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Memorandum

To: Foreign Transaction Working Group
From: Tom Florence
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Date: March 17, 2008
Re: Algorithm Status Report – Preliminary Findings Revised

Purpose of Algorithm

Option 2 allows claimants with more than minimal travel the opportunity to claim a refund based on their travel history without providing the detailed information required by Option 3. The Cover Letter description for Option 2 states:

Request a Total Estimation Refund based on *typical spending* during travel and your answers to a few questions about your own travel outside of the U.S. This Option is recommended if you traveled outside of the U.S. for more than one week or had foreign transactions of more than \$2,500 using your eligible cards during the 1996 to 2006 period. Refunds will be *a maximum of 1%* of estimated foreign transactions.

In addition, the Option 2 form advises that:

The Total Estimation Refund is based on a 1% refund for estimates of *typical foreign transaction activity* using VISA, MasterCard and/or Diners Club credit, charge, or debit/ATM cards.

The Option 2 form requires the claimant to provide an estimate of the total number of days outside of the U.S. during the 1996 to 2006 period, and requests information on the frequency of travel for each of four travel purposes: Business, Visiting Friends or Relatives (VFR), Vacation or Leisure, and Other.

An algorithm is being developed to estimate *typical foreign transaction activity* according to travel days and purpose. The algorithm is based on official government sources of travel and tourism survey information. The results are compared to sample data provided by defendant banks and Option 2 claims data received through January 8, 2008. Option 3 claims data through January 29, 2008 and claims asserted as a response to the original mailing are also examined.

Option 2 algorithm estimates are based on “*typical foreign transaction activity*”. *Typical* is defined as characteristic of the majority of the population. Some Option 2 travel or spending is atypical. For example, annual foreign travel in excess of 16.6 days would be considered atypical since 75% of Option 2 claimants report fewer days. In developing the algorithm, the statistical median has been used in estimating typical patterns. Medians represent the point where 50% of values are lower and 50% are higher. Averages can be greatly influenced by extremely high values, in which case they do not represent patterns of spending or travel that is typical of most people.

It is expected that some refunds will over-compensate and some refunds will under-compensate Option 2 filers, based on claimants’ own personal travel patterns and how those differ from typical patterns. The algorithm estimates *typical* daily foreign currency spending, as determined by official statistics, bank sample data, and claims data.

In examining the sources used to develop the algorithm, the primary concerns are estimation of:

- Total spending that was subject to transaction fees;
- Typical daily spending that was subject to transaction fees;
- Typical number of days of foreign travel;
- Purpose of foreign travel.

Bank Data

In general, samples of bank data provide estimates of total transaction amounts, daily transaction amounts, and number of days involved.

Participating banks were asked to provide transactions for samples of approximately 5,000 cardholders with any foreign transactions between 2003 and 2006. The universe of records is all accounts for individuals (not corporate, government agency or small businesses) with at least one foreign (i.e., cross border) transaction in the Class Period. However, not all such data are reasonably accessible, and the banks provided data with some limitations. The samples are described in Appendix I.

Two banks provided sufficient detail to determine the number of annual transaction days. The median total amount spent across the provided time periods was \$247 to \$342. The median number of transaction days across the provided time periods was 3. The median daily average transaction amount was \$92 to \$96.

	Median Total Amount	Median Days	Median Daily Average
Bank 1	\$247		
Bank 2	\$279	3	\$92
Bank 3	\$342	3	\$96

Adjusting the reported amounts by the time periods covered, the total spending during the Class Period is estimated between \$626 and \$892. Total days are estimated to be less than one week. These estimated total values are considerably lower than other estimates of typical spending, and may reflect changes in credit card ownership or the effects of multiple card ownership with each card representing part of the total spending.

Option 2 Data

Option 2 data provide estimates of number of days of foreign travel and purpose of that travel.

Heffler, Radetich & Saitta LLP (“Heffler”) provided electronic Option 2 data as of January 8, 2008. For Option 2, there are 803,308 records. Duplicate records are known to exist in this population of claims, but Heffler has not completed the identification of duplicates as of the time of this status report. Twenty-five percent of respondents indicated 40 days or fewer of foreign travel over the Class Period. Seventy-five percent indicated 180 days or fewer. The median number of foreign travel days within the Class Period is 80.

The percent of travel days allocated to each of the four travel purpose categories is shown in the table below. As will be shown below, this distribution is similar to the distribution derived from travel survey data. Appendix II contains additional details on Option 2 claimants.

Purpose	Percent of All Travel
Visiting Friends/Relatives	20%
Vacation/Leisure	38%
Business	29%
Other	13%

Original Data (Currently Option 3)

Filings using the original format provide estimates of total foreign transaction amounts.

The original format for filing a claim did not allow an Option 1 or Option 2. The current Option 3 filing requirements are almost identical with the original filing format. Heffler provided data on November 21, 2007 for 100,680 claimants who had filed under the original format.

The average number of credit/debit card accounts reported was 1.9 per claimant, with 53% reporting only one account.

Claimants were more likely to report spending in more recent years. To the extent that claimants did not report their actual spending in earlier years, where records may not have been available, the results would underestimate total transactions. The percent reporting any transactions for each time category from 1996/1997 through 2005/2006 is shown in the table below.

Period	Percent Claimants Reporting Any Foreign Transactions
1996-97	16%
1998	15%
1999	19%
2000	23%
2001	26%
2002	30%
2003	34%
2004	41%
2005-06	83%

A relatively small number of very high value claims, possibly due to misrepresentation or data errors, influence the average total amount of reported foreign transactions over the settlement period. Therefore, the median is a preferable measure of central tendency in foreign transactions. Over the Class Period, the reported total median foreign transaction amount is \$2,504. However, the median is expected to be lower than actual spending, due to difficulties in documenting spending in the early years of the Class Period. After applying calculations that adjust for lower reporting rates in the past, the median total spending over the Class Period is estimated at \$7,357.

Travel and Tourism Statistics

Travel and tourism statistics provide estimates of typical daily foreign transactions and purpose of travel. Information on number of days of travel per person cannot be estimated across data sources.

Analysis of travel and tourism data for algorithm purposes provides an estimate of the per-day non-domestic spending of U.S. travelers for each of the four categories of travel purpose. Three official government travel and tourism sources provide estimates of almost all U.S. resident international travel.

1. Commerce Air Travel Data - The Commerce data is collected and prepared by the U.S. Department of Commerce, Office of Travel and Tourism Industries. It is based on the Survey of International Air Travelers, which is the official source of information on most international air travel by U.S. residents.
2. Canadian Same-Day and Overnight Travel Data - Information about U.S. residents who travel to Canada is based on Statistics Canada data, which provides estimates for same-day trips and trips with at least one overnight.
3. Mexican Same-Day and Overnight Travel Data - Travel statistics for Mexico are disseminated through Mexico's Ministry of Tourism DataTur system, which provides information about U.S. residents who make overnight trips and same-day trips to Mexico.

Air travel statistics tend to provide the most detailed information, whereas same-day travel statistics are more basic. Most statistics for overnight travel provide separate estimates for travel with the main purposes of Business, Visiting Friends and/or Relatives (“VFR”), Vacation/Leisure, and Other, which each have distinctive typical patterns. For example, VFR travelers, on average, report a higher number of days and lower per-day spending, whereas Business travelers report more frequent and shorter trips with higher per-day spending.

As might be expected, travelers who stay at least one night generally spend more per day than same-day travelers. Travelers overseas typically have higher daily averages than travelers to Canada or Mexico. The Option 2 algorithm explicitly considers these distinctive travel and spending patterns, while attempting to adjust for expenditures using other means (e.g. Travelers Checks or other credit cards).

Appendix III provides additional details on the sources of travel and tourism information.

The table below shows the annual average number of days spent in each of the analyzed types of travel, the distribution of Purpose of Travel, and the average daily amount spent.¹

	Annual Number Days (in millions)	VFR	Leisure	Bus.	Other	Avg \$
Air Overseas and Air Mexico	369	22%	34%	36%	8%	\$97
Canada Overnight	57	19%	58%	14%	10%	\$87
Canada Same Day	25	15%	48%	6%	31%	\$41
Mexico By Land (Not Frontier)	3	83%	13%	1%	3%	\$34
Mexico Border	39	49%	45%	4%	2%	\$59
Mexico Day Trip (Including Cruise)	78	49%	45%	4%	2%	\$27
Overall	571	27%	39%	26%	8%	\$81
Average Spending		\$48	\$77	\$152	\$57	

These results have similarities to results using other data sources. For example:

- The overall distribution of Purpose of Travel is similar to the Option 2 results.
- The Average daily expenditures are similar to the median foreign transactions from the bank sample data.²

¹ These data are derived from surveys conducted between 1996 and 2006.

² It is not possible to estimate from these data the number of days spent out of the U.S. for any individual because the overlap between types of travel is unknown. For example, an individual might take a trip overseas and make multiple day trips to Canada. The number of total visitor-days is known, but not the number of days per traveler.

Base Case - Application of Algorithm to Electronic Option 2 Claims

The table below shows the expected typical spending pattern for Option 2 claimants who filed electronically by January 8, 2008. The expected typical refund at 1% would be \$72.40.

Purpose	Option 2 Percent of All Travel	Option 2 Days	Tourism Typical Spending	Expected Typical Total
Visiting Friends/Relatives	20%	16	\$48	\$785
Vacation/Leisure	38%	30	\$77	\$2,316
Business	29%	23	\$152	\$3,556
Other	13%	10	\$57	\$584
	100%	80		\$7,240

The above represents typical patterns. However, Option 2 responses to number of days include some claims with thousands of days, which may in no way be considered typical. Unless an adjustment is made for high values, a relatively small number of claims will be paid a large amount. For example, based on approximately 800,000 claims in the Option 2 data examined for this report, about 10% of claimants report a total of three weeks or less of travel and about 10% of claimants report over a year's worth of travel over the Class Period. Regardless of the actual daily compensation, the refund amount going to the 10% of the claimants with the highest travel days would be larger than the total refund issued to the remaining 90% of the claimants. The travel time reported by this top group of claimants does not appear to meet the criterion of typicality.

There are a variety of alternative approaches for dealing with this atypicality. For example, a maximum number of days eligible for payment could be established. Payment inequalities associated with atypical travel patterns might be mitigated by requiring a level of proof higher than that required for Option 2 to support the higher level of payment requested. Counsel has suggested establishing payment tiers where days in excess of a fixed number would receive reduced payment percentages.

Variations in estimating typical spending can also be considered. In the above table, the average of spending was used. If the median number of dollars, available from the Overseas Air survey results, is used, and if the relationship between that median and arithmetic average is applied to estimate the median spending for all survey results, then the estimate of typical spending would decrease across three of the categories. For example, the estimated VFR spending would decrease from \$48 to \$41.

Furthermore, the Overseas Air survey reports dollars spent using Travelers Checks. If those results are applied to all spending, then categories of spending would be lower. For example, if both adjustments are applied, the typical VFR daily spending would decrease from the \$41 median to \$39.

In addition to the above adjustments, other factors should be considered, especially the use of credit cards other than MasterCard, Visa, and Diners Club. Although the relative market share for foreign transactions is not currently estimated, and that specific information may not be

available, other estimates may be considered. For example, Counsel has suggested the use of The Nilson Report, which covers consumer payment systems. The October 2003 issue shows a 19.51% American Express share of the purchase volume for credit cards. If debit card transactions are included, the American Express share is 15.42%. If the American Express share were assumed to be approximately 17%, then the VFR daily spending would decrease from the \$39 median non-Travelers Check estimate to \$32.

The following table illustrates a range of possible per-day foreign transaction estimates after adjusting the base case estimate for median calculations, use of Travelers Checks, and estimated market share for other card use.

	Per-Day Foreign Transactions - Surveys				
	VFR	Leisure	Bus.	Other	Overall
Base Case	\$48	\$77	\$152	\$57	\$81
Base Case - Median	\$41	\$57	\$162	\$50	\$75
Base Case, excl Trvlrs Chks - Median	\$39	\$52	\$157	\$45	\$71
Base Case, excl Trvlrs Chks and Other Cards - Median	\$32	\$44	\$131	\$37	\$59

As the table below indicates, if the Travelers Checks and other card adjustments were applied to the Base Case scenario described earlier, the total expenditures over the Class Period would be \$5,225. The typical refund would be \$52.25.

Purpose	Option 2 Percent of All Travel	Option 2 Days	Tourism Typical Spending	Expected Typical Total
Visiting Friends/Relatives	20%	16	\$32	\$516
Vacation/Leisure	38%	30	\$44	\$1,311
Business	29%	23	\$131	\$3,023
Other	13%	10	\$37	\$375
	100%	80		\$5,225

Summary

No single source provides all the information necessary for an algorithm. In addition, no one source is sufficiently reliable to use solely to derive the algorithm. Therefore, information must be adapted from multiple sources to triangulate on a reasonable estimate of *typical foreign transaction activity*.

For daily transactions, the bank samples provide somewhat higher estimates (\$92 to \$96/day) than do the survey data (\$59 to \$81/day). However, the estimates of total expenditures using the bank data (\$626 to \$892) are substantially below all other estimates of total foreign transactions across the Class Period (\$2,504 to \$7,240). This is due primarily to the fact that the total travel days estimated from the bank data (6.7 days) are substantially lower than the total days claimed on option 2 claim forms (80 days). This could be explained by multiple card ownership or

ownership of various cards over the sampled period of time. In other words, Option 2 claimants are providing travel days consolidated over multiple credit cards.

Typical total transactions over the Class Period are lowest for the bank sample estimates (\$626 to \$892) due to the low number of estimated days. A median estimate based on early Option 3 filers is about \$7,357.³ Finally, estimates based on survey data range from \$5,225 to \$7,240.

Using a 1% of total transactions rule to calculate claim value, the Base Case claim filed to date in Option 2 could range from approximately \$6 to \$74. If we assume a principle of not paying an Option 2 claim an amount less than Option 1, the effective range of Option 2 values would be \$25 to \$74 per claim. If we excluded the total transaction estimates from the bank data, the more reasonable range for the Base Case or *typical* claim would be from \$52 to \$74.

³ Transaction amounts were extrapolated from recent years to earlier years for claims with missing values in earlier years.

Appendix I

Bank Sample Data

Bank of America

For Bank of America, MBNA credit information is loaded on tapes and not available. The credit data for the remaining accounts was provided for the period January 1, 2003 to October 31, 2006. ATM debit information was not provided due to the short period of time for which it is available. Point of Sale debit data was provided for the period July 1, 2003 to November 8, 2006.

Bank of America used an internally developed sampling procedure designed with the intention of generating a random sample. An ID number was provided for each sampled individual. All debit transactions for an individual were provided on one record, and all credit transactions on another record. The sample consisted of debit and credit transactions for 5,000 individuals sampled from debit accounts and 5,000 individuals sampled from credit accounts. ARPC agreed to derive a final sample of 5,000 individuals, drawing 69.3% of the sample from individuals identified from their credit accounts, and 30.7% of the sample from individuals identified from their debit accounts. Debit records were blank for 329 individuals and those records were omitted from the procedure. Random sampling was accomplished using SPSS software.

The data included:

- total amount of debit transactions for each year
- total number of debit transactions for each year
- total amount of credit transactions for each year
- total number of credit transactions for each year

Yearly amounts and days were summed across debit and credit records. A total of 919 sampled cases have both debit and credit records, and to the extent that debit and credit purchases were made on the same day, this procedure will overstate number of transaction days. However, it is not possible to evaluate the extent of the overstatement given the available data.

JPMorgan Chase

JPMorgan Chase provided credit card data for the period January 1, 2003 through November 8, 2006 and debit/ATM card data for the period September 2004 through November 8, 2006 for accounts that were opened with Bank One, N.A., or any of its affiliates (“Heritage Bank One Accounts”) and for the period January 1, 2003, through November 8, 2006, for accounts that were opened with Chase Manhattan Bank (“Heritage Chase Accounts”).

The bank provided data by transaction day for individuals. The records were daily totals for individuals by debit or credit type. The original data contained the following counts of daily transactions:

- 42,068 credit records

- 1,679 debit records
 - 1,265 SI flags (Heritage Chase Accounts)
 - 414 H1 flags (Heritage Bank One Accounts)

A small number of records showed transaction dates before the defined period. Those transaction days were dropped. In addition, when refunds resulted in a negative amount or negative days for the year, those yearly amounts were dropped.

Records were summed by year for each individual, adding debit and credit amounts and days. Two additional fields were created by summing across years for each individual:

- Total Amount
- Total Transaction Days

The total number of retained individual account holders is 4,685.

Citibank

For Citibank, Credit card data is available for its IBS system (*i.e.*, its largest portfolio, as well as other portfolios) for the period 2004 through 2006.

Citibank provided 7,793 records for 4,997 unique IDs. There was no indication of number of transaction days. Total foreign transaction amounts per year were included. Debit and credit amounts were summed for each individual to produce a total annual foreign transaction amount.

Example of Distribution of Total Transaction Days and Amounts

The table below for the Bank of America data shows that at least 25% of the sample has only 1 transaction day over the period of time provided, and that at least 40% has only 2 days or less and spent no more than \$165.13 over the period.

Percentiles	TOTAMT	TOTDAYS
10	\$29.76	1
20	\$57.53	1
25	\$76.34	1
30	\$101.02	2
40	\$165.13	2
50	\$279.19	3
60	\$445.87	4
70	\$762.22	6
75	\$1,010.37	8
80	\$1,342.85	10
90	\$2,775.03	18

Appendix II Option 2 Data

Respondents were asked how often they traveled for four travel purposes. Travel surveys show that the number of days and amounts spent vary by travel purpose. For example, travelers who are Visiting Friends or Relatives tend to spend more days out of the country but to spend less per day. The travel purposes and frequency categories are:

	Never	Rarely	Sometimes	Often	Mostly
Traveling on business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visiting friends or relatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vacation or leisure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other purpose for travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The analysis assigned a weight to each frequency from Never = 0 to Mostly = 4. The table below gives a hypothetical calculation of allocation of travel purpose for a respondent. If a respondent with 80 days of travel answered that they rarely traveled for Business, Sometimes traveled to Visit Friends/Relatives, Often traveled on Vacation/Leisure, and mostly traveled for other purposes, the 80 travel days were assigned as in the example below:

Purpose	Frequency	Frequency Weight	Proportion of Total	Allocated Days
Business	Rarely	1	10%	8
Visiting Friends/Relatives	Sometimes	2	20%	16
Vacation/Leisure	Often	3	30%	24
Other	Mostly	4	40%	32
Total		10	100%	80

The table below shows percentile distribution for number of travel days:

Percentile	Number of Days
10	22
20	34
30	46
40	60
50	80
60	108
70	150
80	214
90	400

Appendix III Travel and Tourism Survey Data

U.S. Department of Commerce, Office of Travel and Tourism Industries Survey of International Air Travelers

The annual Survey of International Air Travelers is conducted through approximately 50 international airlines for all destinations except Canada. Department of Homeland Security data are used to expand the survey to represent all U.S. travelers. Available results include all years from 1996 to 2006.

The counts of trips represent person-trips over the year, not individuals. For example, in 2006, 30.1 million airline trips (except to Canada) were taken by U.S. resident travelers visiting overseas destinations. Some of these trips represent more than one journey for an individual.

Respondents report the number of nights that they spend outside the USA on their trip. They also estimate the amount of money they spend on the trip outside of the USA, not including any money that was paid for a booked travel package.

The per-trip amount spent outside of the USA, divided by the number of nights spent outside of the USA, gives an estimate of the per-day spending.

Respondents are asked about how they pay for their trip expenses: credit cards, traveler's checks, debit cards, or cash. However, the survey question does not differentiate between out-of-USA spending and other expenses, such as airline tickets, which would be made in U.S. dollars.

Respondents are asked about the main purpose of their trip. Publicly-available data combine Visiting Friends or Relatives (VFR) with Leisure/Vacation. Because travel and spending patterns differ between these categories, additional tables for 1996, 2000, and 2006 were purchased from CIC Research, the contractor for the Airline Survey. These tables were used to provide additional detail on the proportion of travelers in each of the four purpose categories. The CIC tables, which include air travel to Mexico, and limit the analysis to claimants who reported any credit or debit card expenditures, provide the basis for the non-Canadian air traveler estimates. In addition to average spending per visitor-day, the median spending was calculated and provided by CIC Research.

Statistics Canada

Statistics Canada provides statistics related to Canadian studies on overnight and same-day travel to Canada by U.S. residents. The survey of overnight travelers contains information similar to the U.S. Air Survey, including estimates of number of nights and spending for each of the four purpose-of-travel categories. For same-day travel statistics, the proportion of travelers in the purpose-of-travel categories is estimated from U.S. Bureau of Transportation Statistics for 1996

and 1999. Average daily spending is estimated by approximating proportions derived from the Canadian overnight statistics to the same-day overall spending estimate. Spending reported in Canadian dollars is converted to American dollars using Bank of Canada annual conversion rates.

Banco de Mexico and Sectur, the Mexican national tourism data source

The data provided by the Office of Travel and Tourism Industries contractor include air travel to Mexico. Data from Mexico's Sectur was used to estimate purpose of travel and average spending for non-frontier land travel. As with the Canadian statistics, information on frequency of border tourism and same-day visits, and average spending patterns, is available. Purpose of travel details for border and same-day visits were estimated based on the more detailed tables.