



1700 G Street NW, Washington, DC 20552

October 13, 2017

The Honorable Sherrod Brown
Ranking Member
Committee on Banking, Housing, and Urban Affairs
United States Senate
534 Dirksen Senate Office Building
Washington, DC 20510

Dear Ranking Member Brown:

This letter is in response to your request for an analysis by the Consumer Financial Protection Bureau of a review that the Office of the Comptroller of the Currency recently released to the public ostensibly about the effects of the Consumer Bureau's arbitration rule. As reflected in the attachment, the Consumer Bureau's Office of Research analyzed the OCC review and found that it is based on flawed statistics and is contradicted by publicly available historical data that the OCC did not consider. Additionally, recent public remarks by the Acting Comptroller misstate the effects of the arbitration rule on community banks.

The Consumer Bureau's 2015 Arbitration Study analyzed credit card pricing data for large banks that stopped using arbitration agreements as part of a class action settlement in 2009, which cover about half of the credit card market. Consumer Bureau staff supplied these data to the OCC staff upon their request. The analysis in the OCC review commits a basic statistical error by conflating "p values" with the probability of a hypothetical effect actually occurring. Thus, when the OCC review declared that there is a 56% probability that costs increased by at least three percentage points, with an "expected" increase of 3.43 percentage points, that claim is mistaken and unfounded. As the attached Consumer Bureau analysis explains, the OCC review simply misunderstood a basic fact of how probability works.

By committing this error in statistical analysis, the OCC review reached a conclusion that is not supported by the available empirical evidence. We know, for example, that roughly half of the credit card market does not have arbitration clauses in their agreements. If the OCC review were correct, it would mean that these banks are operating at a substantial competitive disadvantage, incurring costs that require them to charge 3.43 percentage points more than their competitors. Not only is there no evidence that is actually happening, but it also would mean that they have chosen to remain at a substantial competitive disadvantage for the years since the orders in that case expired, during which time none of the companies has reinstated an arbitration clause.

The OCC review would also mean that the banks without arbitration clauses in their credit card agreements must expect to incur, each year, a cost of at least \$12 billion in defending and settling class action lawsuits. As described in the attached Consumer Bureau staff analysis, actual

federal class action costs in the credit card market for these banks average at most about \$150 million per year. Even accounting for state class actions, which are smaller, the OCC review would imply that class actions cost approximately 50 times more than actual data would indicate.

Had the OCC shared with the Consumer Bureau its analysis before publicly releasing it, we would have had an opportunity to explain to the OCC the statistical flaw in its analysis and the inconsistency of its conclusion with the known facts. The OCC chose not to do so, even though the Consumer Bureau had consulted repeatedly with the OCC during the rulemaking process and after the rule was issued.

In contrast to the claims that the Acting Comptroller is now making, the Consumer Bureau sought comment on and carefully considered how the arbitration rule would impact consumers and companies alike before it issued the rule. Significantly, none of the credit card banks without arbitration agreements challenged the Consumer Bureau's findings as to the actual costs of class litigation in the credit card market or claimed to be incurring costs of the magnitude now suggested by the OCC.

Based on the comments it received and its own analysis, the Consumer Bureau did recognize that because the arbitration rule will allow groups of consumers to assert their legal rights and recover compensation for the injuries they suffer, some companies will face somewhat greater costs. But the Consumer Bureau further found that even if companies chose to pass all of those incremental costs on to consumers through higher prices, this would cost on average about one dollar per year for each account affected by the arbitration rule – a far cry from the inflated and unsupported figures erroneously cited in the OCC review.

Additionally, there is no foundation for the concern expressed by the Acting Comptroller in a recent speech to community bankers about the impact of the arbitration rule on the safety and soundness of community banks. As I explained in my July 18 letter to the Acting Comptroller, a majority of depository institutions today operate without arbitration agreements – and this has been true for many decades – without any indication of a safety and soundness issue, and certainly none that the OCC has ever raised previously. This is particularly true of community banks. As part of our extensive Arbitration Study, the Consumer Bureau assembled deposit agreements from a random sample of 141 small- and mid-sized banks. At the request of OCC staff, Consumer Bureau staff also provided these agreements to the OCC. The Consumer Bureau's analysis showed that only 7 percent of small- and mid-sized banks had checking account agreements mandating arbitration. In recent meetings between the Consumer Bureau and community banks from across the country, almost none of the community banks told us that they use arbitration agreements.

Even for those few community banks that do use arbitration agreements, the Consumer Bureau estimated, on the basis of historical data from the Arbitration Study, that the final rule would have “practically no effect that could be monetized.” Specifically, the Consumer Bureau estimated from the data that only one depository institution with \$10 billion in assets or less would face an additional federal class action each year as a result of the arbitration rule. As noted above, most of these banks already do not have arbitration agreements. In general, small community banks, with less than \$550 million in assets by Small Business Administration size

standards, and other small businesses covered by the rule would face only a 1-in-1,500 chance of a new class action due to the rule. For those few small banks that do face such an action, the large majority of the cases are resolved quickly on an individual basis without significant expense. For those cases that proceed to a class settlement, as the rule noted, there are safeguards in place for courts to consider the financial condition of the bank as well as any views of regulators such as the OCC. For all of these reasons, there is no cause for this new concern that the Acting Comptroller has raised about the safety and soundness of community banks.

Thank you for your continued support of the work of the Consumer Financial Protection Bureau. Should you have any additional questions about this analysis or the Consumer Bureau's arbitration rule, please do not hesitate to contact me or have your staff contact Catherine Galicia in the Consumer Bureau's Office of Legislative Affairs. Mrs. Galicia can be reached at 202-435-9711.

Sincerely,


Richard Cordray
Director



1700 G Street NW, Washington, DC 20552

October 13, 2017

Information memorandum for the Director

FROM	Office of Research
THROUGH	David Silberman, Associate Director, Research, Markets and Regulations
SUBJECT	Review of Credit Card Pricing Data by OCC in Connection with Arbitration Rule

Introduction

This memo discusses the statistical analysis in the OCC publication that is entitled *OCC Review: Probable Cost to Consumers Resulting from the CFPB's Final Rule on Arbitration Agreements* ("OCC Review").¹ The OCC Review replicates an analysis conducted by the Consumer Financial Protection Bureau to test the hypothesis that the elimination of arbitration agreements results in a pass-through to consumers of costs incurred by companies as a result of their exposure to class action lawsuits. The OCC Review replicates the basic results of the Bureau's 2015 Arbitration Study (the "Study") almost exactly, and agrees that there is no statistically significant evidence of changes in credit card prices caused by certain large credit card issuers removing their pre-dispute arbitration agreements. However, the OCC Review then goes on to claim that there is an "88 percent chance of an increase" in the total cost of credit as a result of the final arbitration rule with "an expected increase of 3.43 percentage points for customers of institutions" that discontinue using mandatory arbitration clauses. These claims rest on incorrect statistical inference and a failure to correctly consider the full body of evidence.

What the Bureau found, and the OCC has confirmed, is that the available data on this question are very noisy, such that the estimates are too imprecise to report as reliable predictors of pass-through costs. The OCC makes its probabilistic claim by making the regrettably common statistical error of confusing the inverse of a p-value with the probability that a hypothesis is true. In laymen's terms, this is akin to flipping a coin twice, having both flips come up heads, and then declaring that the coin is "very likely" to have heads on both sides. One can calculate that the probability of getting two straight heads with a fair coin is 25 percent. But it would be an error

¹ See <https://www.occ.treas.gov/publications/publications-by-type/other-publications-reports/occ-arbitration-study.pdf>.

to say that getting two heads in a row means that there is a 75 percent chance that the coin is two-headed. This is in essence what the OCC Review argues. Further, as we discuss in this memo, the available evidence indicates that a change in the cost of credit on the order of 3.43 percentage points is implausible, both as a matter of statistics and as a matter of economics.

Data and methods

The data and methods of the underlying analysis are described at length in the Study, in Alexandrov (2017), and at a cursory level in the OCC Review.² Since the OCC Review does not dispute the Study's analysis itself, we will only outline the key points here. As part of the Study, the Bureau analyzed whether banks that use arbitration agreements to block class actions, and thus potentially save on litigation costs, pass those savings through to consumers in the form of lower prices. As a matter of economic theory, one would expect some degree of pass-through, but the magnitude may vary depending on the facts of the market in question, which means that the degree of pass-through for a specific industry and in the specific case of arbitration agreements is an empirical question.

The Study used a natural experiment in the credit card industry, where four large banks agreed to remove their arbitration clauses for a period of three years to settle a class action lawsuit, which is referred to as the *Ross* settlement. The analysis used a difference-in-differences model, which compared the change in prices for new accounts at the settling banks to the change in prices for new accounts at several other large banks that served as a control group.³ The key underlying assumption is that the settling banks would have changed their pricing at the same rate as the control group banks save for the settlement – if pricing in the two groups would have diverged anyway for other reasons, then the analysis would lead to biased results. The Study excluded accounts opened in November and December 2009, the period in which the settlements were being finalized, as prices may have been in flux during this period. The Study also estimated several variations on the basic model that excluded accounts further in time from the settlement dates.

The Study used a 1% random sample of new accounts from the Bureau's Credit Card Database (CCDB).⁴ The main pricing variable used was the total cost of credit (TCC) computed from the

² Alexandrov (2017) was written after the Study was published, and an earlier version was initially posted to the SSRN repository in 2015. Both the original version and the currently available version (as of October 4, 2017) include an updated version of the Study's pass-through analysis, with substantially similar results. Although a harmless error, the OCC Review mistakenly identifies the Study as being based on Alexandrov (2017), rather than the other way around.

³ As discussed further in the Study, it would not be appropriate to compare pricing levels across banks, as these could differ for a variety of reasons unrelated to arbitration agreements. Similarly it would not be appropriate to examine the change in pricing at the settling banks alone, as many other factors could have changed credit card pricing during this period, including the end of the 2008 financial crisis and the passage of the CARD Act in 2010.

⁴ The CCDB provides monthly loan-level information, stripped of direct personal identifiers, regarding consumer and small business credit card portfolios for a sample of large credit card issuers, representing 85-90% of credit card

CCDB as the monthly average of all interest and fees over the first 25 months the account was open, divided by the average monthly balance over that period. The Study also examined two other measures of pricing – APRs and annual fees – and had a separate analysis looking for effects on the number of new accounts opened at each bank.

The OCC Review

The OCC Review begins by replicating the main difference-in-differences analysis from the Study and Alexandrov (2017), using a 1% sample of the CCDB that was provided by Bureau staff. The OCC Review only reports results from the base specification, for all consumers, subprime borrowers, and prime borrowers. The point estimates and standard errors reported in the OCC Review’s Table 1 almost exactly match those from the most recent version of Alexandrov (2017), and exactly match results we can generate from the current version of the CCDB.⁵ As shown in the OCC Review’s Table 1, the point estimates show an increase in TCC for all consumers and prime borrowers, but a decrease for sub-prime borrowers. However, there is a huge amount of noise. With standard errors nearly as large as the point estimates or larger, we cannot reject the null hypothesis of no effect on prices at conventional levels. For instance, although the point estimate for all consumers is an increase in TCC of 3.43 percentage points, with a standard error of 2.96 percentage points, one cannot reject the null hypothesis of no effect even at a lax 80% level of significance.⁶ Indeed, a standard 95% confidence interval cannot reject even a *decrease* in TCC as large as 2.3 percentage points, nor an increase as large as 9.2 percentage points, which represents a huge range given that the average TCC in the data is about 19 percentage points.

The OCC Review acknowledges that the results are statistically insignificant. However, it then proceeds to commit a basic error of statistical reasoning in attempting to calculate the *probability* that the average TCC at the settling banks increased by 0, 1, 2, 3 and 4 percentage points (see Table 2 in the OCC Review). The OCC Review appears to calculate these numbers by conducting a 1-tailed t-test for each TCC value, and reporting one minus the resulting p-value.

industry balances. The Bureau has no direct personal identifiers for loans in the CCDB. The CCDB data were obtained through the Bureau’s supervisory authority. The data are classified as confidential pursuant to 12 C.F.R. part 1070. Consistent with the Bureau’s confidentiality rules, findings presented in this paper do not directly or indirectly identify the institutions involved or the exact number of issuers in either group. See 12 C.F.R. § 1070.41(c). The OCC has overlapping supervisory jurisdiction over many of the underlying banks.

⁵ The CCDB is updated on a monthly basis as the banks correct and update their data. In addition, since the present analysis requires 25 months of data to construct the TCC, it becomes possible to include more accounts in the analysis as time passes and additional months of account records become available.

⁶ There is nothing special about the conventional significance levels (Wasserstein and Lazar, 2016). However, 95% significance is generally required by most academic publications; 90% is sometimes seen as acceptable. Some prominent statisticians advocate for even more stringent levels (e.g. 99.5%) to account for the number of analyses calculated in a typical paper.

The OCC calculates a 1-tailed p-value of 0.12, leading to the OCC Review’s claim that there is an “88% probability of an increase.”⁷

It is simply not correct to interpret the inverse of a p-value as the probability that a hypothesis is true – indeed, the American Statistical Association has spoken directly to this point.⁸ Standard statistical hypothesis testing works by *assuming* the true value (here the effect of removing arbitration agreements on TCC), and computing how likely it is that the data could come about under that assumption and the other assumptions in the model. One cannot use that calculation to calculate the inverse – namely, the probability of the alternative hypothesis conditional on the data. This is a basic fact of conditional probabilities.⁹

Aside from this incorrect interpretation, the OCC Review’s decision to calculate p-values from a 1-tailed test is questionable. That is, in calculating their probabilities (which are not the probability of a TCC change greater than 0, 1, 2, 3 or 4 percentage points), the OCC Review assumes away the probability of negative price changes, *i.e.*, decreases in prices resulting from the elimination of arbitration agreements. Since statistical hypothesis testing proceeds by assuming the truth, generally there is no good reason to restrict the range of possibilities to values greater than the null hypothesis. In principle, one could argue that a decrease in TCC is inconsistent with the economic theory of pass-through, but given that the OCC Review’s own replication found a negative point estimate (a decrease in prices) for sub-prime borrowers, this seems a poor justification. Moreover, there is no good reason at all to rule out lower values when testing the hypothesis of a 1 percentage point increase in TCC.

Correct Interpretation of Statistically Insignificant Results

Statistical significance, and statistical inference more generally, is not the only factor that is relevant in evaluating an empirical result. Instead, one has to consider the full picture from the available evidence. A statistically insignificant coefficient can provide useful evidence in some circumstances, particularly if several imprecise estimates all point in the same direction. This is not one of those circumstances.

The complete picture does not make it clear precisely how removing arbitration agreements affected the cost of credit cards at the banks that took part in the *Ross* settlement. As described in detail in this section and consistent with the Study and the final rule, the data do not allow any

⁷ The OCC Review appears to use the sample size of accounts minus one for the degrees of freedom in its tests. Because the analysis in the Study and the OCC Review allow for errors to be clustered by bank, the relevant sample size for computing degrees of freedom is the number of banks, not the number of accounts, and as such the OCC reported probabilities are, even if interpreted correctly, all too high by a point or so.

⁸ Wasserstein and Lazar (2016). See also Greenland and Poole (2011) and citations therein.

⁹ In layman’s terms, reversing conditional probabilities in this fashion is like asserting that the probability of a person having red hair, given that they are male, is the same as the probability of being male, given that they have red hair. Clearly the probabilities are not the same, nor can one be calculated from the other without more information.

reasonable conclusion beyond that stated in the Study: “there is no statistically significant evidence of an increase in prices.” This does not mean that no pass-through occurred; it only means that the analysis did not provide evidence of it. Indeed, in the arbitration rule, the Bureau acknowledged that “most providers will pass through at least portions of some of the costs” incurred as a result of the rule and that neither economic theory nor empirical evidence provided useful guidance as to the “magnitude of the pass-through.” The Bureau therefore assumed that the costs of the rule could be fully passed through to consumers, not passed through at all, or anything in between.

A number of considerations discussed in the Study and the arbitration rule are relevant in assessing the complete picture here.

First, one must consider the degree of uncertainty – the size of the confidence interval or standard error. A result that just barely fails to reject the hypothesis of no effect is different from one that cannot reject any effect under the sun – the latter is much less credible. As noted above, a 95% confidence interval around the point estimate of 3.43 percentage point includes essentially any change in TCC within the realm of plausibility, and quite a few values that are simply implausible.

Second, it is important to consider whether the magnitude of the point estimate makes sense given the underlying mechanism that is supposed to have caused the change. Recall that the underlying theory here is that the settling banks became exposed to class action liability by removing their arbitration agreements, and any resulting increase in prices would reflect the expected cost of litigating and resolving class actions. However, a 3.43 percentage point increase in TCC would be drastically out of proportion with historical class action costs in the credit card industry.

To see this, recall that TCC is calculated as a fraction of outstanding balances. Total outstanding credit card balances on consumer accounts in recent years have been over \$700 billion in any given year.¹⁰ According to the Study, about half of those balances are with banks that have arbitration agreements, and about half of them are with banks that have no such agreements.¹¹ For the average TCC to go up by 3.43 percentage points, expected class action litigation costs for banks that currently have arbitration agreements would have to exceed \$12 billion annually.¹² For comparison, the Study found over a period of 5 years that credit card issuers (generally the half without arbitration agreements) paid less than \$113 million annually to consumers due to federal class action settlements, as well as \$23 million to plaintiff’s attorneys. Based on the

¹⁰ See, e.g., The Nilson Report, No. 989 February 2012 (reporting total outstanding balances on consumer credit cards of \$713 billion).

¹¹ See Study, Section 2, table 1.

¹² Note that this assumes full pass-through of costs to consumers. If there is less than full pass-through, the litigation costs to banks would have to be even higher in order for the cost of credit to consumers to rise by \$12 billion.

assumptions in the arbitration rule, these firms likely paid about \$14 million in defense costs as well, for a total of about \$151 million in class action costs annually.¹³ Even accounting for the cost of state class actions, which are generally much less costly, the difference in magnitude here is on the order of 50-to-1. Therefore, given historical class action costs in the credit card industry, it is unlikely that TCC in this market would increase by even 1 percentage point, even with full pass-through.

Another way to examine a statistically insignificant result with a large point estimate is to consider how it compares to other empirical results using the same data. A noisy estimate that is consistent with other evidence may be meaningful, but an estimate that is noisy and inconsistent is more likely to be meaningless. The 3.43 percentage point increase emphasized in the OCC Review is one of the latter. If the credit card issuers that removed their arbitration agreements under the *Ross* settlement were passing through expected class action costs, one would expect a disproportionate share of those costs to be paid by sub-prime borrowers, who have fewer options and pay more fees and interest in general.¹⁴ In fact, as noted above, the OCC Review as well as Alexandrov (2017) found that on average the cost of credit went *down* for subprime borrowers with new accounts at the banks that removed arbitration agreements under the *Ross* settlement (although again this was imprecise with a large standard error, which means that it is not possible to rule out either no change or a fairly large increase). Other analyses, reported in Alexandrov (2017) but not part of the OCC Review's replication, suggest that APRs went down overall at the settling banks, and that annual fees went down for subprime borrowers, although again all of these estimates had wide confidence intervals.

Further, if the companies that dropped their arbitration clauses had increased their prices by such a large amount relative to their competitors, then one would expect fewer consumers to open accounts at those banks. Even if consumers do not always shop around for credit cards based on rates and fees, an increase of 3.43 percentage points would likely drive some away, or else one might expect the banks to cut back on credit offers unilaterally. The Study considered this possibility, and actually found that new sub-prime accounts *increased* at the settling banks, relative to the banks that did not change their arbitration agreements.¹⁵ These results are not consistent with a big increase in the cost of credit.

¹³ See Study, section 8, table 10, which shows roughly \$117 million in payments to class action attorneys and \$567 million in cash payments to consumers over 5 years. In the arbitration rule, the Bureau estimated defense costs to be roughly 60% of the fees paid to plaintiffs' attorneys, which would add another \$14 million to the expected annual litigation costs.

¹⁴ The Bureau's most recent report on the consumer credit card market found that sub-prime borrowers represent about half of all of the fees paid, although such borrowers represent only about a quarter of all accounts. See <https://www.consumerfinance.gov/data-research/research-reports/the-consumer-credit-card-market/> (Last accessed Oct. 6, 2017).

¹⁵ This result was statistically significant, although as noted in the Study, given the number of calculations, one would expect a few statistically significant results to appear by chance even if there were no real effect.

It is true, as many statisticians stress, that the point estimate of a statistical analysis is our best guess as to the truth given the data *and the assumptions of the statistical model*. Here, the wide confidence interval and inconsistencies with other results tell us that the 3.43 percentage point estimate of the effect of arbitration agreements on the cost of credit is a *bad* guess as to the true effect. Further research would be needed to estimate more precisely the pass-through rate for litigation costs in credit card markets.

Conclusion

Economic theory indicates that an increase in costs to firms may be passed on to consumers in the form of higher prices. The degree of pass-through and the magnitude of any price changes are, however, empirical questions that must be judged in light of the evidence. Based on the available evidence, it is not reasonable or consistent with sound statistical analysis to conclude that removing arbitration agreements is likely to increase the cost of credit cards by anything like 3.43 percentage points. More generally, the available evidence does not support the OCC Review's conclusion that there is "a strong probability of a significant increase in the cost of credit cards as a result of eliminating mandatory arbitration clauses." Instead, that conclusion rests on flawed statistical inferences and cannot be squared with the economics of the credit card market.

References

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