 bps or lower in number and 1.2 bps or lower in value in the CP environment, while they are 12 bps or higher in number and 14 bps or higher in value in the CNP

environment. Again, due to the sample difference, we cannot confirm the three-party schemes' lower fraud chargeback and merchant loss rates for both CP and CNP than those of four-party schemes.

Chart 16: Fraud chargeback and merchant loss rates for CP vs. CNP

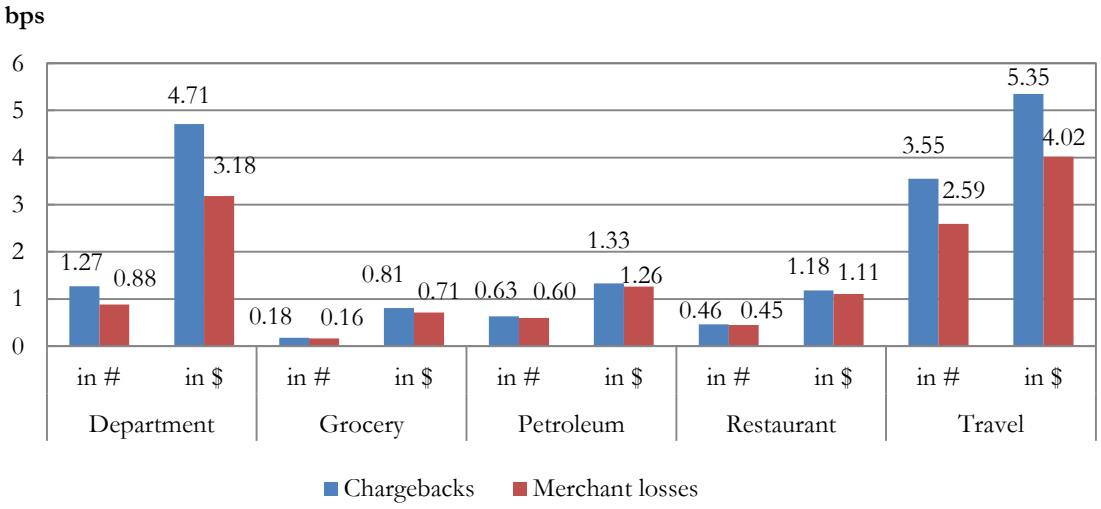


Fraud chargeback and merchant loss rates also vary across different merchant categories (Chart 17). In a given merchant category, those rates vary between the CP and CNP

environment; and within the same environment, those rates vary across merchant categories. For four-party schemes, the travel and department categories have higher fraud rates than the other three categories, if including all transaction channels (Panel A). However, if limiting to the CP environment, while the travel category continues to have much higher fraud rates than the grocery, petroleum, and restaurant categories, the department category has somewhat comparable fraud rates with those three categories (Panel B). The fraud rates of the restaurant category are not notable when either including all channels or limiting to the CP environment, but they are surprisingly high if limiting to the CNP environment (Panel C).[22] For three party schemes, the travel, department, and restaurant categories have slightly higher fraud rates than the grocery and petroleum categories, when including all channels or limiting to the CP channel (Panels D and E). But if limiting to the CNP environment, the restaurant category has remarkably higher fraud rates than any other categories (Panel F).[23]

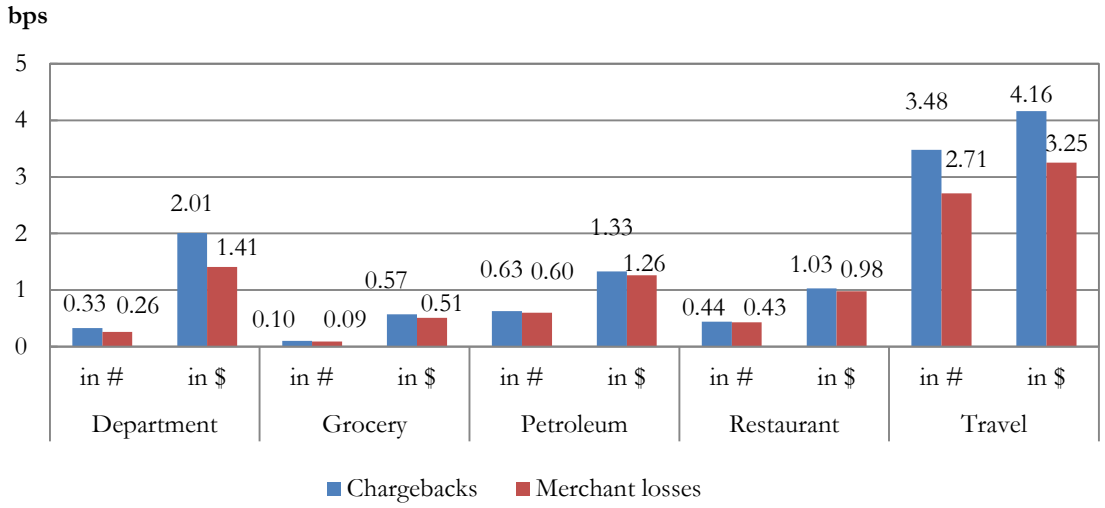
Chart 17: Fraud chargeback and merchant loss rates by merchant category

A: Four-party schemes, all channels

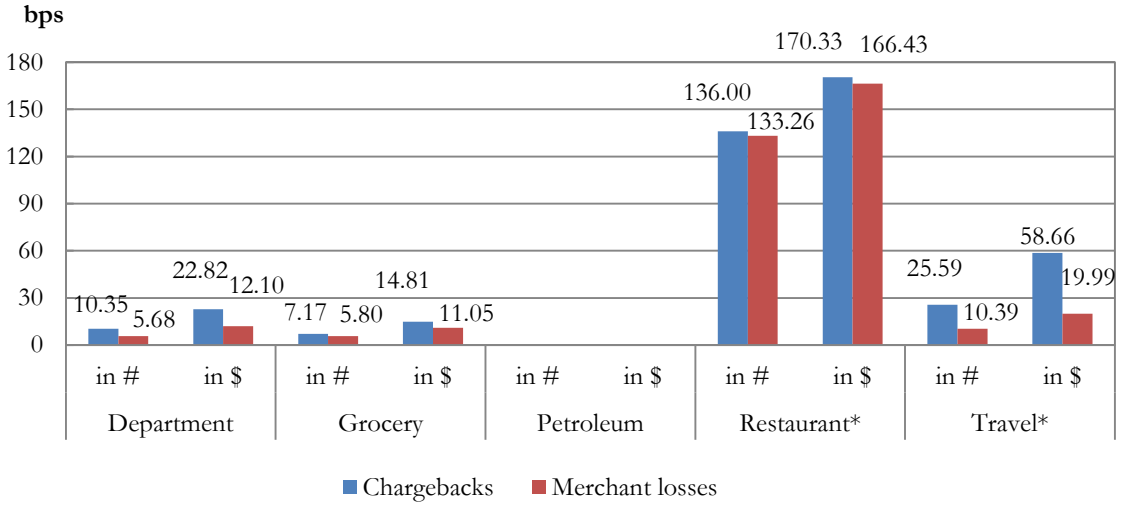


[22] Processors who were able to provide sales data by merchant category and by transaction channel did not have enough CNP sales in the restaurant category, which likely causes this very high CNP fraud rate. Subsection 4.4 considers whether this is a common phenomenon in the restaurant category.
[23] See Footnote 22.

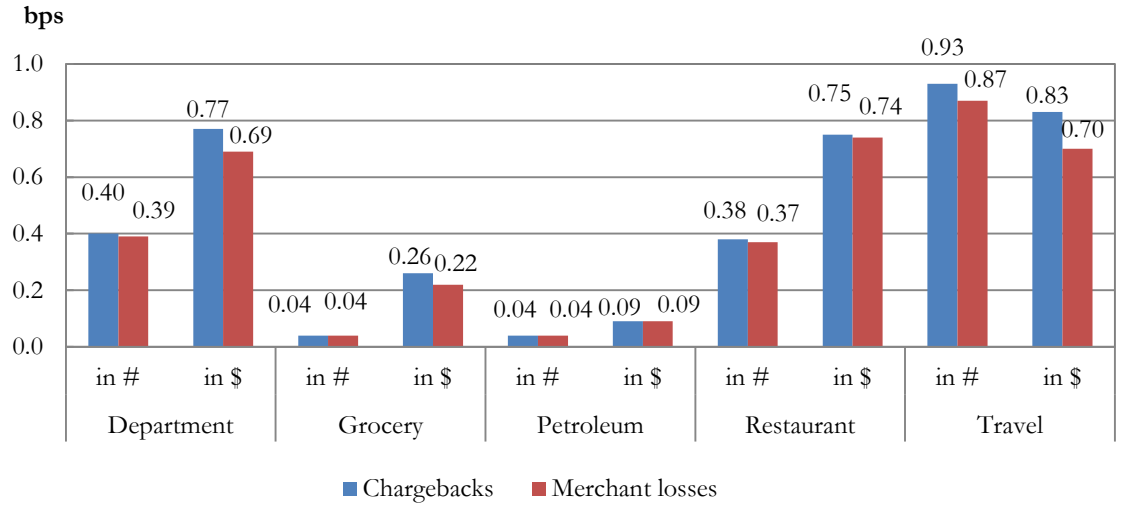
B: Four-party schemes, CP



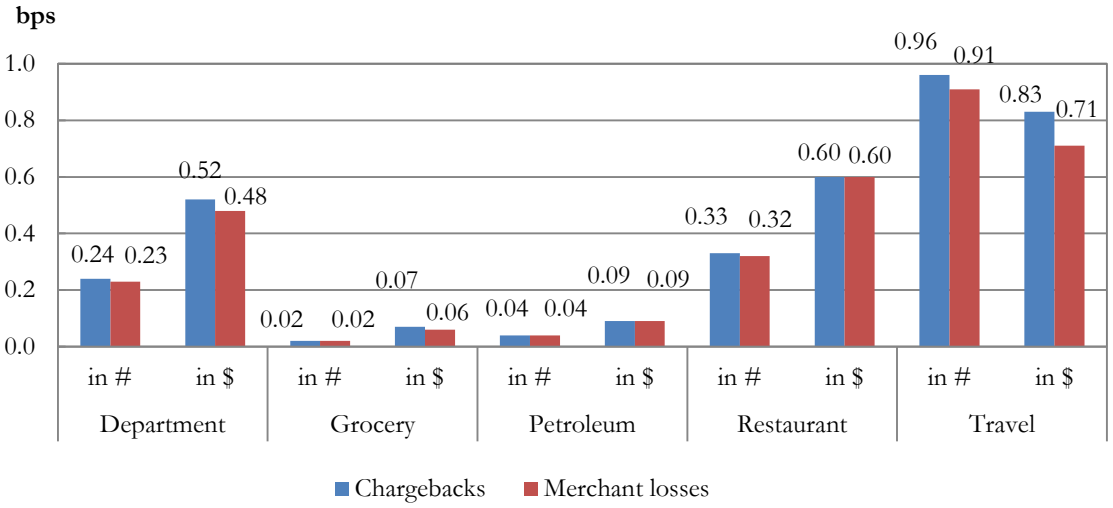
C: Four-party schemes, CNP



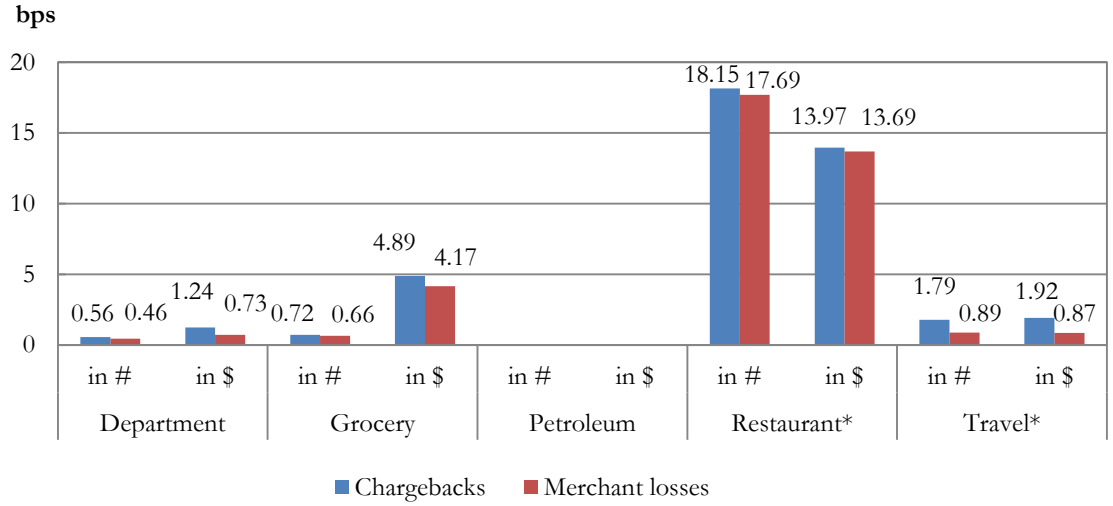
D: Three-party schemes, all channels



E: Three-party schemes, CP



F: Three-party schemes, CNP



*: Due to missing data, CNP sales transactions in the restaurant and travel categories for both four-party and three-party schemes may not be sufficiently large, to obtain stable CNP fraud rates.

4.4 Fraud results comparison and implications

4.4.1 Comparison

Before we consider implications of our fraud results, we examine whether our results are comparable to other available fraud statistics. In the United States, although more fraud statistics are becoming available, most lack detail, especially regarding how the fraud losses are distributed between issuers and merchants. A notable exception is a series of reports published

by the Federal Reserve Board of Governors (FR BOG) on debit card issuers whose interchange fees are regulated.[24] Those reports include detailed fraud statistics on signature debit, PIN debit, or prepaid cards issued by regulated issuers. Each card type's fraud statistics are divided into three main sources of fraud—CNP, counterfeit, and lost and stolen.[25] The statistics are further divided into three parties that are financially responsible for fraud losses—merchants, issuers, and cardholders.

We compare our results with signature debit fraud statistics shown in the most recent FR BOG report (FR BOG, 2014). The top half of Table 1 summarizes the data differences between the FR BOG (2014) and our study. The data period of FR BOG (2014) is a calendar year 2013, which is slightly earlier than ours. Our fraud statistics that are compared against the FR BOG's signature debit include not just signature debit but also four-party schemes' credit and signature-based prepaid cards. The FR BOG's fraud statistics were generated from transactions on the cards issued by regulated issuers, which account for 65 percent of all signature debit transactions in 2013. In contrast, our fraud statistics are generated from transactions processed by the processors participated in our study, which account for more than 20 percent of the four-party schemes' credit and signature debit and prepaid transactions, during the data period.

The bottom half of Table 1 compares fraud rates. Both studies have merchant loss rates in value. The merchant loss rate via all channels obtained from our data is much lower than that in the FR BOG report (2.63 bps vs. 4.75 bps). The merchant loss rate in the CP environment is just slightly lower in our study than in the FR BOG report (1.02 bps vs. 1.70 bps). However, in the CNP environment, our study obtains a much higher merchant loss rate than that in the FR BOG report (14.17 bps vs. 10.22 bps). The results may suggest that our data include more CP sales

[24] The most recent Federal Reserve Payments Study reports overall fraud rates by card type but it does not show how the rate is distributed between merchants and issuers/cardholders (Federal Reserve System 2014).
[25] The vast majority of CP frauds are counterfeit and lost and stolen frauds.

than CNP sales relative to the FR BOG's data. Our data may include relatively more merchants from merchant categories with lower merchant loss rates in the CP environment, such as the grocery category (i.e., grocery, food, and drug stores) and the petroleum category (i.e., gas stations). But our data might include relatively more merchants who may not be sophisticated enough to effectively protect against CNP fraud.[26]

Table 1: Comparison with the fraud statistics in the FR BOG (2014)

		FR BOG (2014)		**Our study**	
Data period		2013		2013 Q4 - 2014 Q3	
Card type		Signature debit		Credit (of four-party schemes) and signature debit/prepaid	
Transactions included in the data		Transactions on the cards issued by regulated issuers		Transactions processed by the processors participated in our study	
Coverage		65 percent of all signature debit transactions		More than 20 percent of four-party schemes' signature-based transactions in value	
Fraud rate (bps)		in number	in value	in number	in value
All parties' losses	All channels	6.00	11.14	n.a.	n.a.
	CP	3.09*	9.36*	n.a.	n.a.
	CNP	18.23*	14.33*	n.a.	n.a.
Merchants' losses	All channels	n.a.	4.75	0.73	2.63
	CP	n.a.	1.70*	0.27	1.02
	CNP	n.a.	10.22*	12.25	14.17

*: Based on the authors' calculation using the information shown in the FR BOG (2014).

Although we cannot directly compare our results of merchant fraud loss rates in number with the results in the FR BOG report, the results of the two studies may be consistent with a payment industry anecdote that says issuers are more financially responsible than merchants for CP fraud, while merchants are more responsible than issuers for CNP fraud.

Fraud rates by merchant category have not been well documented. One exception is Hayashi and Cuddy (2014). They showed fraud rates among largest merchant categories by using the data furnished by NetSpend, a leading prepaid card provider, to the Federal Reserve Bank of

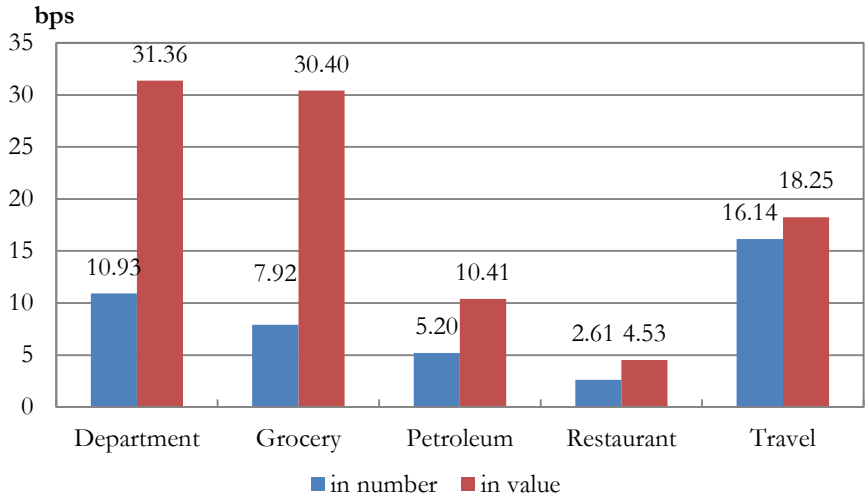
[26] According to CyberSource (2015), online merchants' fraud loss rate from chargeback is on average 38.7 bps in value in 2013, which is more than two times higher than our results.

Kansas City.[27] Their fraud rates, however, are from prepaid cards transactions including both signature- and PIN-based. We use the same data to obtain fraud rates only for signature-based prepaid transactions. Chart 18 shows fraud rates for all parties (not just for merchants) including all channels by merchant category. Among the five merchant categories, the travel and department categories have the highest and the second highest fraud rates in terms of the number, which is consistent with our results obtained from the data furnished by merchant processors. In terms of the value, the grocery category has a higher fraud rate than the travel category, which appears to be inconsistent with our results; however, if issuers incur a relatively more share of fraud losses (without initiating chargebacks) occurred at merchants in the grocery category than those in the travel category, our results and the fraud rates obtained from the NetSpend data might not contradict each other. Very high fraud rates for the restaurant and travel categories in the CNP environment are not found in the NetSpend data, suggesting our results may be unique to some of the merchant processors and may not represent the overall restaurant or overall travel category.[28]

[27] The data furnished by NetSpend contain all purchase transactions and fraudulent transactions made during June 2012. See Hayashi and Cuddy (2014) for more detail.

[28] The CNP fraud rates obtained from the NetSpend data are 7 bps in number and 11 bps in value for the restaurant category, and 17 bps in number and 20 bps in value for the travel category. The CNP fraud share in the total fraud obtained from the NetSpend data is more than 50 percent (the CP fraud share is less than 50 percent) for the travel category, suggesting our data obtained from processors may not represent the travel category, unless issuers initiate few CNP chargebacks in the travel category.

Chart 18: Fraud rates by merchant category from NetSpend data



Although there are no fraud statistics available to compare merchant fraud loss rates across different networks, the variation of *issuer* fraud loss rates among credit card networks has been reported by the Nilson Report. Using the most recent statistics of 2014, the weighted average issuer loss rates from credit card fraud are calculated to be 7.17 bps for the four-party schemes and 4.23 bps for the three-party schemes.[29] The lower issuers' fraud loss rate in a network relative to the other networks does not necessarily imply that the network's overall fraud rate incurred by all parties is lower. Instead, it might imply that the fraud losses are relatively more heavily distributed to merchants in the network, compared with the other networks. Due to the sample difference, our results are inconclusive regarding whether or not the three-party schemes have lower merchant fraud loss rates than the four-party schemes, and thus whether or not the three-party schemes have lower fraud loss rates for all parties than the four-party schemes is also inconclusive.[30]

[29] See Nilson Report, Issue 1057.
[30] A lower overall fraud loss rate for three-party schemes has been reported in France in the recent years (Observatory for Payment Card Security 2014).

4.4.2 Implications

Our fraud results are generally consistent with other available fraud statistics; however, some of our results may be unique to the processors who participated in our study or their merchants. To generate fraud chargeback rates and merchant fraud loss rates that represent the overall merchants or payees, the data collection needs to be broadened. Including more processors, not just those with detailed chargeback data but also with detailed sales data (such as by transaction channel and by merchant category), would improve the representativeness of the data. Data from processors who specialize in certain merchant categories (such as e-Commerce, education, health care, utility, government, and others) may also help identify the merchant fraud loss rate variation across merchant categories.

The lack of detailed and reliable fraud statistics is also a problem for all parties' and issuers' fraud losses. Fraud statistics similar to the ones generated by the FR BOG for signature-debit, PIN-debit, and prepaid card transactions on the regulated issuers' cards can be expanded to those card transactions on exempt issuers' cards and credit card transactions. More detailed fraud statistics have been generated in several other countries and those data are instrumental for focusing and directing resources where they are most needed to combat against fraud.

Our results, combined with other available fraud statistics, suggest that merchant fraud loss rates significantly vary between CP and CNP. The merchant fraud loss rates for CP transactions are currently low, but this may change as more card issuers issue EMV cards (Sullivan). From October 1, 2015, card networks have shifted counterfeit and/or lost or stolen fraud liability for a CP transaction from the issuer to the merchant if the merchant has not adopted EMV but the issuer has.[31] Nevertheless, some merchant categories have been slow to

[31] Visa has shifted counterfeit fraud liability only, while MasterCard, American Express, and Discover have shifted both counterfeit and lost or stolen fraud liability. These three networks introduced a security hierarchy in which lost

adopt EMV. The information about potential liability increase—in other words, the current issuers' fraud loss rates from counterfeit and lost or stolen fraud in a certain merchant category—may help facilitate merchants to adopt EMV. As more issuers and merchants adopt EMV, the overall CP fraud will decline. However, it is uncertain whether the net benefit of CP fraud loss reduction (after subtracting the EMV implementation cost) will be distributed evenly between issuers and merchants or distributed mostly to one side. Keeping track of merchant fraud loss rates for CP and CNP separately after the EMV liability shift will inform how the benefit is distributed.

In contrast to merchant fraud loss rates from CP transactions, our results and other available fraud statistics suggest that merchant fraud loss rates from CNP transactions are quite high and merchants are more liable than issuers for CNP fraud. The CNP fraud is a pressing issue because more card transactions will continue shifting from CP to CNP, and fraudsters will also shift their focus to CNP transactions as the EMV migration makes CP transactions more secure. Several technologies and methods to make CNP transactions more secure are available but they have not been widely adopted at least in the United States, partly because they require joint adoption by issuers and merchants. Policymakers and card networks that coordinate payment security strategies in the industry may want to consider whether the current CNP fraud liability distribution gives both parties enough incentives to adopt such technologies, and if not whether to adjust the distribution or adopt other approaches such as mandates or requirements.

5. Conclusion

To fill the knowledge gap about chargebacks, this study has described the current chargeback landscape by generating detailed statistics on chargebacks for signature-based

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or stolen card fraud liability will shift to the party with the highest risk environment. In this hierarchy, card networks consider an EMV card used with PIN to be more secure than an EMV card used with a signature.

transactions. For Visa and MasterCard (or four-party schemes') transactions, chargebacks merchants received are, on average, 1.6 bps of sales number and 6.5 bps of sales value. Merchants disputed 20 to 30 percent of the chargebacks successfully, and as a result their actual losses are 1.3 bps of sales number and 4.6 bps of sales value. The most common reason for chargebacks is fraud, which accounts for about 50 percent of chargebacks. Both the total and fraud chargeback rates are significantly higher for CNP transactions than for CP transactions. They also vary by merchant category. For example, the travel category has higher total and fraud chargeback rates than the other categories even if limiting to a certain transaction channel. For American Express and Discover (or three-party schemes') transactions, the total and fraud chargeback rates are somewhat lower. But to confirm these lower rates, the data collection needs to be expanded to either three-party scheme networks or large merchants, who directly work with those networks.

The merchants' losses from chargebacks—about 5 bps of sales value—are substantially smaller than the most significant card acceptance costs for merchants such as interchange fees or merchant discount fees. However, the merchant losses we measured in this study are only one part of the costs associated with chargebacks for merchants. For example, when a merchant incurs losses from a fraud chargeback, the merchant loses not only the transaction funds but also the merchandise consumed by the fraudster. Merchants allocate their resources (such as labor and capital) to prevent, detect, and resolve chargebacks. They may also pay fines and fees for chargebacks to their processors or networks. To better understand the complete picture about the costs associated with chargebacks, further research is required.

Our fraud results are generally consistent with other available fraud statistics for four-party schemes' signature-based transactions. Merchants have a significantly high CNP fraud loss

rate (14 bps in value), while their CP fraud loss rate is quite modest (1 basis point in value). To fight against CNP fraud is an urgent matter not only for merchants but also for other participants in the payments industry as well as policymakers. When policymakers or industry leaders consider strategies to reduce CNP fraud, or individual industry participants consider their own strategies, detailed fraud statistics enable them to make informed decisions. Keeping track of all parties' fraud rates by transaction channel and by merchant category may help identify areas of needed focus or improvement of payments security. How fraud losses are distributed across merchants and issuers may inform whether their incentives to reduce CNP fraud are aligned with those of the planners or socially desirable outcomes.

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Appendix A: Reason code categories and corresponding reason codes

Category	Visa	MasterCard	Discover	AmEx
Fraud	57, 62, 75, 81, 83, 93	4837, 4840, 4863, 4870, 4871, 4849, 4847, 4862, 4857	4752, 7010, 7030, 4580, 7001, 7003, 7011, 7018, 7020, 7023, 7028, 7031, 7002, 7032, 7038, 7099, 7021, 7022	F10, F14, F29, FR2, FR4
Non-Receipt of Goods/Services	30, 90	4855, 4859	4755	C08
Quality of Service/Merchandise	53	4853, 4854, 4899	4533	C31, C32
Cancellation and Return	41, 85	4841, 4860	4541, 4594, 8002	C02, C04, C05, C18, C28
Non-Receipt of Information	60, 79	4801, 4802	4563, 4584, 4502	R03, R13
Processing Error	74, 76, 80, 82, 86, 96	4831, 4834, 4842, 4846, 4850	4750, 4751, 4550, 4534, 4542, 4554, 4757, 8001, 4586	C14, P05, P08
Authorization Issues	70, 71, 72, 73, 77, 78	4807, 4808, 4812, 4835	4753, 4756, 4863, 4754, 4535	A01, A02, A08

Appendix B: Merchant categories and corresponding merchant category codes (MCCs)

Category	MCC	Description
Travel	3000-3299	Airlines
	3351-3441	Car Rental
	3501-3790	Hotels/Motels/Inns/Resorts
Department, Big Box, and Apparel	5300	Wholesale Clubs
	5310	Discount Stores
	5311	Department Stores
	5331	Variety Stores
	5399	Misc. General Merchandise
	5611	Men's and Boy's Clothing and Accessories Stores
	5621	Women's Ready-To-Wear Stores
	5631	Women's Accessory and Specialty Shops
	5641	Children's and Infant's Wear Stores
	5651	Family Clothing Stores
	5655	Sports and Riding Apparel Stores
	5661	Shoe Stores
	5681	Furriers and Fur Shops
	5691	Men's, Women's Clothing Stores
	5697	Tailors, Alterations
	5698	Wig and Toupee Stores
	5699	Misc. Apparel and Accessory Shops
	5999	Misc. and Specialty Retail
Grocery, Food, and Drug	5411	Grocery Stores, Supermarkets
	5422	Meat Provisioners – Freezer and Locker
	5441	Candy, Nut, and Confectionery Stores
	5451	Dairy Products Stores
	5499	Misc. Food Stores
	5912	Drug Stores and Pharmacies
Petroleum	5541	Service Stations (with or without ancillary services)
	5542	Automated Fuel Dispensers
Restaurant	5812	Eating places and Restaurants
	5814	Fast Food Restaurants
	5813	Drinking Places, Bars, Taverns, Cocktail lounges
	5811	Caterers
	5462	Bakeries
Travel	3000-3299	Airlines
	3351-3441	Car Rental
	3501-3790	Hotels/Motels/Inns/Resorts

Appendix C: Detailed chargeback statistics

All merchants

Chart C1: Average value per transaction by channel

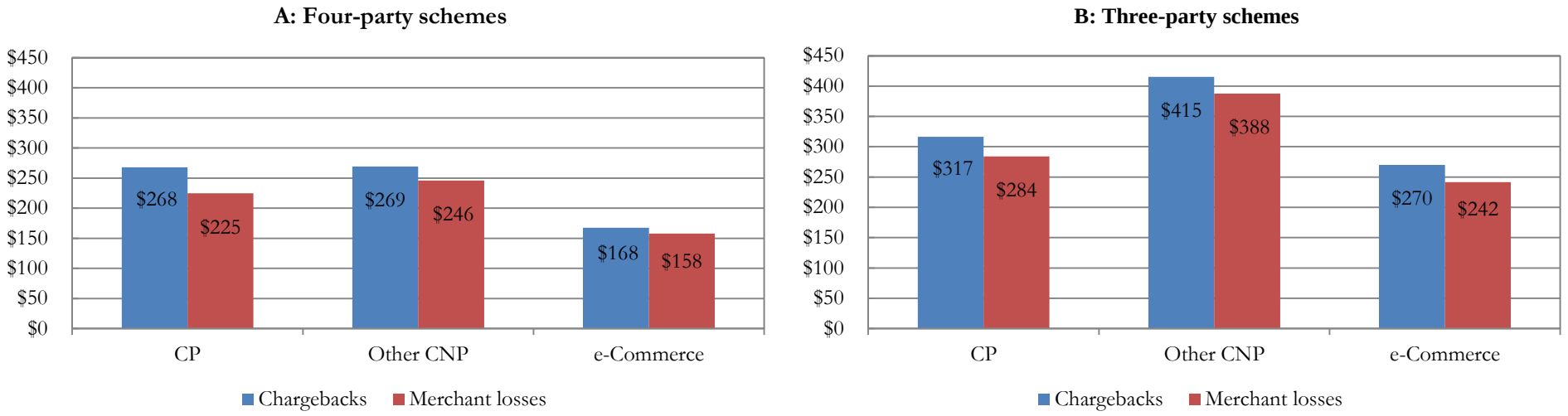
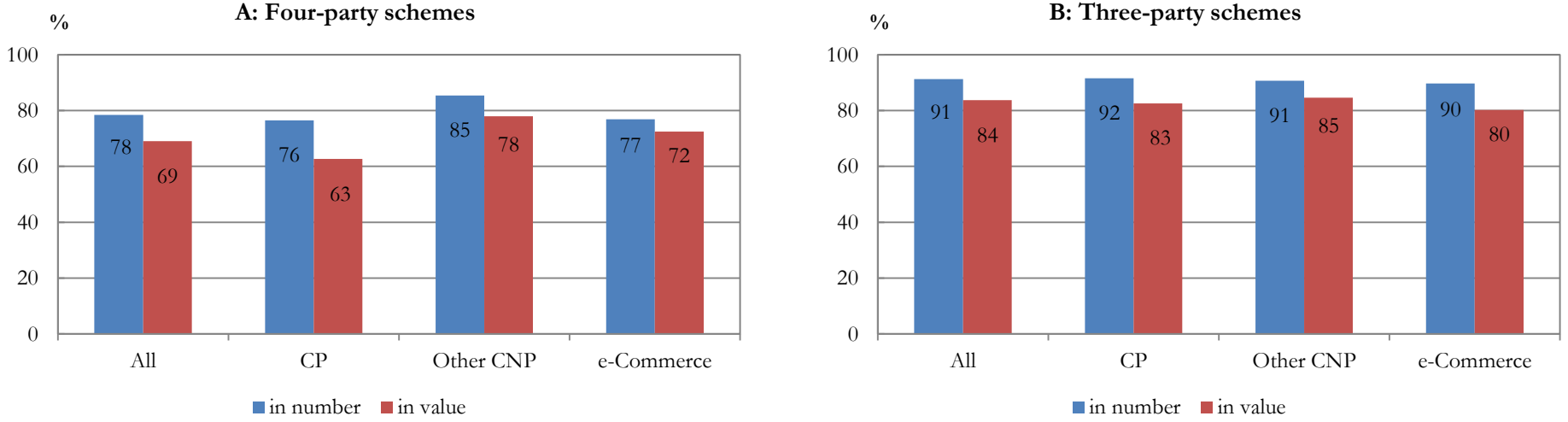


Chart C2: Merchant loss to chargeback ratio for all channels combined and by channel



All merchants

Chart C3: Share of chargebacks by reason code for CP and CNP

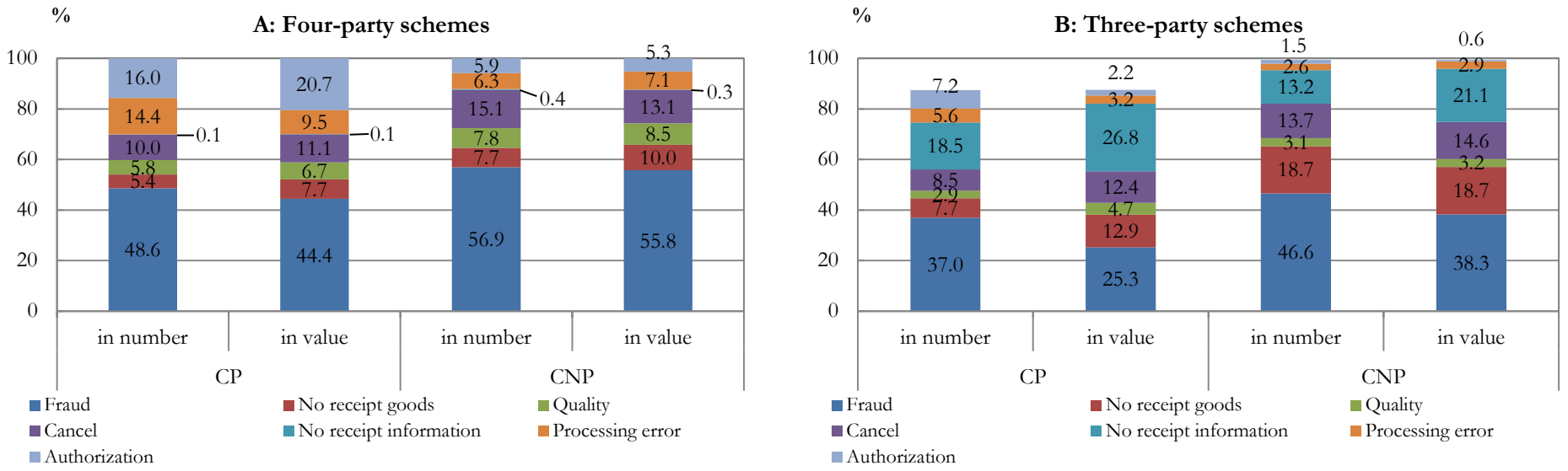
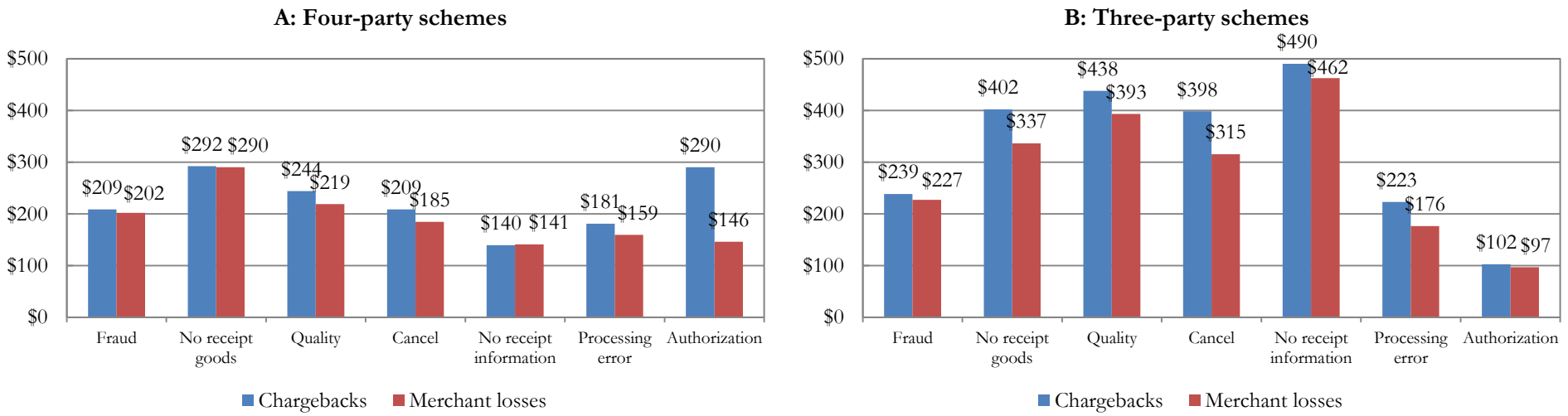


Chart C4: Average value per transaction by reason code



Department Category

Chart C5: Average value per transaction for all channels combined and by channel

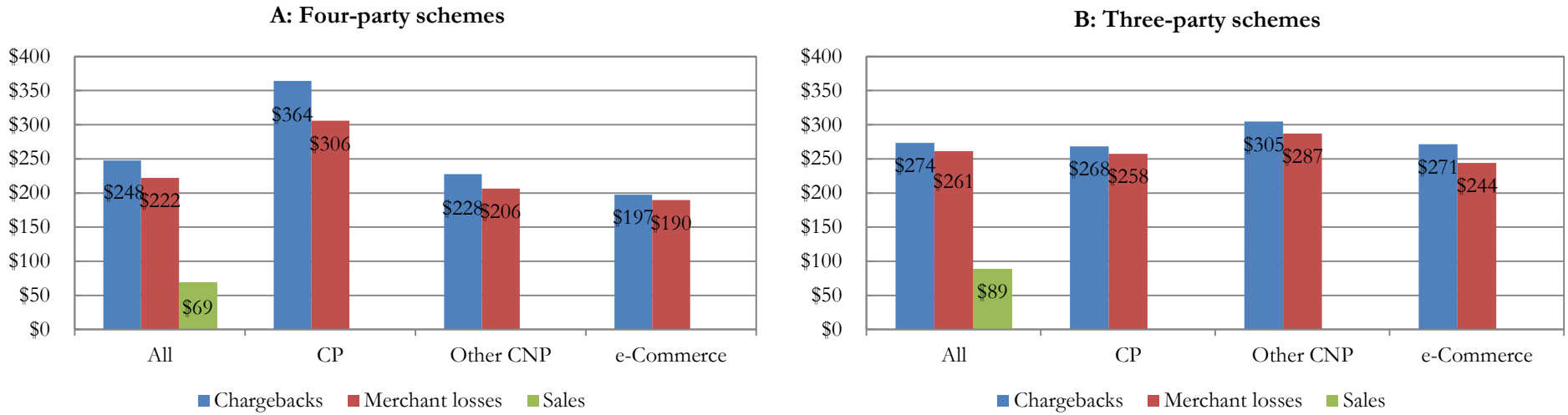
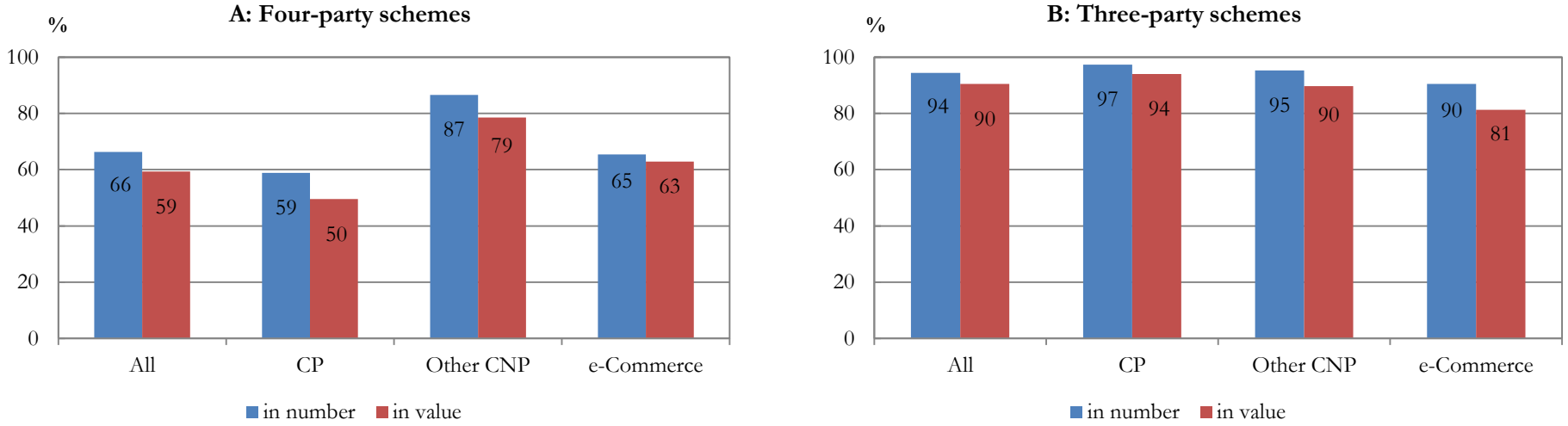


Chart C6: Merchant loss to chargeback ratio for all channels combined and by channel



Department Category

Chart C7: Average value per transaction by reason code

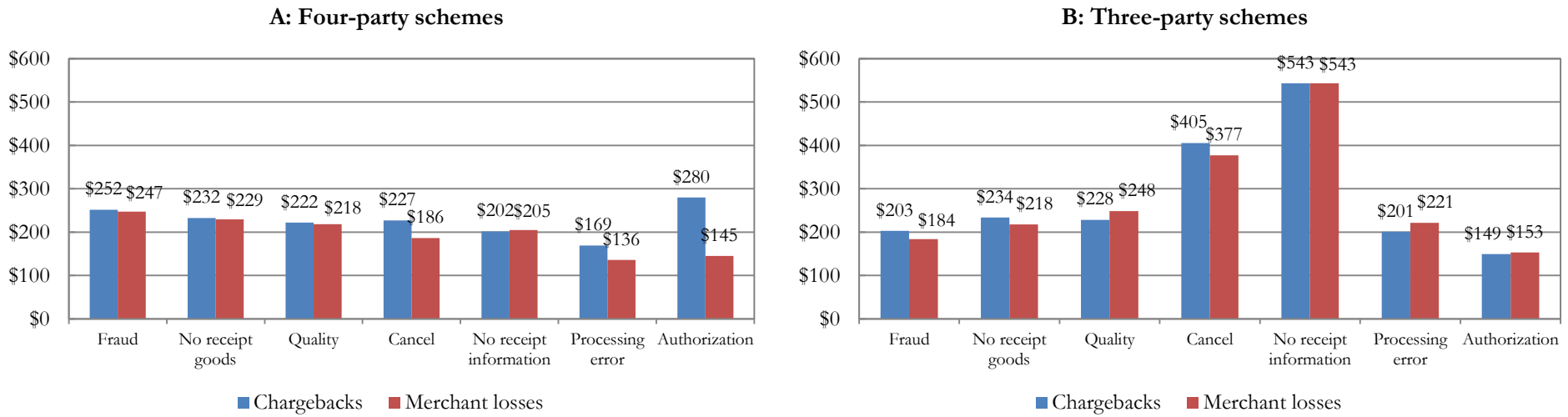
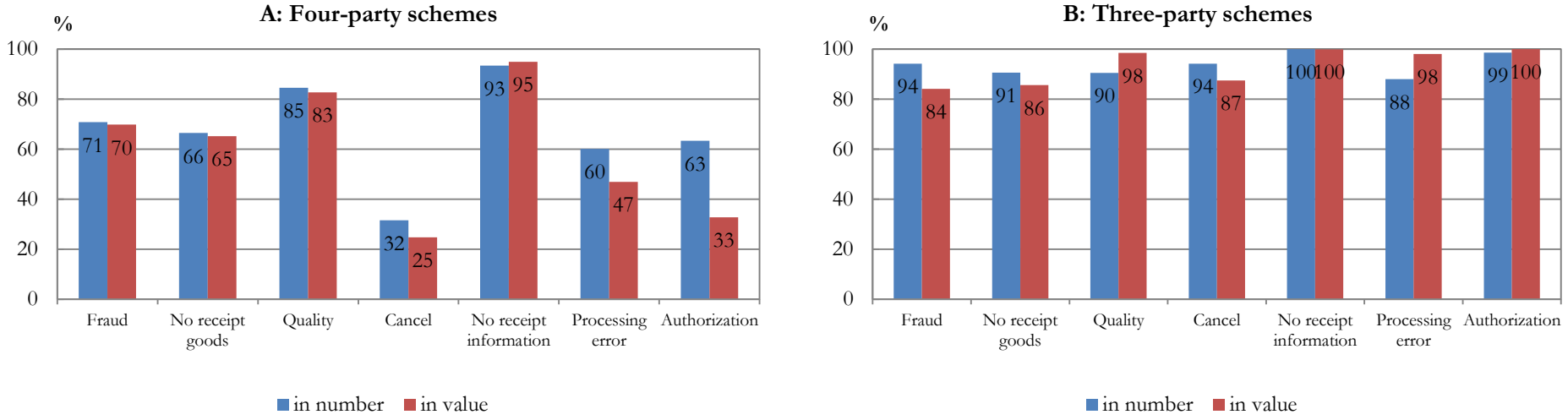
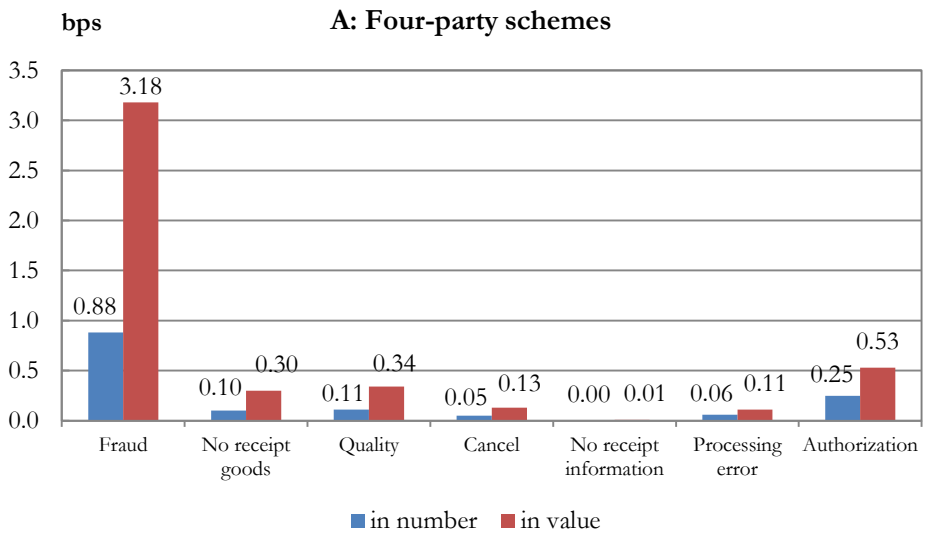


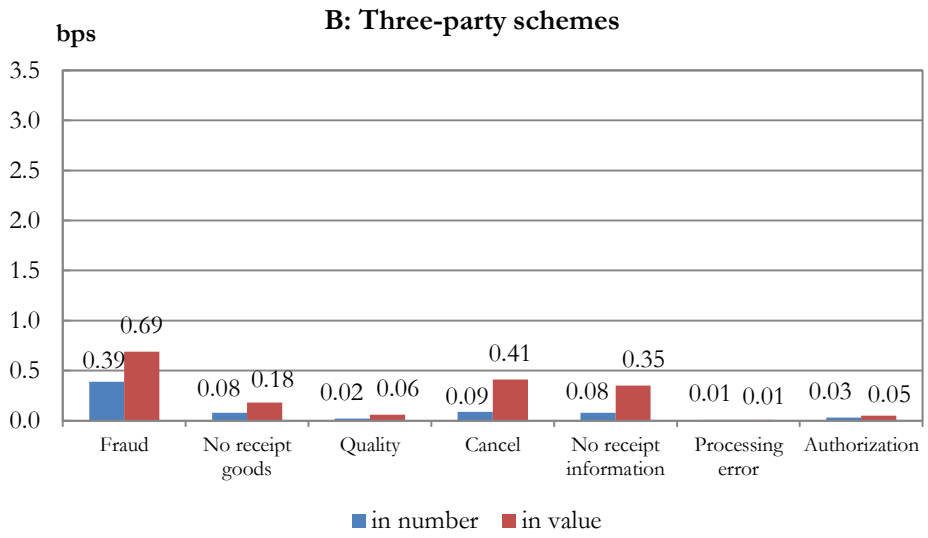
Chart C8: Merchant loss to chargeback ratio by reason code



Department Category

Chart C9: Merchant loss rates divided into reason code categories


bps
A: Four-party schemes
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.88
3.18
0.10
0.30
0.11
0.34
0.05
0.13
0.00
0.01
0.06
0.11
0.25
0.53
Fraud
No receipt goods
Quality
Cancel
No receipt information
Processing error
Authorization
in number
in value


bps
B: Three-party schemes
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.39
0.69
0.08
0.18
0.02
0.06
0.09
0.41
0.08
0.35
0.01
0.01
0.03
0.05
Fraud
No receipt goods
Quality
Cancel
No receipt information
Processing error
Authorization
in number
in value

Grocery Category

Chart C10: Average value per transaction for all channels combined and by channel

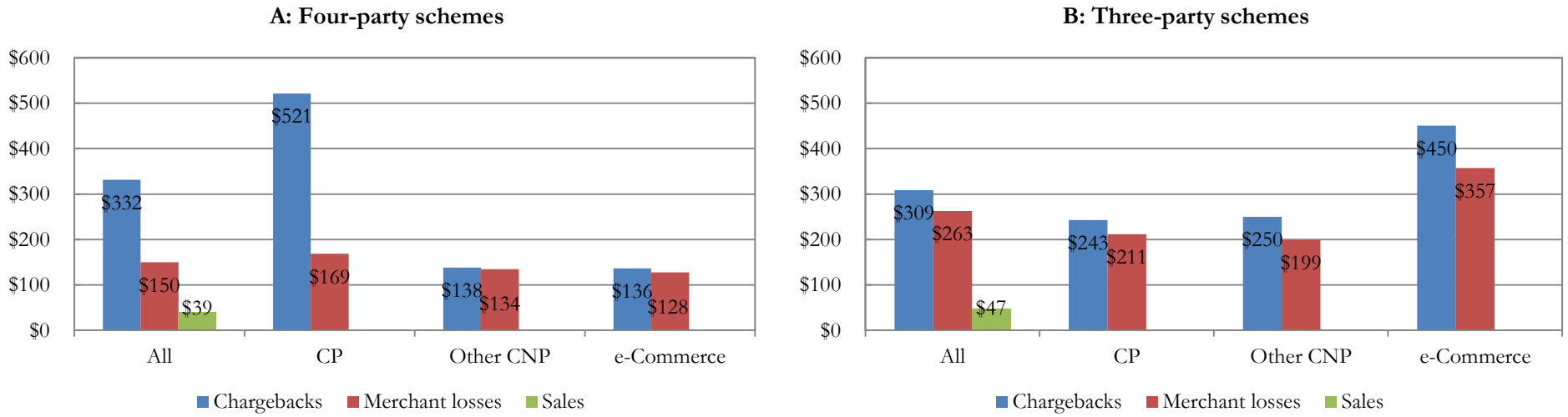
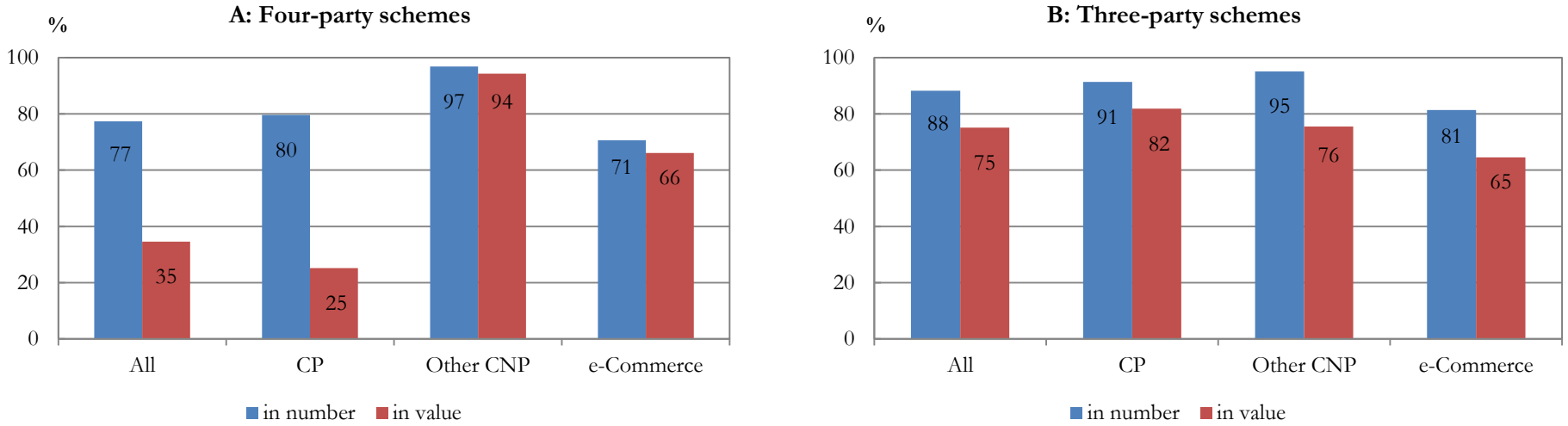


Chart C11: Merchant loss to chargeback ratio for all channels combined and by channel



Grocery Category

Chart C12: Average value per transaction by reason code

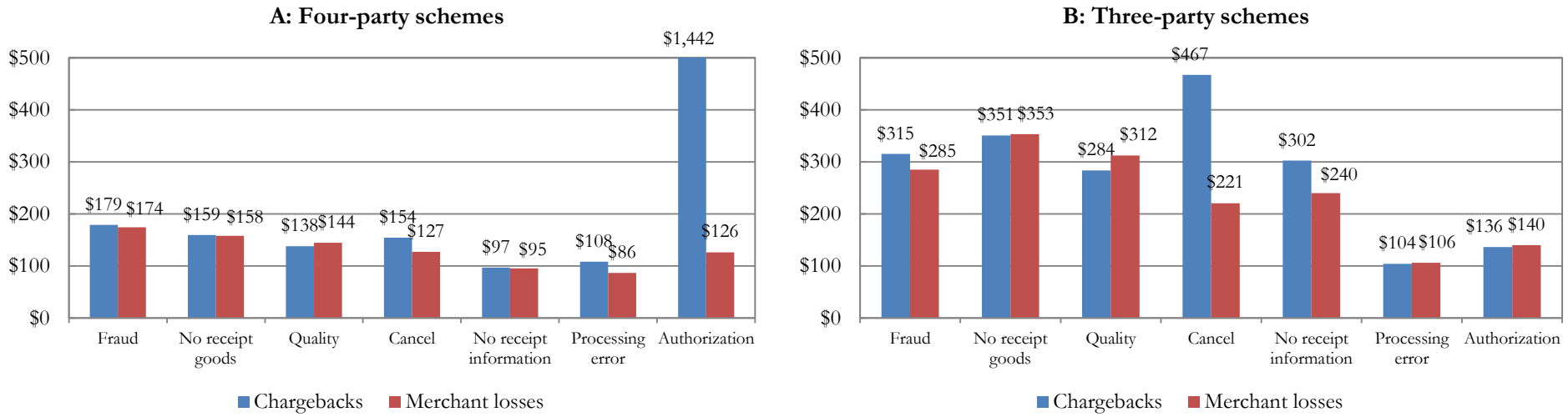
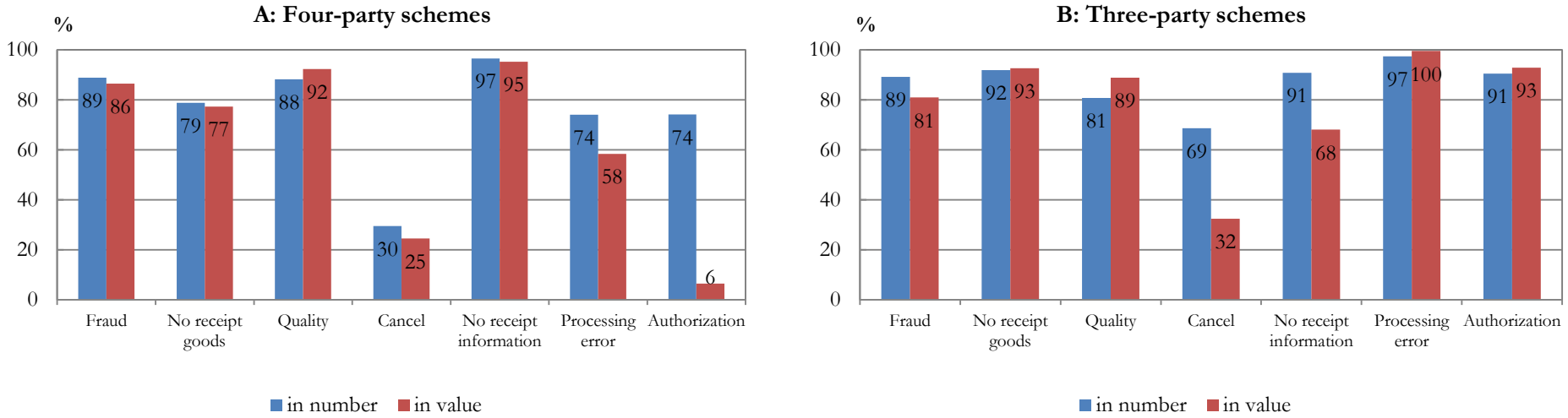
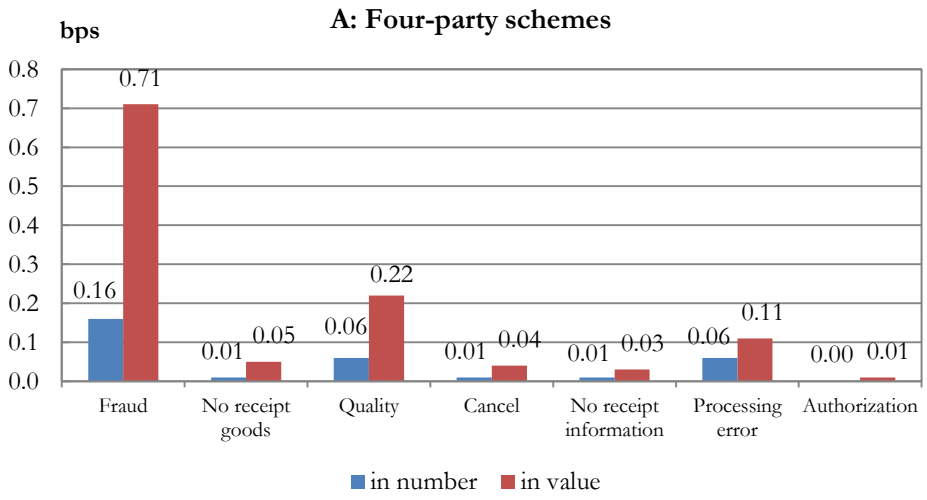


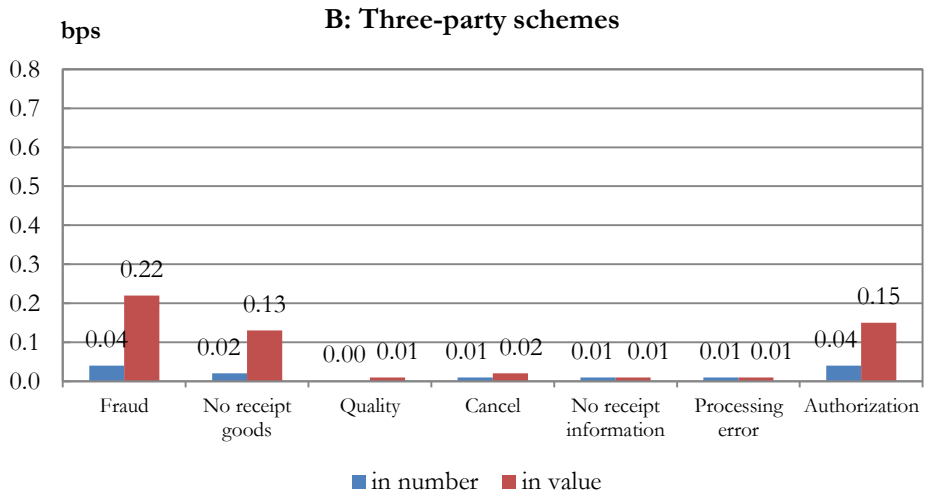
Chart C13: Merchant loss to chargeback ratio by reason code



Grocery Category

Chart C14: Merchant loss rates divided into reason code categories





Petroleum Category

Chart C15: Average value per transaction for all channels combined

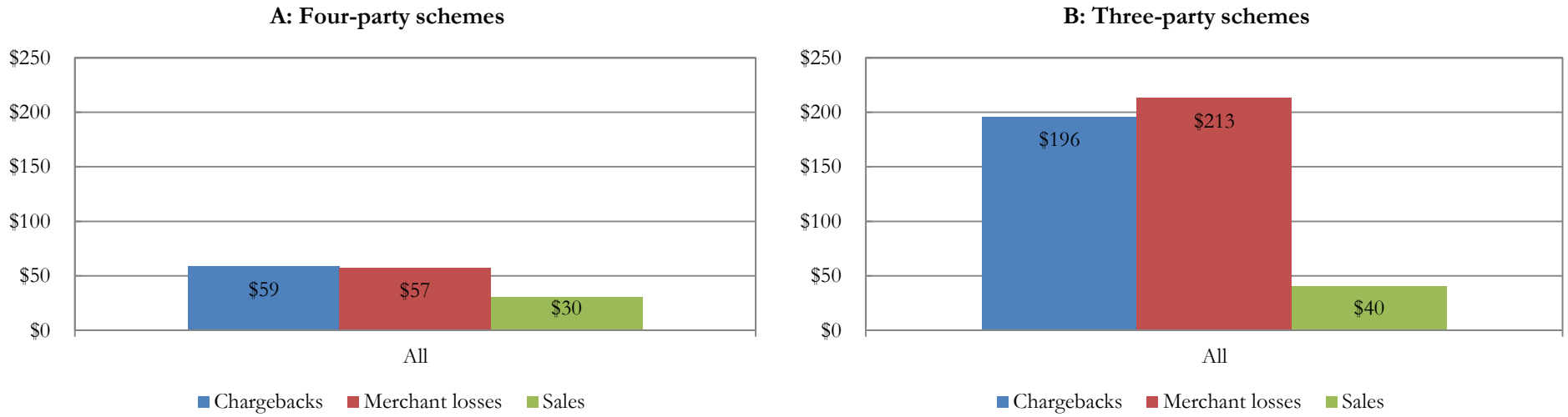
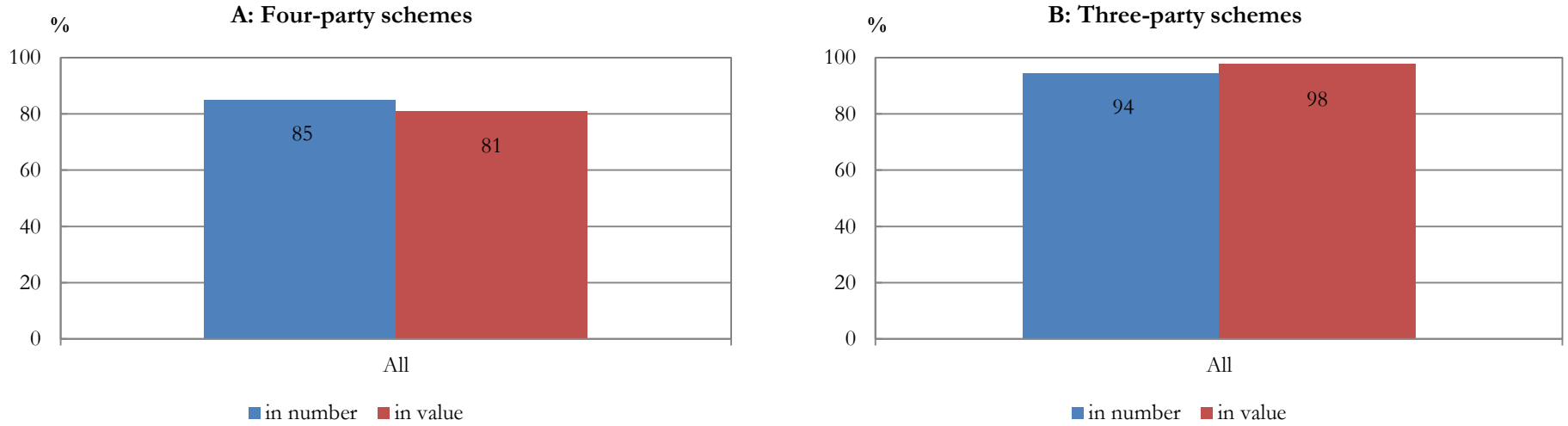
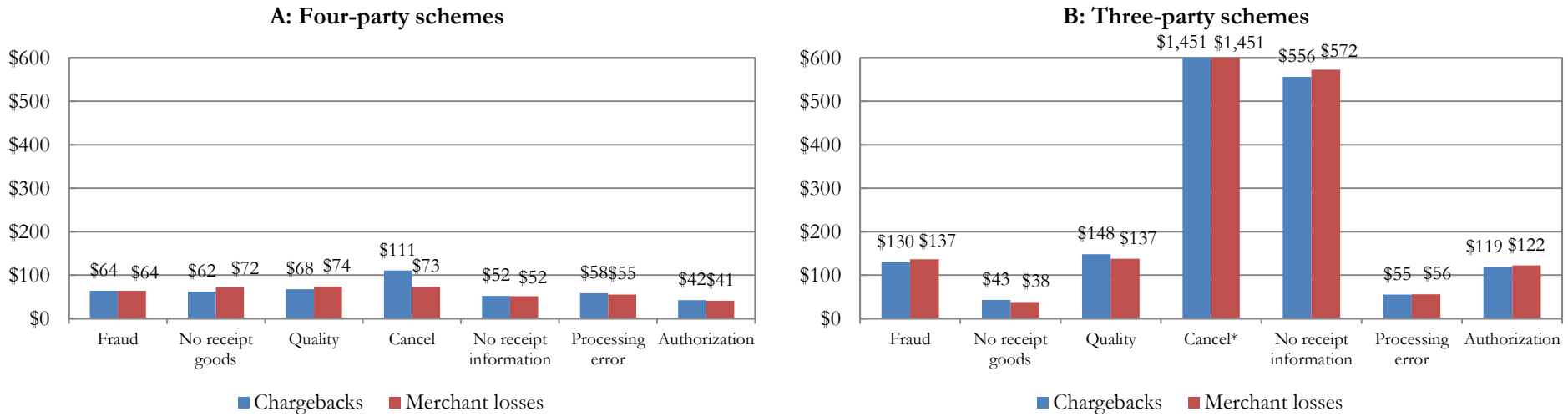


Chart C16: Merchant loss to chargeback ratio for all channels combined



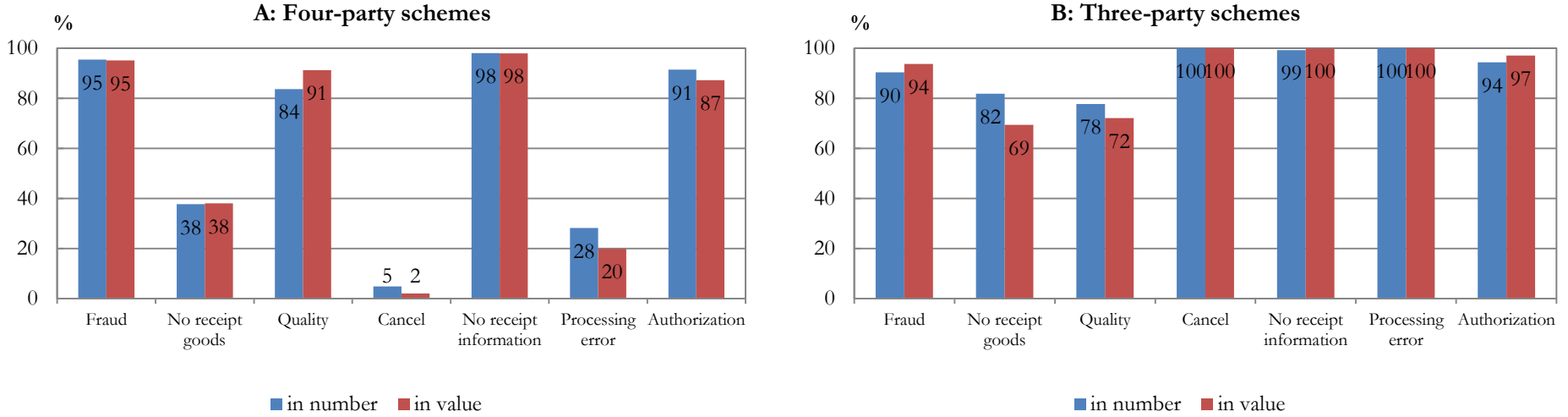
Petroleum Category

Chart C17: Average value per transaction by reason code



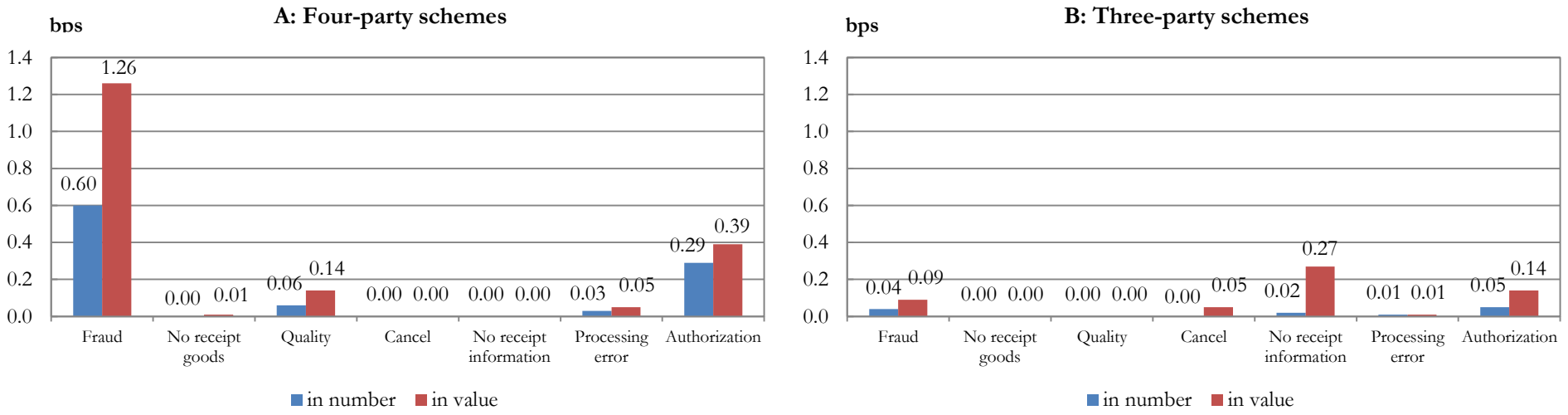
*: A very small number of chargebacks.

Chart C18: Merchant loss to chargeback ratio by reason code



Petroleum Category

Chart C19: Merchant loss rates divided into reason code categories



Restaurant Category

Chart C20: Average value per transaction for all channels combined and by channel

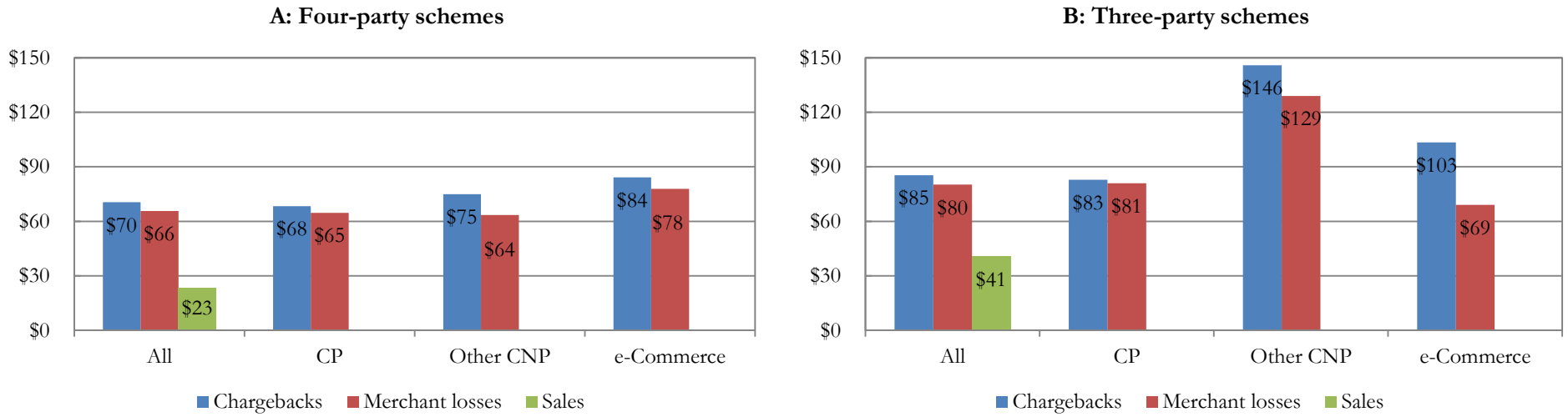
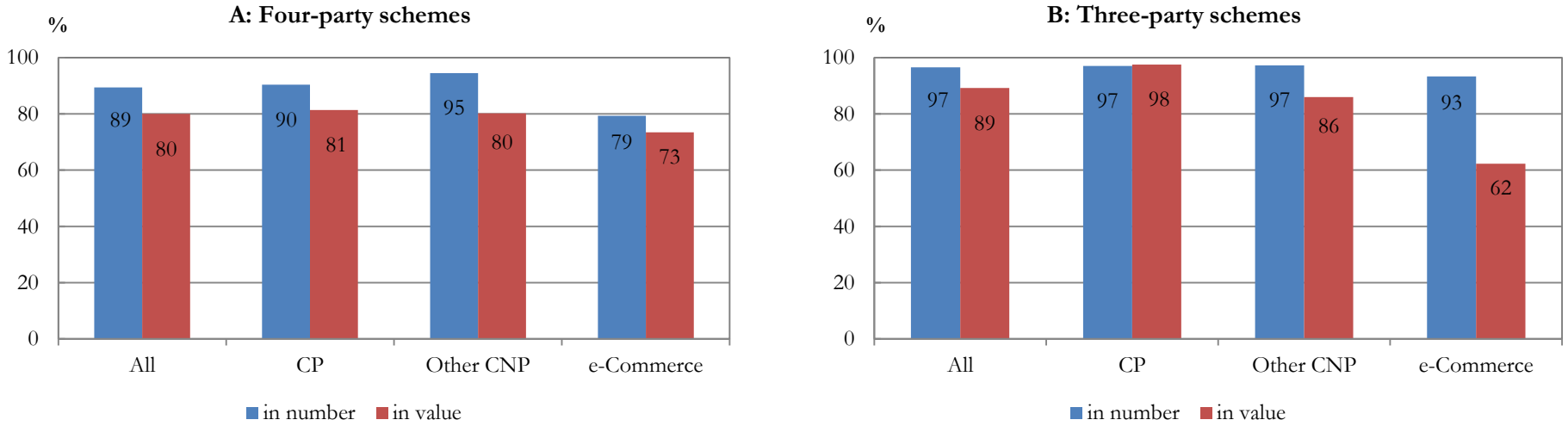


Chart C21: Merchant loss to chargeback ratio for all channels combined and by channel



Restaurant Category

Chart C22: Average value per transaction by reason code

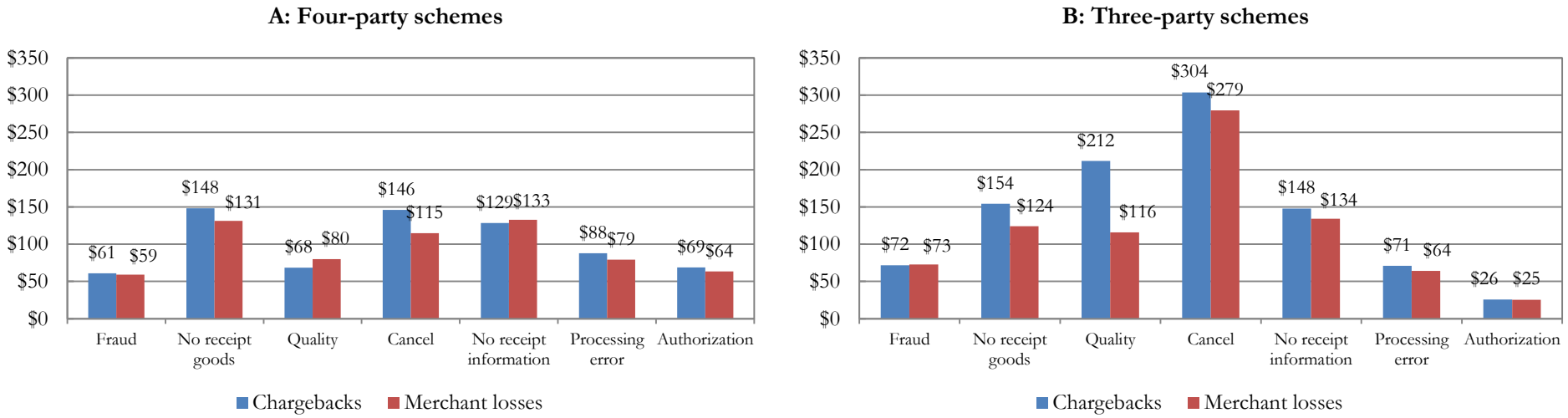
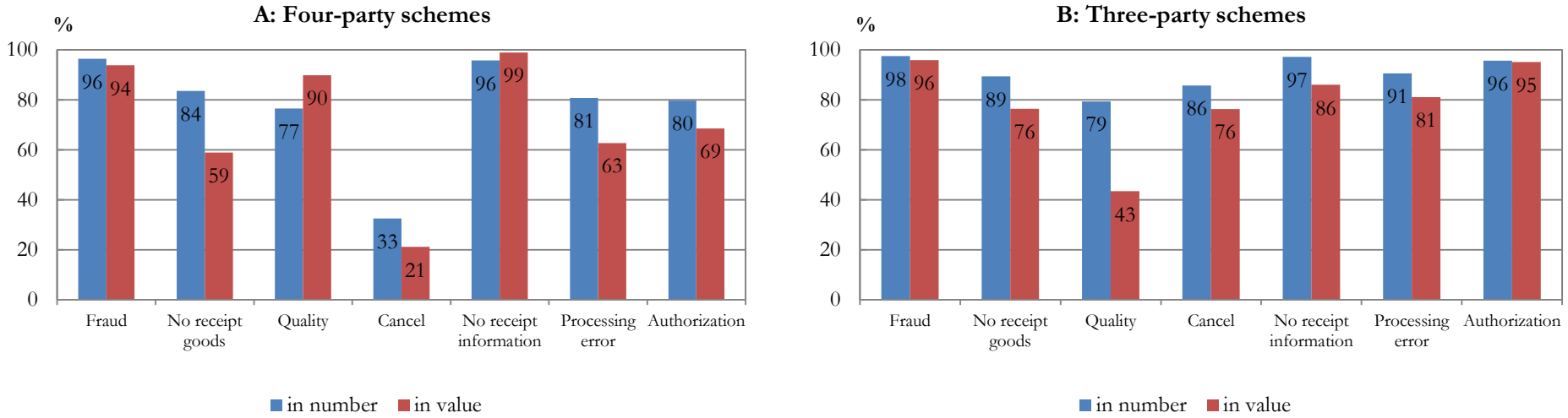
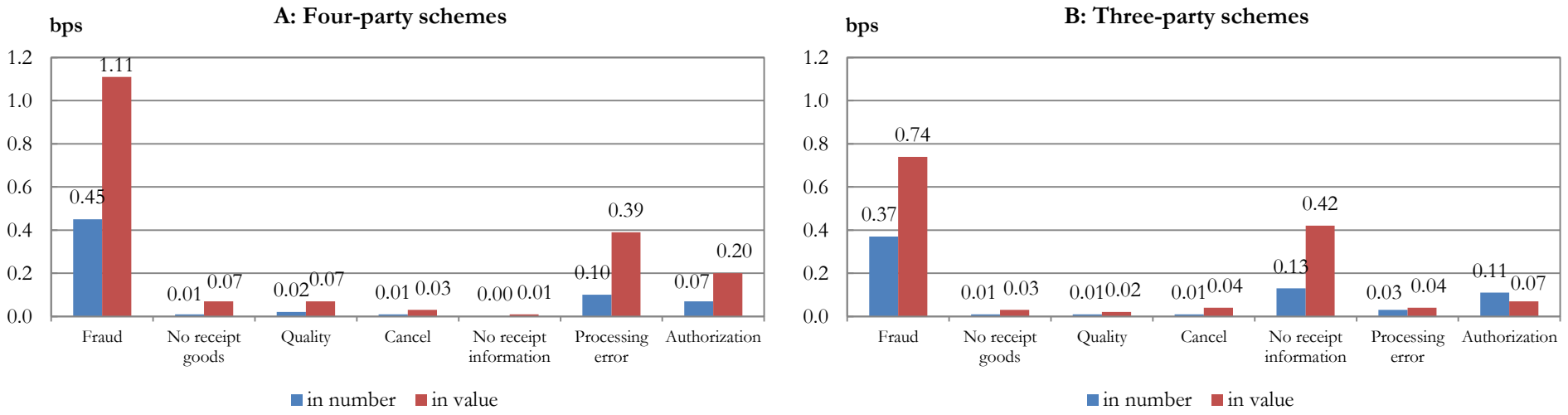


Chart C23: Merchant loss to chargeback ratio by reason code



Restaurant Category

Chart C24: Merchant loss rates divided into reason code categories



Travel Category

Chart C25: Average value per transaction for all channels combined and by channel

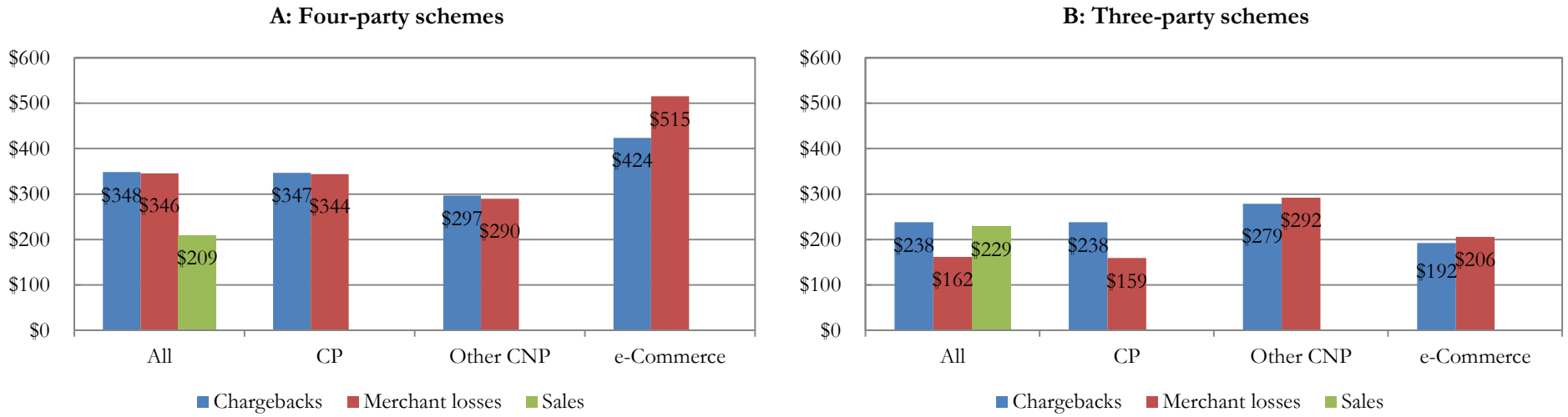
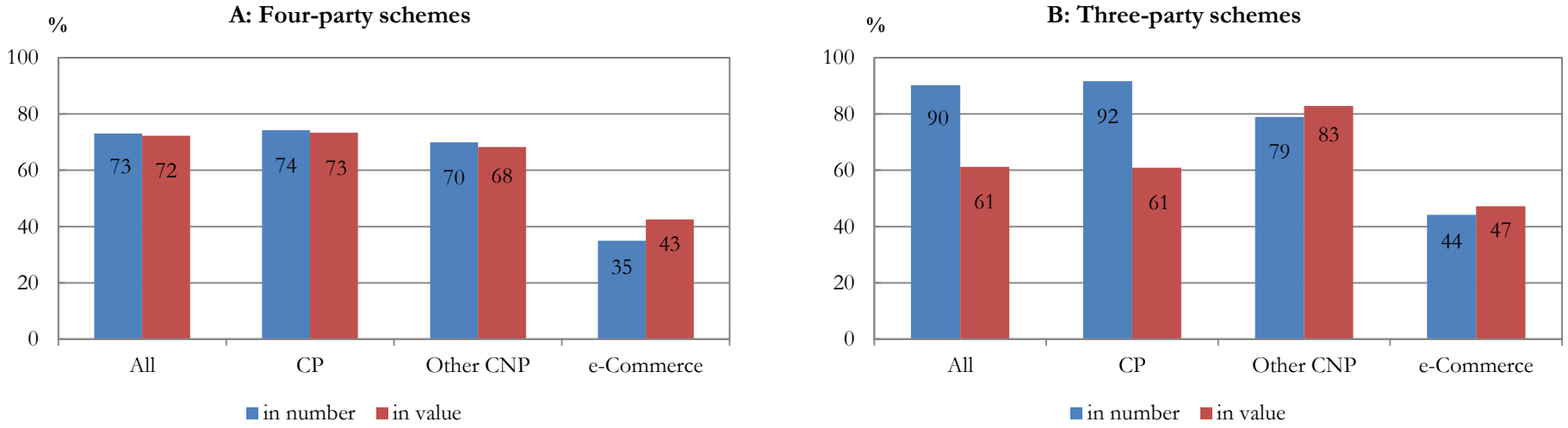


Chart C26: Merchant loss to chargeback ratio for all channels combined and by channel



Travel Category

Chart C27: Average value per transaction by reason code

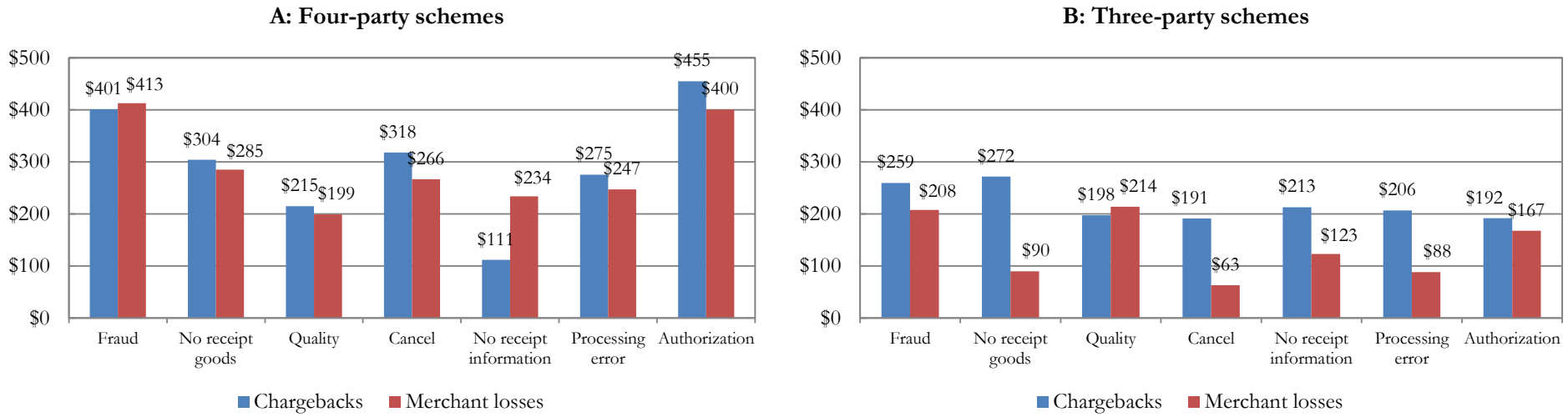
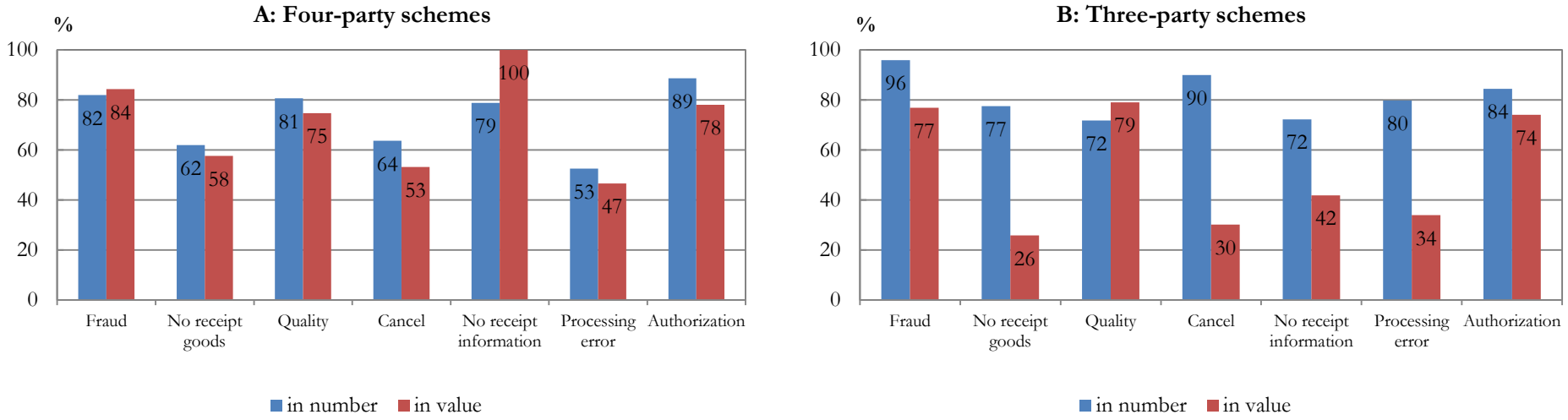
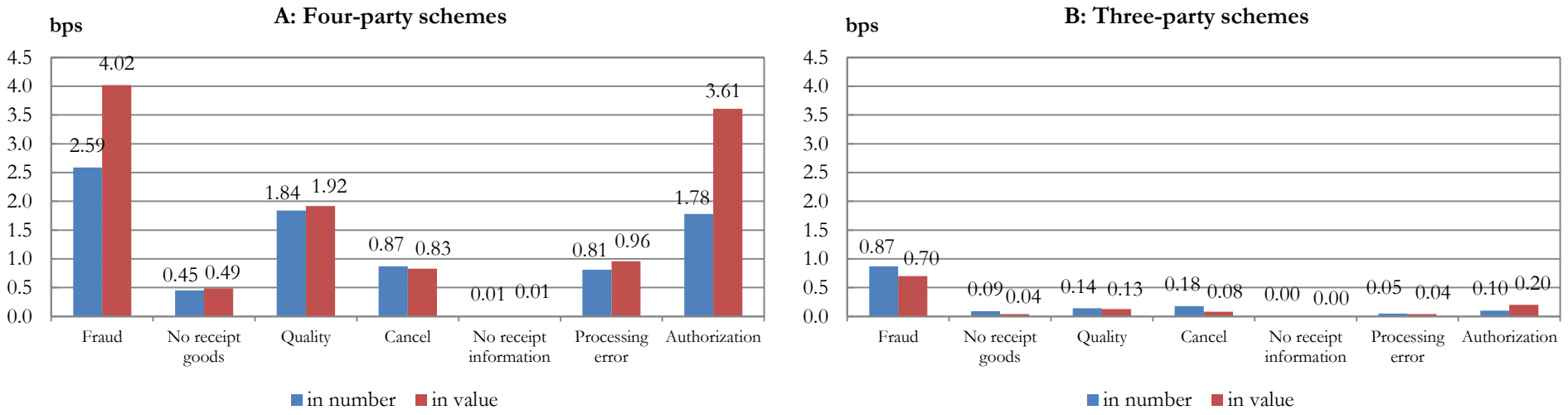


Chart C28: Merchant loss to chargeback ratio by reason code



Travel Category

Chart C29: Merchant loss rates divided into reason code categories



Appendix D: Retrieval statistics

Chart D1: Retrieval rates (relative to sales) for all merchants

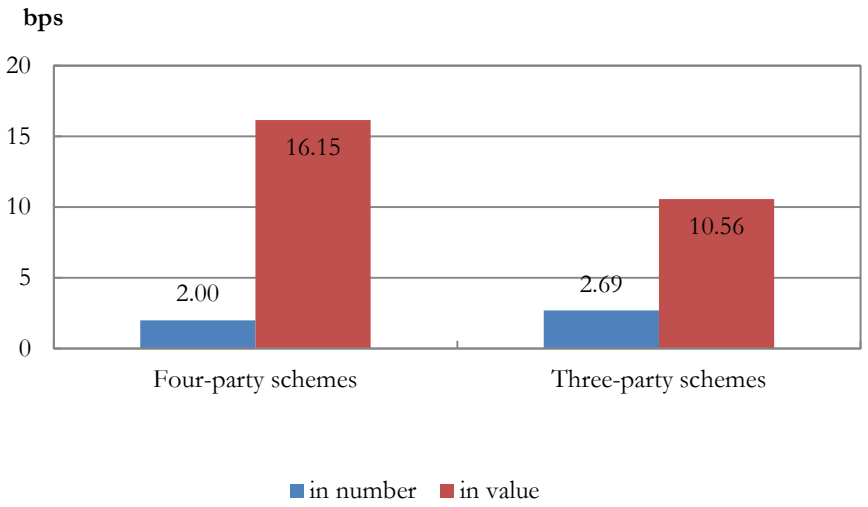
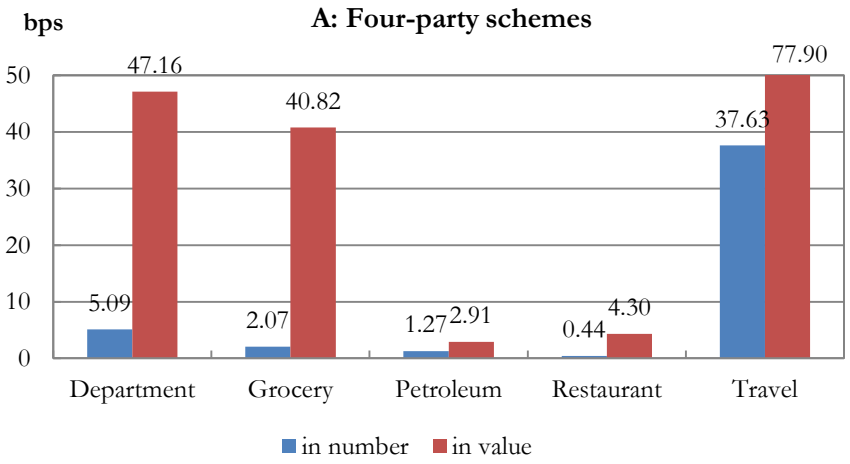


Chart D2: Retrieval rates by merchant category



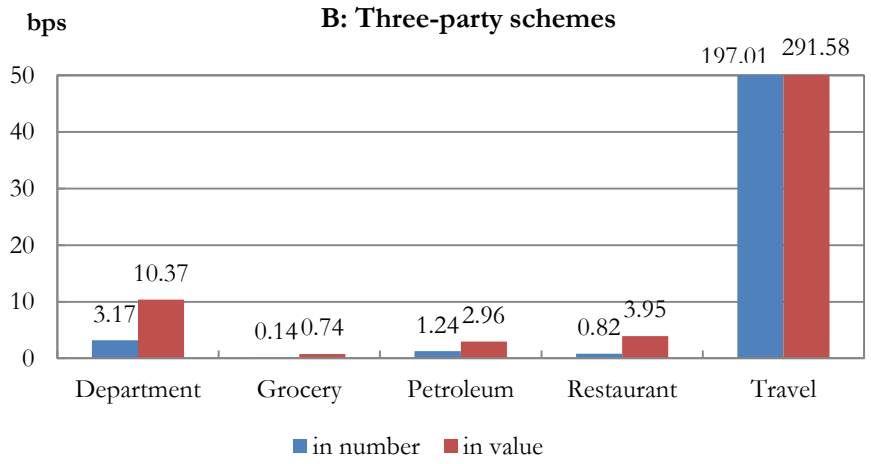


Chart D3: Retrieval channel share for all merchants

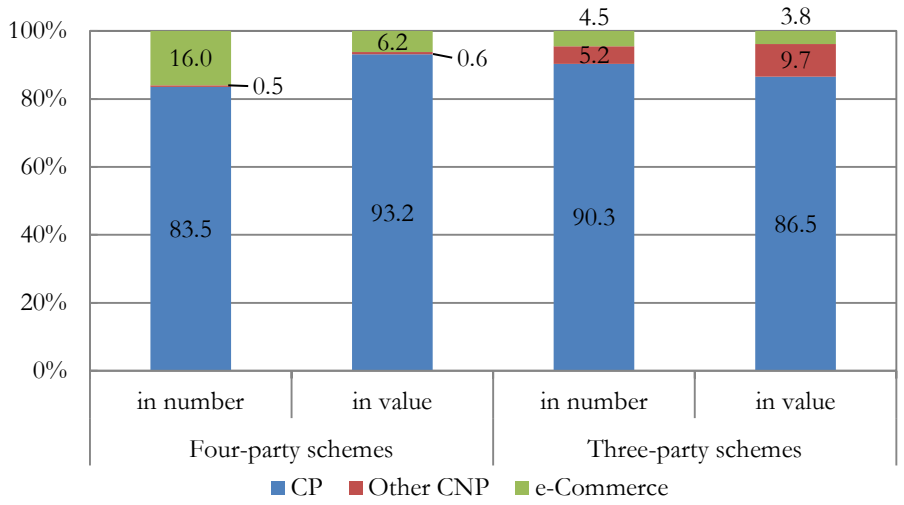
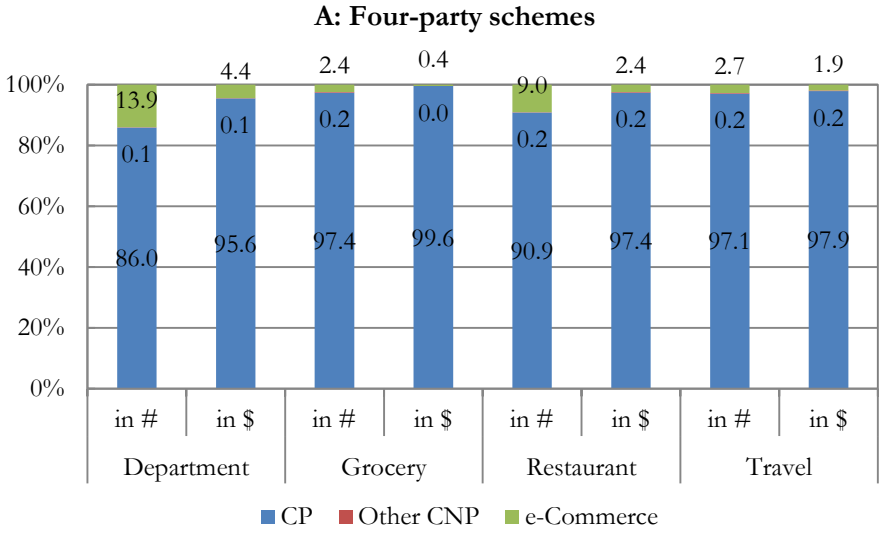


Chart D4: Retrieval channel share by merchant category



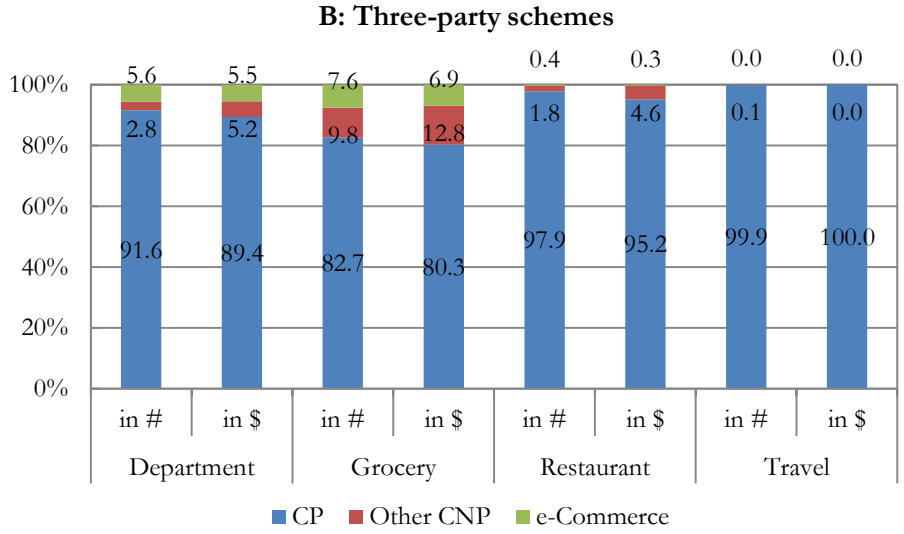
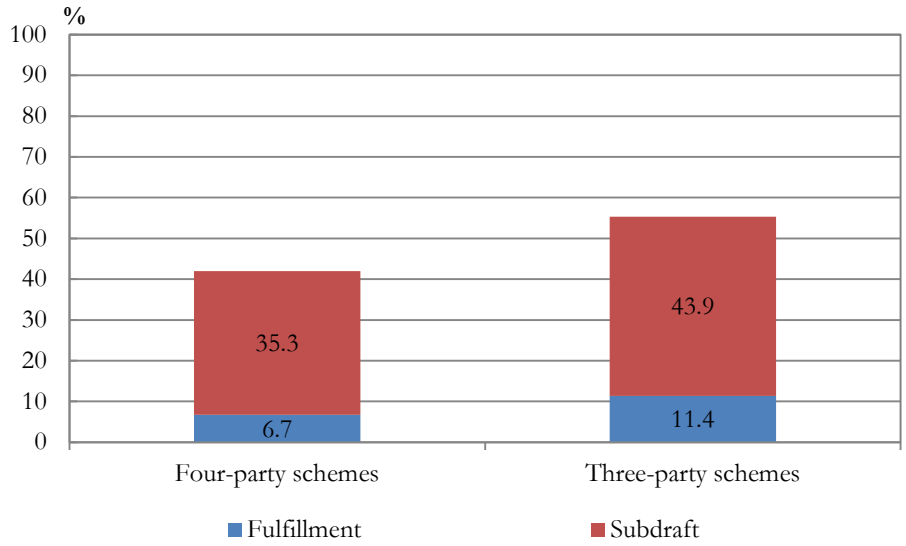


Chart D5: Fulfillment and subdraft rates (relative to retrievals) for all merchants*



*: Fulfillment means the merchant responded to the retrieval request by sending a legible copy of the requested receipt within the specified timeframe. Subdraft means the merchant responded to the retrieval request with a substitute sales draft (e.g., without signature).

Chart D6: Fulfillment and subdraft rates for all merchants by channel

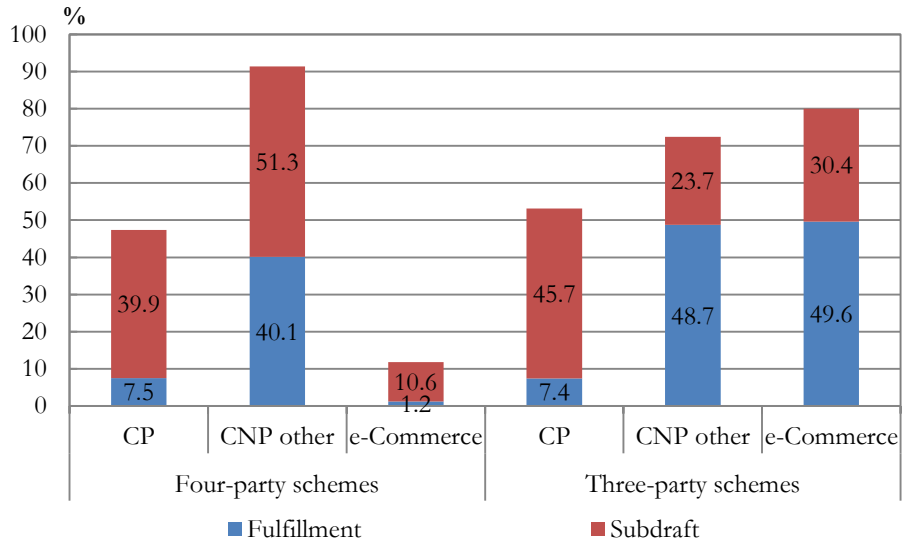
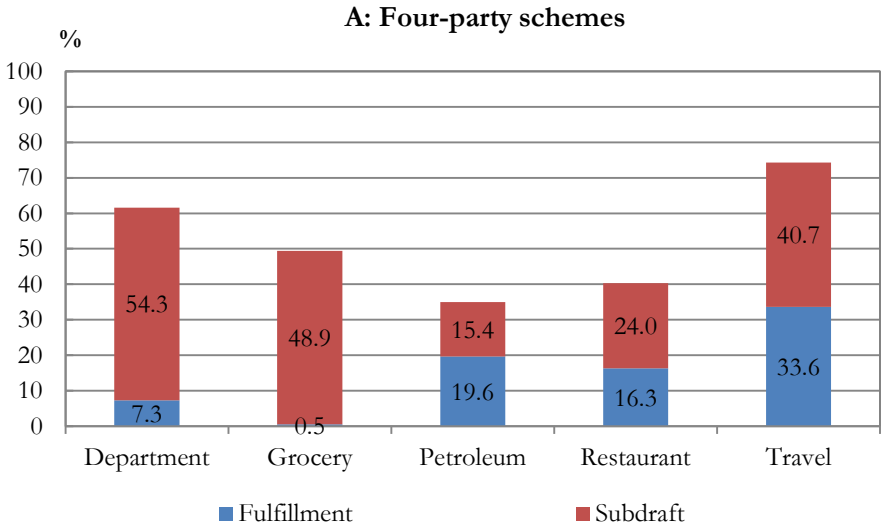


Chart D7: Fulfillment and subdraft rates by merchant category



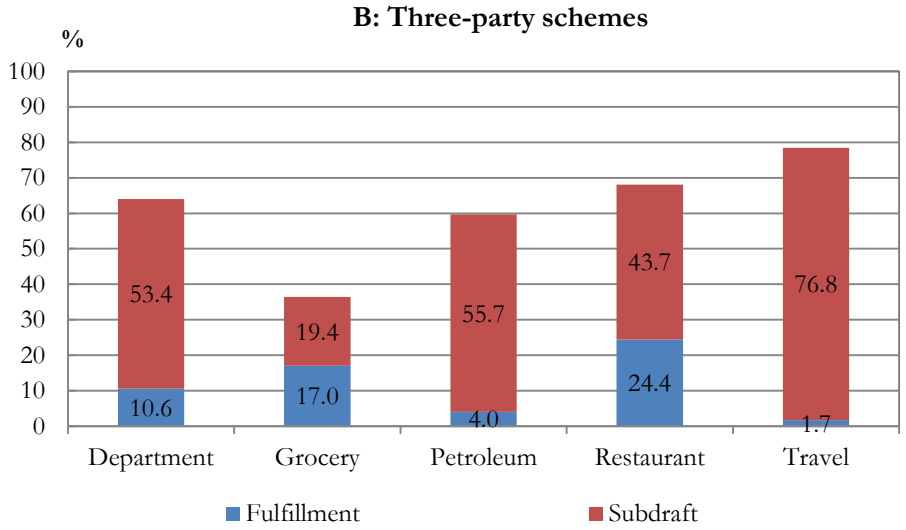
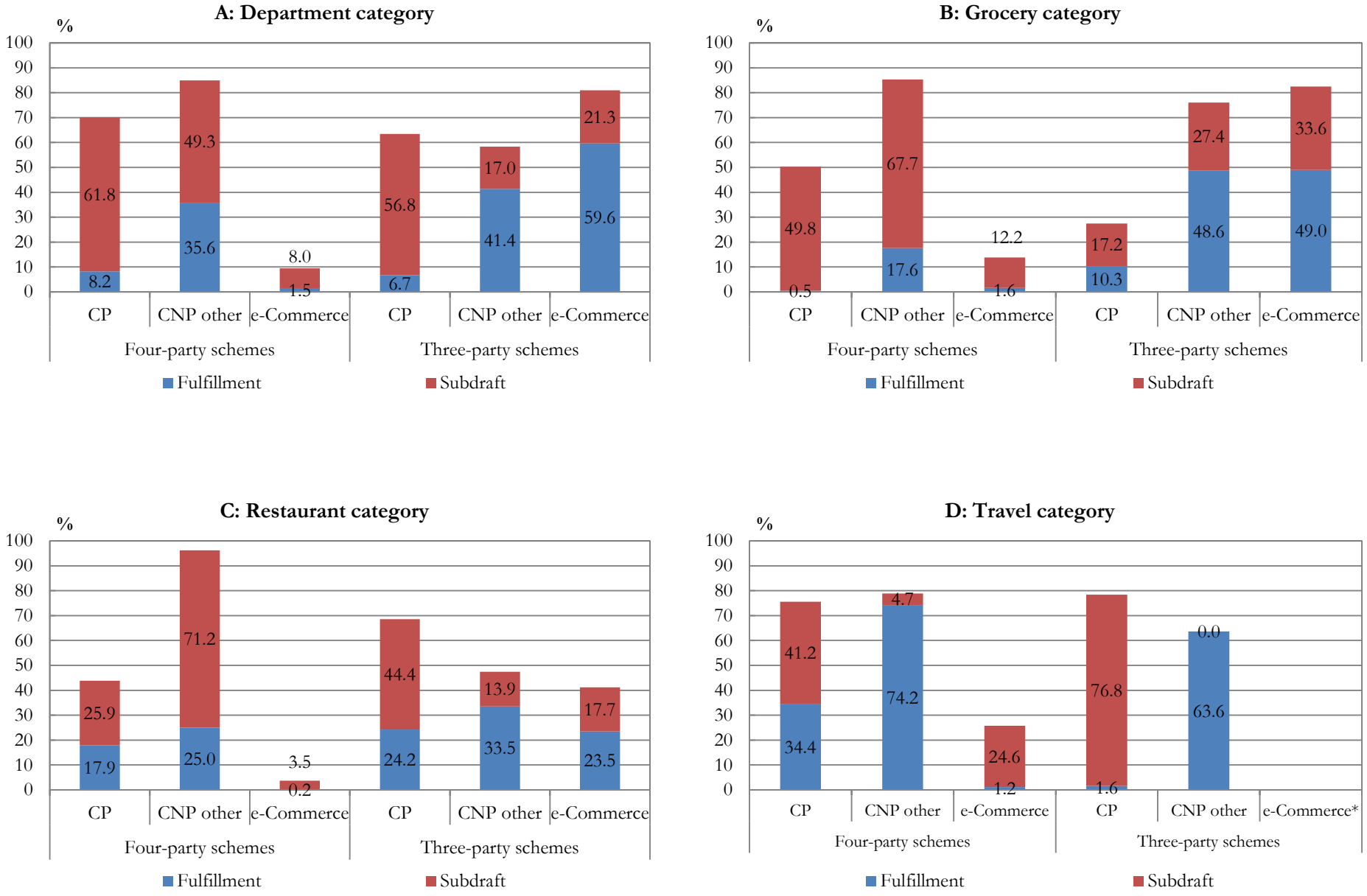


Chart D8: Fulfillment and subdraft rates by channel by merchant category



*:No retrievals.