EXHIBIT 7

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CECIL BARRETT, JR., CYNTHIA BARRETT, JEAN BLANCO GUERRIER, JACQUELINE GRISSETT, CRAIG GRISSETT, STEVEN PARHAM, BETTY HOFFMAN, EDWARD HOFFMAN, DORIS MURRAY, JOSLYN DAY and KEISHA CHAVERS on behalf of themselves and all others similarly situated, Plaintiffs, v. OPTION ONE MORTGAGE CORPORATION and H&R BLOCK MORTGAGE CORP. N/K/A OPTION ONE MORTGAGE SERVICES, INC. Defendants.	C.A. No. 08-10157 **REPLY CLASS CERTIFICATION REPORT OF IAN AYRES**

CONFIDENTIAL—SUBJECT TO PROTECTIVE ORDER

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I. INTRODUCTION & SUMMARY OF CONCLUSIONS

1. I have been asked by Plaintiffs' counsel to review and comment upon the May 4, 2010 class-certification report of Dr. Darius Palia.[1] A list of the materials I have reviewed since submitting my initial class certification report is attached as Appendix 1.

2. Upon review of Dr. Palia's report and the other materials, I continue to conclude that Class members suffered a disparate impact as a result of Defendants' mortgage pricing policies. I also conclude that disparate impact can be analyzed and demonstrated using common methods and proof, that the named Plaintiffs' claims are typical of those of the Class, and that monetary relief to the Class may be reliably estimated for each member of the Class and in the aggregate for the Class as a whole.

3. In his expert report, Dr. Palia argues for segmenting the population of loans by broker and geographic market before attempting to measure whether disparities exist between the loan costs for minorities and the loan costs for white borrowers (as measured by the APR). In this report, I explain why Dr. Palia is incorrect in arguing that a consistent pattern of statistically significant racial disparities must persist across every metropolitan area and individual broker in order to prove that the Defendants' Discretionary Pricing Policy caused a disparate impact. In fact, part of the unjustified disparate impact caused by Defendants' discretionary policy is the very fact that it gave different brokers the discretion to produce different amounts of racial disparity. Even if one were to assume that the metropolitan area and the identity of the individual broker are legitimate business justifications for Defendants' charging different loan prices, I show that a proper disparate impact model continues to show a statistically significant disparate impact against Defendants' African-American borrowers.

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[1] Rebuttal Report of Darius Palia, May 4, 2010 [hereinafter *Palia Class Certification Report*].

4. Dr. Palia discusses the differences in the actual APRs of Class members' loans in his report and the predicted APRs under my model if the Class members had been white. Dr. Palia finds that some loans exist for which the predicted APR for a Class member (if that member had been white) is higher than the actual APR. Dr. Palia's arguments ignore the very nature of regressions, in which predictions are merely the estimates of the *average* APR Plaintiffs would have received (if white) and thus, like the actual APRs for white borrowers, should be expected to be distributed both above and below this estimated average.

5. Dr. Palia also discounts the fact that the named Plaintiffs' APRs are higher than what my model would have predicted if the Plaintiffs had been white because, according to Dr. Palia, those differences are not statistically significant. Furthermore, Dr. Palia argues that a substantial portion of African-American borrowers have APRs that are lower than the APRs predicted by my Model (4). However, none of these findings show that the claims of the named Plaintiffs are atypical of the claims of the Class as a whole.

6. Finally, Dr. Palia argues that my damage methodology is flawed. But as indicated in my initial report,[2] with the benefit of more data, it is possible to undertake a damage analysis that separately takes account of both the injury that occurs at the time of the lending from elevated upfront fees and the injury that occurs over time from elevated accruing interest. Now, with the benefit of the servicing data (which was not provided to me until it was included with the electronic materials accompanying Dr. Palia's report), it is feasible to estimate damages that reflect actual payment histories of individual Class members. It remains my opinion that there exists a credible common methodology to reliably estimate the aggregate monetary relief for the

[2] Class Certification Report of Ian Ayres, March 22, 2010 [hereinafter *Ayres Class Certification Report*], at ¶85 and ¶89.

Class as a whole, as well as a credible mechanism for allocating this relief among Class members on the basis of realistic estimates of their expected individual injury. In my original report, the five-year payment assumption was merely illustrative.

II. DR. PALIA'S EXTREME SEGMENTATION OF LOAN DATA IS FLAWED

7. In the APR models presented in his report, Dr. Palia restricts himself to examining loans separately by broker or by the Metropolitan Statistical Area (MSA) in which the loans were made. Dr. Palia claims that in order for there to be credible evidence that a discretionary pricing policy caused disparate impact, there must be a consistent pattern of statistically significant racial disparities both across brokers and across MSAs.[3] This claim is not accurate. An employer might have a discretionary hiring policy that was implemented by five interviewers. The possibility that two of the five interviewers did not use their discretion in ways that caused an unjustified disparate impact on African-American applicants would not mean that the employer's discretionary policy on net did not result in an unjustified disparate impact on the class of African-American applicants. Similarly, imagine a police department that gave its officers certain discretion to search and frisk citizens who were stopped for traffic violations. The department's policy would empower some "bad cops" to frisk citizens in ways that produced higher than average racial disparities. The fact that other officers exercised that discretion in ways that produced a smaller unjustified racial disparity would not mean that the department's

[3] For example, with regard to brokers: "If such disparate impact is not observed consistently across brokers, that would suggest that loan pricing is the result of individualized decision making rather than the result of a common policy applied commonly across the entire African-American borrower population." *Palia Class Certification Report*, at ¶8.

discretionary policy did not work an unjustified disparate impact on the class of stopped African-American citizens.[4]

8. In this case, the possibility that not all brokers who were granted pricing discretion under the Discretionary Pricing Policy exercised that discretion to cause the same degree of unjustified disparate impact does not mean that the discretionary policy of the Defendants did not cause an unjustified disparate racial impact. Indeed, part of the unjustified disparate impact caused by Defendants' discretionary policy is the very fact that it gave different brokers the discretion to produce different amounts of racial disparity.

9. Dr. Palia's report suggests that my alleged failure to adequately control for broker and MSA effects has produced a misleading estimate of racial disparity because of "Simpson's Paradox."[5] Dr. Palia illustrates the paradox with the example of a university that in aggregate had a lower acceptance rate for female than male applicants, even though many of the departments admitted women at a higher rate than men. A stylized version of this university example can help us understand how the Simpson's Paradox operates. Imagine there is a university with just two graduate departments (math and English). Of the 1,000 women who apply for graduate admission, imagine that 90 percent apply to the English department and that 10 percent apply to the math department. In contrast, imagine that the 1,000 male applications are evenly divided between the two graduate departments. Finally, imagine that in each department, the admission rate for women is higher than that for men but that the admission rate in the English department for both male and female applicants is markedly lower than in the

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[4] Ian Ayres & Jonathan Borowsky, *A Study of Racially Disparate Outcomes in the Los Angeles Police Department*, Prepared for ACLU of Southern California (2008) (refuting argument that variable racial disparities in policing behavior negatives finding of unjustified disparate impact).

[5] *Palia Class Certification Report*, at ¶17.

math department. Specifically, imagine the departments admit men and women at the following rates:

	Women	Men
Math	82%	80%
English	22%	20%

Under these conditions, the overall admission rate of men applicants at the university would be 50 percent, while the overall admission rate for women at the university would be only 28 percent.[6] The paradox in this example is that even though women have a higher admission rate than men in each department, they nonetheless have a lower admission rate for the university as a whole. Dr. Palia suggests that my analysis might suffer from this same paradox because my failure to adequately control for broker and MSA effects is similar to not drilling down to the university department level to analyze disparities.

10. Dr. Palia's Simpson's Paradox argument is flawed both theoretically and empirically. First, it misunderstands the difference between a disparate treatment and a disparate impact claim. In a disparate impact claim, where intentional discrimination need not be proven, defendant policies that produce unjustified racial or gender disparities may give rise to concern. In the foregoing university example, the defendant's policy of admitting a much higher proportion of math applicants than English applicants has a disparate impact on women applicants because women applicants disproportionately apply to the English department.[7] In this case, the Defendants' Discretionary Pricing Policy similarly may cause a disparate racial impact (relative to a less or non-discretionary policy that they might have used) because minorities may

[6] In this example, a total of 280 women would be admitted (82 of 100 would be admitted to the math department and 198 of 900 would be admitted to the English department) and 500 men would be admitted (400 of 500 would be admitted to the math department and 100 of 500 would be admitted to the English department).

[7] In addition, the university may have policies that cause a disparate impact because they tend to induce women to disproportionately apply to the English department.

have greater exposure to brokers who impose higher costs on minorities. Controlling for the tendency of the different departments to admit students at different rates would only be appropriate in a disparate impact analysis if the university could establish a business justification for the much lower acceptance rate in the department dominantly applied to by women. Analogously, controlling for the tendency of different brokers to charge different APRs would only be appropriate if the Defendants could establish a business justification for the higher APRs charged by brokers disproportionately used by African Americans. But nowhere in his report does Dr. Palia provide either a credible theory or evidence to support such a business justification. Accordingly, the theoretical possibility of a Simpson's Paradox should not qualify the strong evidence that Defendants' policies resulted in an unjustified disparate impact adverse to African-American borrowers.

11. Secondly, in the foregoing university example, even if the university was justified using a lower acceptance rate in the department where women disproportionately apply, the appropriate statistical way to control for this justification would be in a single regression with data on all applicants to all departments. A university-wide admission regression that added department controls in the stylized example would simultaneously estimate that math applicants were admitted at a higher rate than English applicants, and that the admission rate for women applicants is two percent higher than the rate for men. This regression would show that after controlling for (justified) department effects, that the university policies if anything produced a disparate impact in favor of women applicants. But in what follows (see infra at Tables 1 and 2), I will show that adding analogous controls for broker and MSA effects does not alter the sign and significance of my original estimates of racial disparity. After controlling for the tendency of individual brokers to charge different APRs, I continue to find a statistically significant disparate

impact adverse to African-American borrowers. Consequently, contra to Dr. Palia, there is no credible empirical evidence that a Simpson's Paradox exists in this data.

A. Dr. Palia Inappropriately Runs Separate Regressions for Each Broker, Whereas a More Appropriate Regression Controlling for Broker Effects Shows a Statistically Significant Disparate Impact to African Americans

12. Dr. Palia's approach of dividing the Defendants' loan data into tens of thousands of subsets and then running individual regressions on 100 of these different brokers reduces the ability of the data to credibly generate statistically significant parameter estimates. The smaller the sample size, the harder it is to statistically identify instances of bias. For example, imagine that a coin was biased to come up tails 55 percent of the time. Were one to flip the coin 1,000 times, one would reliably be able to reject the null hypothesis that the coin is unbiased.

13. Now consider another experiment. Instead of flipping the same biased coin 1,000 times, the coin is flipped only 10 times by 100 separate individuals. In this latter example, one would be unable to identify any consistent measure of statistically significant bias across the 100 separate trials.[8] Accordingly, under Dr. Palia's subset approach, there would be no credible evidence of disparity even though all the individuals were flipping the same biased coin.

14. Were one to accept Dr. Palia's claim that it is appropriate to control for broker effects, the more accepted econometric approach is to control for such effects in a single

[8] If one were to flip this biased coin 1,000 times, the error margin for a 95 percent confidence interval, using a Z-distribution cutoff of 1.96, would be plus or minus three percent. Thus, as long as the coin came up tails more than 53 percent of the time, one would reject the null hypothesis that the coin is fair and conclude that the coin is biased towards tails. However, if one were to flip the coin only 10 times, the error margin would be plus or minus 31 percent. Thus, one would reject the null hypothesis *only* if the coin came up tails more than 81 percent of the time. In other words, as long as there were fewer than 9 tails, one would accept the null hypothesis of an unbiased coin. This is due to the fact that the test with 10 flips is far less powerful than the test with 1,000 flips. These intervals are approximated using the standard Normal distribution and the formula for standard deviation of proportions, which can be found in standard statistics textbooks. *See, e.g.*, PAUL G. HOEL, INTRODUCTION TO MATHEMATICAL STATISTICS (John Wiley & Sons, 4th ed. 1971) at 81-84.

regression.[9] The single regression approach analyzes whether statistically significant racial disparities persist after adding separate control variables for each individual broker. It is superior to a statistical analysis consisting of many separate regressions because the degrees of freedom will be larger in the single regression than in any of the separate regressions. That is, each separate regression will involve the *re-estimation* of the regression parameters that are common to each regression. By contrast, the single regression approach with fixed effects will estimate the parameters on these variables only once, which results in smaller standard errors and more precise estimates.

15. For example, suppose one were interested in estimating the effect of car weight and car size on fuel efficiency, and one had data on curb-weight, fuel efficiency, and the car's footprint for 10 different car manufacturers. One could estimate a separate regression for each manufacturer, which would result in the estimation of 10 separate regression parameters on the variable *Curb Weight* and an additional 10 separate regression parameters on the variable *Footprint*. Alternatively, one could get a more precise estimate by pooling the data together, estimating a single regression that contained the variables *Curb Weight* and *Footprint* and then separate fixed effects for each car manufacturer. In total, this pooled approach would involve the estimation of only thirteen parameters (10 fixed effects, one constant term, and one parameter each on *Curb Weight* and *Footprint*). The separate regression approach favored by Dr. Palia would involve the estimation of 30 different regression parameters—that is, 10 constant terms,

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[9] *See, e.g.*, DAMODAR N. GUJARATI, BASIC ECONOMETRICS (McGraw-Hill, 3rd ed. 1995) at 522-525. *See also* H.D. VINOD & AMAN ULLAH, RECENT ADVANCES IN REGRESSION MODELS (Marcel Dekker 1981) at 248: "When dealing with cross-section and time series data, where each individual cross-section sample is small so that sharp inferences about the coefficients are not possible, it is a common practice in applied work to pool all data together, and estimate a common regression. The basic motivation for pooling time series and cross-section data is that if the model is properly specified, pooling provides more efficient estimation, inference, and possibly prediction."

10 parameters on *Curb Weight* and 10 parameters on *Footprint.* Essentially, by devoting less data to the calculation of the parameters on *Curb Weight* and *Footprint* the estimates of those parameters are less precise than in the pooled-data approach.

16. Still, individual broker controls are likely to understate the true racial disparities produced by Defendants' Discretionary Pricing Policy. If African Americans disproportionately borrow from a broker that charges high APRs that are not related to the cost of lending, the regression will attribute part of those APRs to that individual broker effect and not to the borrower's race. Even though the discretionary policy causes disparate impact because it allows different brokers to produce different levels of racial disparity, controlling for individual broker effects ignores this source of unjustified racial disparity.

17. It is accordingly my opinion that it is inappropriate to include broker controls in a regression. But it is also my opinion that, if one were going to analyze the impact of individual brokers in a test of whether Defendants' policies produced a disparate impact on African-American borrowers, the broker controls should be included in a single regression instead of the subset regressions inappropriately undertaken by Dr. Palia. Table 1 compares the regressions originally reported in Table 7 of my original report to the results of analogous regressions which include more than 29,000 individual broker controls.

TABLE 1: EFFECT OF INCLUDING BROKER CONTROL VARIABLES ON APR BASIS POINT DISPARITIES

	No Broker Controls[1]			With Broker Controls[2]		
	African American	Observations	Adj. R^2	African American	Observations	Adj. R^2
Model (4) Estimated for All Nonprime Loans	8.63*** (0.31)	865,052	0.73601	6.50*** (0.33)	865,052	0.75469
Model (4) Estimated Separately by Business Unit						
Model (4-OOMC): Option One Mortgage Co.	8.54*** (0.33)	778,553	0.74095	6.37*** (0.35)	778,553	0.75830
Model (4-HRBMC): H&R Block Mortgage Corp.	7.16*** (0.95)	86,499	0.76145	7.27*** (0.95)	86,499	0.76231
Model (4) Estimated Separately by Lien Status						
Model (4-L1): First Lien	8.96*** (0.31)	767,811	0.74367	6.50*** (0.33)	767,811	0.76541
Model (4-L2): Subordinate Lien	3.78*** (0.78)	97,241	0.71582	2.76*** (0.89)	97,241	0.74383
Model (4) Estimated Separately by Year of Origination						
Model (4-2001)	15.20*** (1.21)	71,019	0.59471	11.71*** (1.35)	71,019	0.65008
Model (4-2002)	11.83*** (1.02)	93,576	0.63310	8.53*** (1.16)	93,576	0.66806
Model (4-2003)	11.80*** (0.80)	131,044	0.61894	10.14*** (0.88)	131,044	0.66085
Model (4-2004)	9.39*** (0.67)	159,953	0.69325	6.95*** (0.74)	159,953	0.71975
Model (4-2005)	5.87*** (0.47)	227,550	0.76560	4.20*** (0.51)	227,550	0.78614
Model (4-2006)	4.05*** (0.62)	137,601	0.66171	3.66*** (0.71)	137,601	0.67830
Model (4-2007)	6.88*** (1.08)	44,309	0.72216	5.97*** (1.35)	44,309	0.75149

Note: Robust standard errors in parentheses.
*** Statistically significant at 1%, ** Statistically significant at 5%, * Statistically significant at 10%.
[1] As reported in Table 7 of my original report.
[2] Dummy variables, broker fixed effects, are added for each of the 29,628 brokers in the population of nonprime loans. If the broker name is missing for an HRBMC loan, I assume that the broker name is "H & R BLOCK MORTGAGE CORP., INC." because 99% of HRBMC loans with a broker name have that broker name.

18. Table 1 shows that without broker controls, my baseline test (Model (4)) estimated an unjustified racial disparity in APR of 8.63 basis points, and that with broker controls, the estimated racial disparity remains highly statistically significant at 6.50 basis points.

The lower racial disparity estimate is evidence that Defendants' pricing policies cause some African-American borrowers to pay higher prices because these borrowers disproportionately borrow from high-APR brokers, but that a majority of the unjustified disparity is attributable to higher loan APRs that African-American borrowers pay relative to white borrowers at the same broker.

19. The other regressions in Table 1 report similar results. Even after adding broker controls, the estimates of racial disparities remain statistically significant, with the majority of the racial disparity arising within broker disparities.

20. These results are actually consistent with Dr. Palia's Exhibit C, which shows that H&R Block Mortgage Corp., Inc. has almost 10 times as many loans as any nonprime broker in Defendants' dataset (with 85,556 nonprime loans versus 9,733 loans for the second largest broker). Dr. Palia himself, in his subset regression, reports that H&R Block Mortgage Corp., Inc. had a statistically significant unjustified racial disparity of 7.29 basis points. Thus, even if we limit the analysis to a broker entity that was wholly owned by Defendants, we find that Defendants' pricing policies produced an unjustified racial disparity that is statistically significant.

B. Dr. Palia Inappropriately Runs Separate Regressions for Each MSA, Whereas a More Appropriate Regression Controlling for MSA Effects Shows a Statistically Significant Disparate Impact to African Americans

21. The general economic conditions of a more localized area for the property may also influence the cost of a mortgage. For example, if the borrower were to lose his or her job, the risk that the borrower would default because of an inability to find another job in the same area is higher if the general unemployment rate in that area is higher. However, contrary to Dr. Palia's argument, this fact does not necessitate a separate analysis for each geographic area.

Instead, to control for any risk-based variation in local markets, one can include dummy variables for the Metropolitan Statistical Area (MSA) of the property.

22. The most authoritative regression (Model (4)) from my original report did include state dummy variables to control for possible geographic differences in the cost of lending.[10] I did not include MSA dummy variables in Model (4) in my original report because the MSA of the property was not given in the original data. It is noteworthy that Defendants' underwriting data also did not see fit to include MSA as an underwriting criterion. However, to be cautious about possible geographic cost differences within states, it may be appropriate to include more fine-grained MSA controls in a regression specification. But, as before, it is appropriate to allow for separate MSA effects in a single regression, instead of testing for disparate impacts on geographic subsets of the data.

23. Accordingly, I re-estimate the most authoritative benchmark specification (Model (4)) from my original report by adding the MSA dummy variables used by Dr. Palia in his analysis. Table 2 shows the original results of my Model (4) and the effect of adding MSA controls to the model on the disparities in APRs for African Americans.

[10] It is troubling that Dr. Palia's report claims that the results from the individual broker regressions (reported in his Exhibit C) were from a specification that, contra to my Model (4), did not include state dummies. He offers no explanation as to why he departed from my specification. Moreover, the results reported in Exhibit C are actually from regressions that include state dummies. If one excludes state dummies in individual broker regressions one finds that—notwithstanding the smaller data subsamples—25 brokers (as opposed to his claim of 13 brokers) had statistically significant racial disparities that were adverse to African-American borrowers.

TABLE 2: EFFECT OF INCLUDING MSA CONTROL VARIABLES ON APR BASIS POINT DISPARITIES

	No Control for MSA[1]			Include Dr. Palia's MSA Controls		
	African American	Observations	Adj. R^2	African American	Observations	Adj. R^2
Model (4) Estimated for All Nonprime Loans	8.63*** (0.31)	865,052	0.73601	8.66*** (0.32)	865,052	0.73691
Model (4) Estimated Separately by Business Unit						
Model (4-OOMC): Option One Mortgage Co.	8.54*** (0.33)	778,553	0.74095	8.22*** (0.33)	778,553	0.74182
Model (4-HRBMC): H&R Block Mortgage Corp.	7.16*** (0.95)	86,499	0.76145	8.21*** (0.99)	86,499	0.76255
Model (4) Estimated Separately by Lien Status						
Model (4-L1): First Lien	8.96*** (0.31)	767,811	0.74367	8.89*** (0.32)	767,811	0.74464
Model (4-L2): Subordinate Lien	3.78*** (0.78)	97,241	0.71582	4.07*** (0.81)	97,241	0.71700
Model (4) Estimated Separately by Year of Origination						
Model (4-2001)	15.20*** (1.21)	71,019	0.59471	13.59*** (1.25)	71,019	0.59942
Model (4-2002)	11.83*** (1.02)	93,576	0.63310	11.13*** (1.05)	93,576	0.63582
Model (4-2003)	11.80*** (0.80)	131,044	0.61894	12.07*** (0.82)	131,044	0.62172
Model (4-2004)	9.39*** (0.67)	159,953	0.69325	9.84*** (0.69)	159,953	0.69494
Model (4-2005)	5.87*** (0.47)	227,550	0.76560	6.73*** (0.49)	227,550	0.76711
Model (4-2006)	4.05*** (0.62)	137,601	0.66171	4.95*** (0.64)	137,601	0.66348
Model (4-2007)	6.88*** (1.08)	44,309	0.72216	7.79*** (1.11)	44,309	0.72463

Note: Robust standard errors in parentheses.
*** Statistically significant at 1%, ** Statistically significant at 5%, * Statistically significant at 10%.
[1]As reported in Table 7 of my original report.

24. As Table 2 shows, adding the MSA dummy variables slightly increases the estimated racial disparity for the baseline specification (Model (4)) from 8.63 basis points in a regression without MSA controls to 8.66 basis points in a regression with MSA controls. Indeed, Table 2 shows across a variety of different models that adding MSA controls tends to increase the size of the estimate of the unjustified disparate impact. In all the regressions reported in

Table 2, the addition of MSA controls leaves the high statistical significance of the estimates unaffected. The bottom line is that the addition of MSA controls has no substantial impact on my original finding.

III. THE COMMONALITY AND TYPICALITY OF THE NAMED PLAINTIFFS' CLAIMS IS NOT CONTRADICTED BY DR. PALIA'S COMPARISON OF ACTUAL & PREDICTED APRS

25. Dr. Palia's report includes a section in which he discusses the typicality of the characteristics of the named Plaintiffs and their Option One loans.[11] The fact that risk-based characteristics of the borrower or the loan vary across loans, including those of the named Plaintiffs, does not preclude a class-wide analysis or undermine a conclusion regarding typicality. All of the legitimate risk-based characteristics of the borrower or loan are factors that can be controlled for in a regression analysis, as I discussed in my original report.[12] All Class members, including the named Plaintiffs, were subject to Defendants' policies, even if they interacted with different loan brokers or had different risk profiles. An examination of whether these policies caused a disparate impact on the Class of African-American borrowers must be done on an aggregate basis. As discussed in my original report, if this case were to proceed to individual trials, each plaintiff would rely on the common evidence and methods presented in my report.[13]

26. Dr. Palia's analysis of typicality is flawed for two reasons. First, Dr. Palia ignores that the predictions from a regression of the APRs minority borrowers would have paid if they were white are merely predictions of the *average* APR a white borrower with similar cost-based

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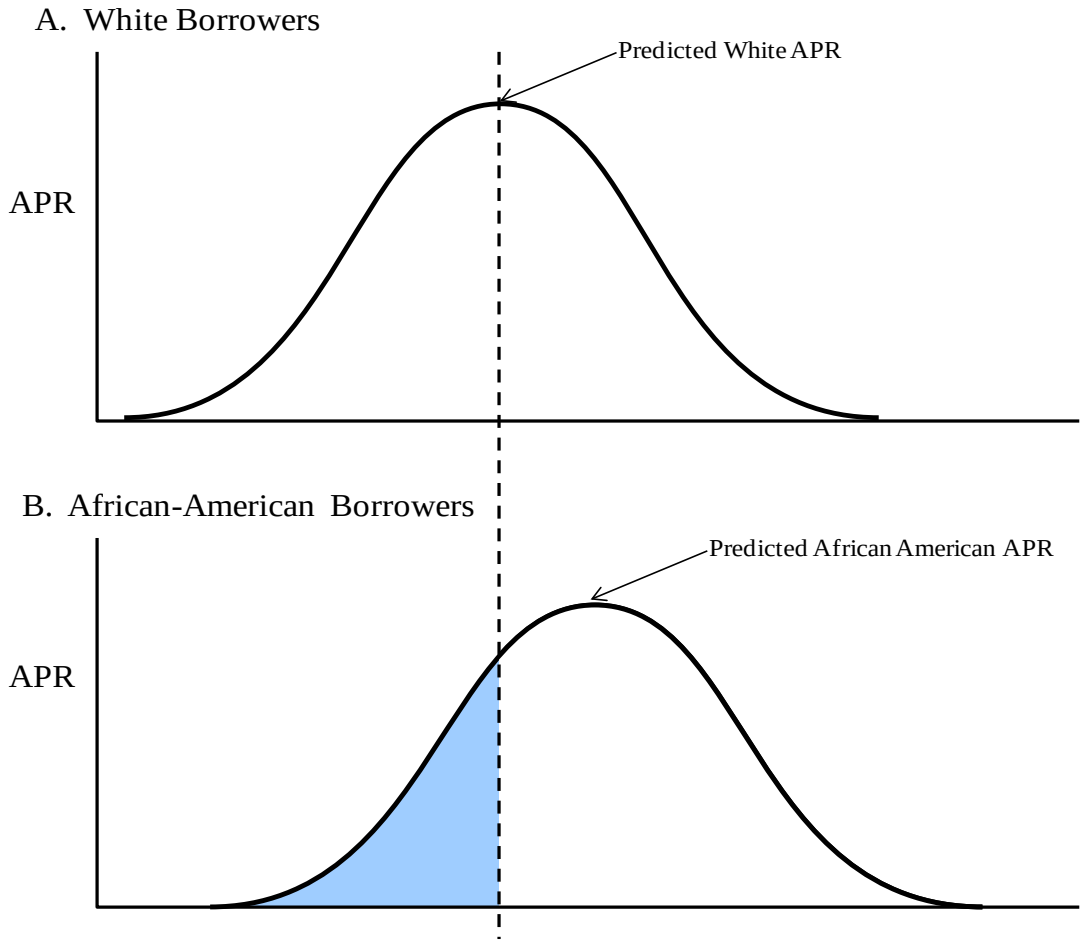
[11] *Palia Class Certification Report*, at ¶39.
[12] *Ayres Class Certification Report*, at ¶61.
[13] *Id.* at ¶11.

characteristics would have paid. One would expect that, if minority borrowers were white, many (roughly 50%) of these borrowers would have received APRs below the white average. Given the sizeable volatility in APRs for white borrowers with similar risk characteristics, it should not be surprising that some APRs of minority borrowers were below the *average* APR of white borrowers with similar risk characteristics. The disparate racial impact can statistically be found in minority borrowers having an APR distribution (after controlling for cost-based factors) that lies above that of white borrowers. The results of my original regressions provide credible evidence that the group of African-American borrowers whose actual APRs were below the average white predictions would have tended to have had even lower APRs absent the unjustified disparate impact of the Defendants' policies. Accordingly, Dr. Palia's concern that 46 percent of African-American borrowers had actual APRs below the predicted average of similarly situated white borrowers in no way undermines the conclusion that Defendants' pricing policies caused a statistically significant racial disparity that is not justified by differences in risk or cost characteristics.

27. To illustrate this point, consider Figure 1 (below). The Figure illustrates a pair of actual distributions of APRs for white borrowers and African-American borrowers with identical characteristics under a regression model of the sort I have used in my analyses. Because borrowers with identical characteristics received different APRs, the regressions estimate a distribution for a predicted range of APRs for both whites (A) and African Americans (B), but centered around two different predicted APR means, which represent estimates of the predicted average APRs for both whites and African Americans with identical characteristics. The predicted average APR for whites is lower than the predicted average APR for African Americans. And the difference between those two predicted averages would be equal to the

regression's estimate of racial disparity (in this case, on the order of 6.8 basis points for African Americans).

FIGURE 1: COMPARISON OF THE DISTRIBUTION OF AFRICAN AMERICAN APRS & WHITE APRS



28. Under Dr. Palia's approach, if the actual APR of a Class member is less than the APR that the model would predict for a white borrower with identical characteristics (a circumstance represented by the shaded area of the distribution of actual minority APRs in Figure 1), then the analysis has shown no common impact to the Class. This conclusion is incorrect. Instead, my approach recognizes that there will always be some variation in actual APRs that result in some borrowers getting better loan terms than our models predict. In the

absence of discrimination, some African-American borrowers (as well as some white borrowers) would be in the extreme left hand side of the distribution with APRs, well below the model's predicted levels.

29. The second flaw in Dr. Palia's analysis of typicality concerns his reliance on the statistical significance of racial disparities estimated for individual named Plaintiffs.

30. In my original report, I examined the typicality of the named Plaintiffs by using my APR regression model to predict the average APR for each loan of the named Plaintiffs if the named Plaintiff had been white instead of a minority.[14] If the named Plaintiff's actual APR was greater than the predicted APR if white, then the Plaintiff's loan was more expensive than what the Plaintiff's non-race, risk-based characteristics would have implied. Because the actual APR for at least one of the loans for each named Plaintiff was greater than the APR predicted by some of my regression models had the borrower been white, I concluded that the claims of the named Plaintiffs were typical of those of the Class. In all, nine of the 10 loans made by the named Plaintiffs carried APRs that were larger than the average predicted APR if they had been white under my preferred Model (4).

31. Dr. Palia criticizes my analysis for failing to report whether any of these estimated disparities was statistically significant.[15] He points out that only one of the 10 loans exhibits a statistically significant disparity between the actual APR paid by the named Plaintiff (Ms. Day). Dr. Palia's reliance on statistical significance of individual loan disparities is particularly in error. Here we see Dr. Palia's taking his divide-and-reanalyze approach taken to an unreasonable extreme. The fact that the individual disparities are not statistically significant does not mean that

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[14] *Ayres Class Certification Report* at ¶¶75-77, Table 9.
[15] *Palia Class Certification Report*, at ¶39.

the named Plaintiffs did not have an elevated chance or probability of being subjected to an unjustified racial disparity. It is impossible to find bias in a coin if you flip it just one time. Analogously, it is difficult to find statistically significant racial disparities in APRs if you analyze individual loans. My earlier criticism of dividing the data into subsets of brokers and subsets of MSAs is all the more apposite with regard to Dr. Palia's dividing the data into individual loans.

IV. AGGREGATE MONETARY CLASS RELIEF CAN BE COMPUTED TAKING ACCOUNT OF UPFRONT FEES AND PREPAYMENTS USING AVAILABLE DATA AND COMMON METHODOLOGY

32. Dr. Palia criticizes the method of calculating monetary relief for the Class that I discussed in my original report. He argues that my methodology is flawed because it fails to sufficiently account for specific contractual terms on individual loans[16] and because it fails to adequately take account of prepayments and liquidations of loans.[17]

33. Dr. Palia's criticisms are not well founded because he ignores large portions of my analysis. My original report explicitly described my damage estimates merely as "illustrative."[18] My report suggested how, with data on payment histories, it would be possible to more accurately compute Class monetary relief as a function of actual past and expected future payments.[19]

34. The "Option One National Servicing Data" which was disclosed with the backup materials to Dr. Palia's report provides the kind of data that can be used to undertake this payment-to-date analysis. But Dr. Palia's analysis of prospective payments is inappropriately censored. His Table 6 presents descriptive statistics suggesting that the average longevity of

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[16] *Id.* at ¶¶40-42.
[17] *Id.* at ¶43.
[18] *Ayres Class Certification Report*, at ¶¶85, 89, Table 10.
[19] *Id*. at ¶¶85, 89.

loans that were not paid off, liquidated, or released was 3.0 years. But this average is purely a function of the average time between when the loan was issued and the closing date of the service data (Oct. 9, 2008). Thus, loans that were issued in 2007 only had the opportunity be outstanding for 22 months at most.

35. In computing Class monetary relief, it is possible to account for damages accruing to date on individual loans. And for loans that are still active, it is possible, using hazard analysis and prepayment models such as those discussed in my original report,[20] to compute prospective relief for the distribution of future time periods the loan is expected to be outstanding. For those loans for which Defendants continue to control servicing, relief through loan modification simplifies the process for appropriately addressing relief going forward.

36. As discussed in my original report, a computation of relief can account for different components that impact the APR. Dr. Palia stresses in his report that the government-mandated APR formula for adjustable rate loans was inflated for expected future payments that many of the Class members did not in fact pay because they paid off their loans before the interest rate on their loan was reset upward. However, Dr. Palia ignores that the APR formula understates the impact of amortizing upfront fees over a short time before prepayment, as well as how this will cause the APR approach to understate Class monetary relief.

37. With the benefit of servicing data and information on the loan terms (including upfront fees), a researcher could account for the probable higher upfront fees and the higher interest accrual over time that was attributable to the unjustified disparate impacts of Defendants' pricing policies, both for individual Class members and for the Class as a whole. Thus, at a

[20] *Id*. at ¶83.

merits phase, there exists a credible and generally accepted approach for computing monetary relief using a common method.

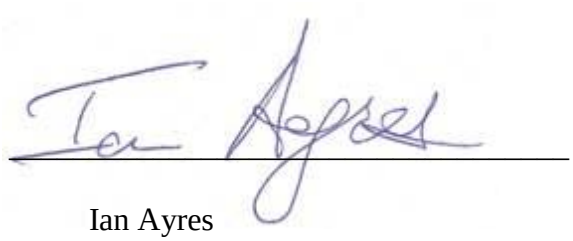
V. CONCLUSION

38. Dr. Palia's report includes no evidence or arguments that change the underlying findings of disparate impact in my original report. His attempts to divide the loan data into different subsets for each of the 100 largest brokers and to completely exclude from his regressions the 614,676 loans made by more than 29,000 different brokers rob his approach of an opportunity to test a central question in this dispute: whether the Defendants' Discretionary Pricing Policy produced a disparate racial impact relative to a less or non-discretionary policy that they might have employed instead. Even after including individual broker controls, I continue to find statistically significant racial disparities. Analogously, his attempts to divide the loan data into 100 different MSAs and to completely exclude from his regressions the 195,113 loans made in 840 smaller MSAs inappropriately reduce the power of the test to identify statistically significant racial disparities. My more appropriate controls for individual MSA effects in a single regression show that large and statistically significant racial disparities persist. In sum, there remains strong statistical evidence that Defendants' practices caused unjustified disparate impacts that are robustly significant in a statistical sense. With the benefit of servicing data detailing the historic payment of the loans, it is possible to develop a common method to compute class-wide monetary relief that accounts for specific loan terms as well as past and expected elevated cash flows caused by the unjustified racial disparities.

* * *

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on June 18, 2010.



Ian Ayres

APPENDIX 1: MATERIALS RELIED UPON

All Materials Relied Upon in the Class Certification Report of Ian Ayres, Mar. 22, 2010.

Filings:

- Rebuttal Report of Darius Palia, Ph.D., May 4, 2010, and backup materials.

Books:

- DAMODAR N. GUJARATI, BASIC ECONOMETRICS (McGraw-Hill, 3rd ed. 1995).
- PAUL G. HOEL, INTRODUCTION TO MATHEMATICAL STATISTICS (John Wiley & Sons, 4th ed. 1971).
- H.D. VINOD & AMAN ULLAH, RECENT ADVANCES IN REGRESSION MODELS (Marcel Dekker 1981).

Academic Articles & Other Studies:

- Ian Ayres & Jonathan Borowsky, *A Study of Racially Disparate Outcomes in the Los Angeles Police Department*, Prepared for ACLU of Southern California (2008).