

Expert Report of Charles D. Cowan, Ph.D.**I. Summary of Conclusions**

I have been retained by AIG to review and opine on Brian Lin's Opinion Concerning Contemplated Settlement Amount ("Lin Report"), and to consider issues raised by the Lin Report and other matters bearing on the quantification of damages to the Covered Trusts. Based on my expertise and my review of the case materials described herein, I conclude as follows:

A. Mr. Lin Materially and Unjustifiably Undervalued the Damages Suffered By the Covered Trusts

The proposed Settlement Agreement seeks to resolve certain claims, including claims arising from breaches of representations and warranties in the 530 Covered Trusts. I have experience and expertise in the identification of breaches of representations and warranties in residential mortgage loans and pools of residential mortgage loans and the quantification of repurchase liability. In my experience and expert opinion, the most reliable method for establishing actual breaches of representations and warranties in the Covered Trusts is to review the actual loan files and other loan-level information, such as servicing records and data tapes. Alternatively, one may reunderwrite a statistically valid sample of the actual loan files and related loan-level information. This is the standard practice in repurchase disputes, and I am not aware of any repurchase case – other than this one – where this was not done.

To the extent a loan file review were impossible for whatever reason, (e.g., the files were lost or destroyed) an alternative methodology would be to reunderwrite loans similar to those in the subject pools, such as the approach used by the investor group represented by Gibbs & Bruns ("GBIG"), set forth in Exhibit 13 to Docket No. 301 (the "Alternative Approach"). That approach demonstrated that the repurchase liability ranged from approximately \$64 billion to \$95 billion on nearly \$108 billion in realized and expected losses.¹ Because there was no

¹ Ex. 13 to Doc. No. 301 (BNYM_CW-00000206 – 207) ("Affirmation of Elaine P. Golin In Support of Memorandum of Non-Parties Bank of America and Countrywide in Opposition to Objectors' Motion to Compel Production of Loan Files") (Dep. Ex. 21). The Alternative Approach was based on 543 trusts, including the 530 Covered Trusts.

analysis of actual loan files in the 530 Covered Trusts, it is my opinion that the Alternative Approach was the most reliable set of data available to Mr. Lin at the time.

I have reviewed the Lin Report and assessed the approach being employed therein. Without looking at any loan files, Mr. Lin used a funnel-like approach, which, based on a series of assumptions, successively narrowed the funnel and reduced the purported repurchase liability and ultimate settlement range. He adopted this approach from the Alternative Approach. While I do not fundamentally disagree with using a funnel-like approach that applies data to produce a figure representing repurchase liability, the reliability of such an approach turns on the appropriate use of accurate data and assumptions. Mr. Lin's data and assumptions were based on information from the GBIG and Bank of America ("BofA"), as well as information from the Trustee and Mr. Lin's own internal research. However, he simply adopted much of BofA's unverified and irrelevant data and ignored much of the data provided by the GBIG. He did so without any sound basis for doing either. The assumptions and techniques Mr. Lin chose are fundamentally and facially flawed and his approach leads to an unsupportable settlement range.

It was not scientifically sound or reliable to attempt to estimate a settlement range in the manner attempted by Mr. Lin. If asked to do so, and restricted to the information Mr. Lin was given, at a minimum, I would have designed a statistically valid analysis that used both data sets presented to me in an effort to approximate the best result possible under the restrictive circumstances. I believe this is the approach that would have been taken under similar circumstances by a reasonable and qualified expert experienced in quantification of repurchase liability. Had Mr. Lin conducted the analysis I have now performed, a very different repurchase liability would have emerged. To be clear, I reach my conclusion using only the limited information Mr. Lin had available to him. It is *not* my conclusion that such an exercise would represent an accurate estimate of the *actual* repurchase liability, only that had Mr. Lin pursued a scientifically sound approach to reconciling the two sets of data available to him, he would have calculated a repurchase liability in line with the results of my analysis.

If I were provided with loan files necessary to conduct a statistically valid sample of loans for the Covered Trusts, I could accurately determine the total repurchase liability. That figure may well

be within the range found by the GBIG under their Alternative Approach - \$64 billion to \$95 billion. The question can be answered definitively by engaging in the appropriate reunderwriting analysis, which would have revealed the total repurchase liability.

B. The Trustee's Material and Adverse Discount Was Invalid and Mr. Lin Wrongly Included That Discount in His Approach

The Covered Trusts suffer harm as a result of breaches of representations and warranties even when individual mortgage loans do not experience a payment default. The Trustee ignored these harms when it discounted the settlement under Bank of America's theory that payment default is a prerequisite to repurchase. The Lin approach also wrongly assumes that trusts are only harmed when loans default. This assumption caused Mr. Lin to even more severely understate losses to the Covered Trusts.

II. Qualifications and Compensation

My background covers 40 years of research and study in the areas of statistics, economics, and their application to business problems. I am Managing Partner of Analytic Focus LLC, headquartered in San Antonio, Texas with offices in Birmingham, Alabama and Washington, DC. My firm conducts research for legal matters, including litigation support and expert witness services when requested. Some of our work focuses on measurement of risk for financial intermediaries. The final area of our practice is in support of Federal and State agencies needing economic and financial analysis to pursue their missions. Prior to founding Analytic Focus, I served as Chief Statistician for the Federal Deposit Insurance Corporation. I was also a Director for Price Waterhouse where I headed the Financial Services Group in the Quantitative Methods Division. I served for 12 years at the U.S. Bureau of the Census where I was responsible for the evaluation of the Decennial Census and held the title of Chief of the Survey Design Branch. I am also an adjunct professor in the School of Public Health at the University of Alabama – Birmingham (UAB) and previously served as a professor in the Business School at UAB, as a research professor at the University of Illinois, and in other academic and professional positions. For the past four years, I have been actively involved in numerous RMBS litigation activities. I have worked with all the Federal government entities involved in various lawsuits, including the FDIC, the FHFA, Freddie Mac, Fannie Mae, NCUA, seven of the Federal Home Loan Banks,

HUD, the FHA, and the Department of Justice. Additionally, I have worked with nearly all of the monoline insurers, including MBIA, Ambac, Syncora, Assured, and FGIC. I have worked with numerous investors and investor groups, as well as states (Nevada and Arizona) pursuing consumer issues, and class actions on behalf of borrowers. We have been responsible for the sampling of loans in preparation for re-underwriting, damages calculations and modeling, recreation of waterfalls for payment streams, the re-underwriting of loans, review of due diligence, analysis of mortgage insurance claims, the re-analysis of quality control programs, and the evaluation of models forecasting default and prepay rates. I have been qualified as an expert witness in state and federal courts in New York, among other places, on the topics of economics and statistics.

My resume and a listing of my publications are presented in Exhibit A. A list of the materials on which I relied in formulating my opinions is attached as Exhibit B. My firm, Analytic Focus, is being compensated at an hourly rate ranging from \$55-\$595. The compensation Analytic Focus receives in no way affects my opinion.

III. Summary of My Opinions and Their Factual Basis

A. Lin's and the Trustee's Failure to Review Loan Files

In my experience and opinion, the most effective method by which to identify breaches of representations and warranties in residential mortgage loans is to review the actual loan files and other relevant materials such as servicing files and data tapes. It is my understanding that this method was not used in this case. Nor was any sampling of loan files conducted.

I am aware of the fact that the GBIG has argued that loan file review would be expensive and time consuming, but it is important to keep those costs in perspective. An analysis across the 530 trusts, but not for the trusts individually, could have been performed using a valid statistical sampling of 4,630-6,470 loan files.² An analysis at the trust level (for each of the 530 trusts) could have been performed using a valid statistical sampling of approximately 50,000 loan files, at an approximate cost of \$200 to \$300 per loan file.

² Affidavit of Charles D. Cowan, Ph.D. (June 1, 2012), Doc. No. 314.

The review of actual loan files in the Covered Trusts would have yielded, among other things, a more accurate breach rate than what was used in the Lin Report. Indeed, one of the most significant deficiencies in the Lin Report is the failure to establish a breach rate for the actual loans in the Covered Trusts or, at least, use of a reasonable approximation of those loans. Instead, Mr. Lin and the Trustee relied on the different, indeed, completely irrelevant loans sold to the GSEs. Mr. Lin himself testified that [REDACTED]

[REDACTED].³
Loan file review and sampling is a generally accepted and judicially approved method for calculating breach rates in RMBS.

B. Lin’s Unreasonable Rejection of the Breach Rate Identified by the GBIG

As an alternative to actual loan file review, another methodology that Mr. Lin and the Trustee could have employed was to obtain breach rates from similar loans or pools of loans. In fact, this is the exercise that the GBIG performed and presented to both [REDACTED] and Mr. Lin.⁴ The Alternate Approach relied on reunderwriting of 250,000 loan files that, according to Mr. Lin, were similar to the loans in the Covered Trusts. The GBIG identified breach rates at or exceeding 60% and repurchase liability of approximately \$64 billion to \$95 billion. The GBIG further concluded that a reasonable settlement amount would be \$32.3 billion.⁵ Without any justification, other than characterizing the GBIG breach rate as “aggressive,”⁶ Mr. Lin rejected the actual reunderwriting experience reflected in the Alternative Approach.

C. Summary of the Lin Approach

1. Overview of Mr. Lin’s Approach

Brian Lin says he was hired to “render an independent professional opinion relating to the settlement amount of 530 Trusts,” which he calls the “Settlement Portfolio.”⁷ The details of

³ Lin Dep. 90:5–94:9, 218:7-18 (Oct. 16 & 17, 2012).

⁴ Ex. 13 to Doc. No. 301 (BNYM_CW-00000206 – 207) (Dep. Ex. 21).

⁵ *Id.*

⁶ Dep. Ex. 9 (BNYM_CW-00252597–605) at 1 (“Lin Report”) (also available at <http://www.cwrmbsettlemnt.com/docs/Opinion%20Concerning%20Contemplated%20Settlement%20Amount%20For%20530%20Trusts.pdf>).

⁷ Lin Report at 1.

what Mr. Lin did are set forth more fully in the Lin Report and his deposition.⁸ Generally stated, Mr. Lin reviewed data from the GBIG and Bank of America (“BofA”), [REDACTED] and using this information, developed what he alleges is a reasonable settlement range of \$8.8 billion to \$11 billion.

Mr. Lin adopted the general approach of the GBIG. He started with four totals for all of the 543 trusts that the GBIG included in its model. The first set was three collateral balances, summarized in three groups: 60+ Days Delinquent, Modified Loans, and Non-Modified Loans. He added one additional total: realized losses. Mr. Lin then “funneled” these total amounts of loss or dollars at risk by application of four assumed rates (Default Rate, Severity Rate, Breach Rate and Success Rate) to obtain his “reasonable” settlement range. Mr. Lin’s simple tabular calculation is presented below as Table 1, reproducing the table he presents in his report.

Table 1: Reproduction of Tabular Summary from the Lin Report

Low Range

<u>Description</u>	<u>Balance</u>	<u>Default Rate</u>	<u>Severity Rate</u>	<u>Losses</u>	<u>Breach Rate</u>	<u>Success Rate</u>	<u>Settlement</u>
Liquidated Loans				\$25.0	36%	40%	\$3.6
60+ Delinquent Loans	\$72.5	90%	45%	\$29.4	36%	40%	\$4.2
Mod. Current Loans	\$12.8	35%	45%	\$2.0	36%	40%	\$0.3
Non-Mod. Current Loans	\$98.6	11%	45%	\$4.9	36%	40%	\$0.7
Total							\$8.8

High Range

<u>Description</u>	<u>Balance</u>	<u>Default Rate</u>	<u>Severity Rate</u>	<u>Losses</u>	<u>Breach Rate</u>	<u>Success Rate</u>	<u>Settlement</u>
Liquidated Loans				\$25.0	36%	40%	\$3.6
60+ Delinquent Loans	\$72.5	90%	60%	\$39.2	36%	40%	\$5.6
Mod. Current Loans	\$12.8	40%	60%	\$3.1	36%	40%	\$0.4
Non-Mod. Current Loans / D30	\$98.6	16%	60%	\$9.5	36%	40%	\$1.4
Total							\$11.0

⁸ I refer to specific acts by Mr. Lin and his omissions (as discussed in his deposition) only as is necessary to state my opinion.

2. Summary of Mr. Lin's Assumptions

a) Default Rate

The default rate is the percentage of the aggregated loan balances in each delinquency-status bucket for loans that are in default or are likely to go into default based on data made available to or assumptions made by Mr. Lin. Mr. Lin assumed a 90% default rate for loans that are 60-89 days delinquent; 35-40% for current, modified loans; 11-16% for non-modified loans that are either current or up to 59 days delinquent.

b) Severity Rate

Severity is the percentage of loan balance that will result in loss after loss mitigation activities such as foreclosure. Mr. Lin assumed severity rates of 45% and 60% in all delinquency categories.

c) Actual and Expected Losses

After accounting for default and severity rates, Mr. Lin assumed total losses in 543 Countrywide-issued RMBS, including the Settlement Portfolio, of \$61.3 billion and \$76.8 billion for the low and high ranges, respectively.⁹

d) Breach Rate

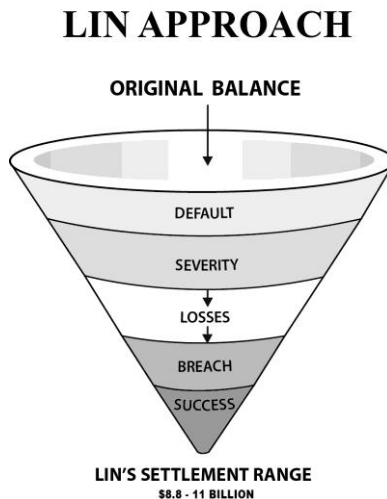
Mr. Lin described, in his deposition, [REDACTED] In his report, he used a constant breach rate of 36%. However, the application of the breach rate to dollar values in his report should be the proportion of dollars in loans that are in breach, a different calculation than the one described in his deposition or in his report.

e) Success Rate

The success rate represents the percentage of loans in breach that BofA is estimated to agree to repurchase. Mr. Lin used a unified constant success rate of 40%.

⁹ Lin Report at 8.

Mr. Lin’s approach can be viewed as a funnel based on each of the four assumptions, which narrowed the funnel and reduced the repurchase liability and ultimate settlement range. After applying all four assumptions, Mr. Lin determined a “reasonable” settlement range of \$8.8 to \$11.0 billion.



D. The Lin Report Disregards Important Information and Contains Obvious Flaws

There is evidence in the materials that Mr. Lin used or had available that [REDACTED]

[REDACTED] In fact, materials in his production [REDACTED]

[REDACTED] Further, the simplistic approach he took in combining the four assumptions guaranteed a minimum value for the settlement range. Mr. Lin assumed the lowest default rate occurs with the lowest severity rate which then occurs simultaneously with a static breach rate AND the lowest success rate. Having all four extremes occur simultaneously defies common sense and probabilistically, is infinitesimally close to zero. Note also that Mr. Lin does not employ an approach that permits him to evaluate the reliability of his outcomes. This section addresses the rates Mr. Lin used; the next section of this report addresses how the rates could have been combined.

1. Default Rate

For the group “60+ delinquent loans,” Mr. Lin assumed that the default rate is 90%. However, among the 60+ delinquent loans, there are majority of loans (85.8%¹⁰) that are 180+ delinquent and essentially are in default. Assuming that Mr. Lin’s assumption is true, it is clear that he embeds a default rate for loans that are 60 to 179 days delinquent in his calculation of 29.7%.

<u>Delinquency Status</u>	<u>Proportion in Population</u>	<u>Default Rate</u>
Greater than 180 days	85.8%	100.0%
<u>60-179 days</u>	<u>14.2%</u>	<u>29.7%</u>
Total: 60+ Days	100.0%	90.0%

This proportion, for a substantial proportion of the Settlement Portfolio, is far too low. This value (the 29.7%) is actually even lower than the average default rate for the full population. The actual default rate for this population should exceed 90%. I conservatively use a 90% default rate.

For the modified current loans, Mr. Lin claimed that “[w]ith respect to the default of previously modified current loans, performance has improved dramatically since the first round of loan modification in early 2008 due to aggressive methods taken by both servicers and the government.”¹¹ Mr. Lin further states, “a default rate for previously modified current loans ranging from 35% to 40% is reasonable.”¹²

However, according to a report from Amherst Securities [REDACTED],¹³ the HAMP modifications are likely to be largely ineffective and the re-default rates remain high even with significant payment reduction. Notwithstanding this information, Mr. Lin used a much lower re-default rate (35% or 40%) without any factual basis or calculations showing how his significantly lower re-default rates were derived.

¹⁰ Appendices.

¹¹ Lin Report at 7.

¹² *Id.*

¹³ Ex. 19 to Doc. 301 (BNYM_CW-00000278 – 369) at BNYM_CW-00000293-94 (pp. 13-14) (Dep. Ex. 150) (Reliance 1); Lin Dep. 272:15-273:3. Documents referred to in this opinion as Mr. Lin’s reliance materials are labeled in the footnotes as “Reliance ___”.

In actual fact, the re-default rate is 51.4% at 12 months after modification. I would expect the cumulative re-default rate will be much higher than this rate at the maturity of the trust, a factor Mr. Lin apparently did not consider at all. Even for the group “Portfolio Loans” with the lowest re-default rate, the predicted rate will be 53.6%¹⁴ at twenty-four months after modification.

For the non-modified current loans, Mr. Lin assigned a default rate of either 11% or 16%. According to data provided to Mr. Lin by the GBIG,¹⁵ the rate is 50%. The 50% rate was derived from Bank of America’s own published information.¹⁶ Moreover, Mr. Lin provided no factual support for his use of 11% or 16%. He provided no calculations supporting his downward adjustment of the publicly available data provided to him.

Further, Mr. Lin repeated an error that he made with the 60+ days delinquent loans. He improperly lumped current loans with loans that were 30-59 days delinquent without distinguishing between the different default characteristics of current and delinquent loans. I am using Mr. Lin’s number, with the understanding that it is a conservative value, likely lower than the true weighted average.

Cumulatively, the result of Mr. Lin’s facially unsupported default rates results in a drastic understatement of likely defaults when compared with reliable, publicly available data - including data that Mr. Lin and the Trustee had in their possession at or before the issuance of the Lin Report. Since default rates served as the first assumption that reduced the aggregated balances for purposes of deriving estimated losses, understatement of default rates (and severity rates, as discussed below) results in artificially underestimated losses. Underestimated losses result in underestimated repurchase liability. Further, throughout this process, Mr. Lin did not estimate or acknowledge standard measures of reliability used to evaluate such calculations.

¹⁴ Appendices.

¹⁵ Ex. 13 to Doc. 301 (BNYM_CW-00000206–207) (Dep. Ex. 21) (Reliance 2).

¹⁶ Ex. 19 to Doc. 301 (BNYM_CW-00000278–369) at BNYM_CW-00000279 (Dep. Ex. 22).

2. Severity Rate

Turning to the issue of severity, Mr. Lin utilized assumptions of 45% and 60% at the low and high ranges, respectively. However, the Alternative Approach shows a “Grand Total” severity rate of 66%.

Under Mr. Lin’s assumptions (low range), the loss rate (the expected losses over the current balance) is 19.7%, which is 32.2% lower than the loss rate 28.8% according to Mr. Lin’s reliance material (see Table 2 below). Even with Mr. Lin’s high range, his loss rate of 28.1% is still lower than 28.8%. In short, Mr. Lin’s severity rates are grossly short of the numbers found in his reliance materials.

Table 2: How Mr. Lin Calculates His Loss Rate

Low Range

<u>Description</u>	<u>Balance</u>	<u>Default Rate</u>	<u>Severity Rate</u>	<u>Loss Rate</u>
Liquidated Loans				
60+ Delinquent Loans	\$72.5	90%	45%	41%
Mod. Current Loans	\$12.8	35%	45%	16%
Non-Mod. Current Loans / D30	\$98.6	11%	45%	5%
<u>Total</u>	\$183.9			19.7%

High Range

<u>Description</u>	<u>Balance</u>	<u>Default Rate</u>	<u>Severity Rate</u>	<u>Loss Rate</u>
Liquidated Loans				
60+ Delinquent Loans	\$72.5	90%	60%	54%
Mod. Current Loans	\$12.8	40%	60%	24%
Non-Mod. Current Loans / D30	\$98.6	16%	60%	10%
<u>Total</u>	\$183.9			28.1%

3. Losses

The cumulative effect of these errors and omissions results in low and high estimates from Mr. Lin's approach that significantly underestimates losses.

4. Breach Rate

After calculating losses, Mr. Lin assumed a breach rate of 36.0%. The breach rate represents Bank of America's *unverified* experience in negotiating repurchase claims with the Government Sponsored Enterprises ("GSEs"), Fannie Mae and Freddie Mac. As set forth below, adopting a breach rate from the GSE repurchase experience is completely improper and unjustified. In an earlier section, I also noted that Mr. Lin [REDACTED] [REDACTED] but the application of this rate is to dollar amounts and so would more properly be computed as the proportion of dollars in loans with breaches relative to the total dollars in loans. My past experience in similar investigations is that the "dollar breach rate" is typically higher [REDACTED] because loans with higher dollar values are more likely to have breaches, [REDACTED]. For multiple reasons, Mr. Lin's breach rate is fundamentally wrong and undermines the validity of his approach.

5. Success Rate

Finally, Mr. Lin assumed a 40% success rate. This too represents unverified GSE repurchase experience data provided by BofA. Furthermore, this assumption has no place in the Lin Report. As a preliminary matter, the "success rate" appears to be a reflection of [REDACTED] claims between BofA and the GSEs. As set forth below, there are numerous problems with comparing the GSE loans to the loans in the Covered Trusts. More fundamentally, however, embedded in the very notion of a success rate are various factors parties consider when resolving legal disputes. In my experience, experts offering opinions about the calculation of damages are never involved in the acceptance or non-acceptance of the results. It is highly unusual for any financial expert to offer any opinion on the various factors lawyers and clients consider with respect to litigation. This appears to be why the Trustee hired additional experts to opine on legal arguments that would affect the probability of success on the underlying claims.

Consequently, Mr. Lin's application of a success rate appears to constitute a double discount for litigation considerations.

My Opinion Concerning Mr. Lin's Reliance on Unrelated Repurchase Experiences

There are multiple problems with relying on BofA's GSE repurchase experience, which were clear on the face of the Lin Report and from other data sources then available to Lin and/or the Trustee, including:

1. Neither Lin nor the Trustee did anything to verify the accuracy of BofA's breach and success¹⁷ assumptions.

According to the Lin Report, BofA's repurchase experience reflected a 36% breach rate and a 40% success rate.¹⁸ This information came from BofA.¹⁹ Lin [REDACTED] adopted the BofA breach and success rates without verification.²⁰

2. The loans that were the subject of the GSE repurchase experience are completely different from the loans in the Covered Trusts.

Mortgage loans, also known as "collateral," vary widely in credit quality. Certain types of loans are far more likely to suffer from breaches of representations and warranties than others. Comparing portfolios comprised of different collateral types is an unreliable way of deriving breach and success rates. The Lin Report acknowledges the problem of comparing GSE and private label loans,²¹ and another of the Trustee's experts drew an important distinction between GSE and private label loans in its "Primer" on the subprime meltdown:

For the most part, the GSEs have dealt with prime mortgages that conform to a relatively narrow set of specifications and cater to borrowers with good credit and complete

¹⁷ As set forth above, it is my opinion that a success rate assumption finds no place here. Nevertheless, in order to address Mr. Lin's misuse of the GSE repurchase experience, I discuss both breach and success rates.

¹⁸ Lin Report at 8.

¹⁹ [REDACTED]; Lin Report at 8.

²⁰ Lin Report at 8; [REDACTED]

²¹ Lin Report at 4 ("I believe it would have been easier to compare two analogous portfolios rather than to utilize a comparison between conforming and non-conforming portfolios.").

documentation. Mortgages that lie outside these parameters are usually issued and securitized by private-label (“non-Agency”) companies.²²

Moreover, Freddie Mac’s then-General Counsel, who [REDACTED] and was a member of the GBIG, testified that [REDACTED]

[REDACTED]

[REDACTED]”²³ The GBIG “ [REDACTED]

[REDACTED]”²⁴

3. Embedded in the Freddie Mac portion of the GSE repurchase experience on which Lin and the Trustee relied to establish the breach and success rates were two fundamental problems rendering Lin’s and the Trustee’s reliance unreasonable: (a) a flawed methodology for identifying loans potentially subject to repurchase by BofA and (b) the influence of on-going business relationships with BofA on Freddie Mac’s repurchase prosecution and decision-making.

In September, 2011, the Federal Housing Finance Agency (“FHFA”) Office of the Inspector General (“OIG”) issued a report on the December 2010 Freddie Mac/BofA repurchase settlement.²⁵ That report concluded that Freddie Mac’s methodology for demanding repurchase of loans purchased from Countrywide was flawed because it failed to consider loans that performed for the first 24 months after origination, in part because Freddie Mac believed “that the need to maintain relationships with loan sellers such as Bank of America was a factor weighing against implementing more expansive loan review and repurchase policies.”²⁶ Freddie

²² Dep. Ex. 393 at 4-5, Dr. Fatan Sabry and Dr. Thomas Schopflocher, “The Subprime Meltdown: A Primer” (June 21, 2007). Notably, the information in this primer was available to the Trustee before it accepted the Settlement.

²³ Bostrom Dep. (Freddie Mac) 262:8-16 (Dec. 18, 2012); *see also* Waterstredt Dep. (MetLife) 57:13-17 (Dec. 5, 2012) [REDACTED] Robertson Dep. (BlackRock) 220:4-12 [REDACTED]

²⁴ Bostrom Dep. (Freddie Mac) 263:25-264:5.

²⁵ Dep. Ex. 201, Federal Housing Finance Agency Office of Inspector General, “Evaluation of the Federal Housing Finance Agency’s Oversight of Freddie Mac’s Repurchase Settlement with Bank of America” (Sept. 27, 2011).

²⁶ *Id.* at 27; *see generally id.* at 16-31.

Mac's then-General Counsel confirmed that [REDACTED]

[REDACTED]²⁷

Although the FHFA OIG's report was not issued until after the settlement agreement was signed, Freddie Mac—a member of the investor group steering committee—[REDACTED]

[REDACTED]²⁸ Indeed, Freddie Mac was [REDACTED]

[REDACTED]²⁹

4. The Fannie Mae portion of the GSE repurchase experience was incomplete and has since been resolved for an additional \$11 billion.

While Freddie Mac resolved all of its Countrywide-related repurchase claims in December, 2010, Fannie Mae resolved only about 75% of its existing claims.³⁰ This information was [REDACTED] available to the Trustee before it entered into the Settlement.³¹ The remaining Fannie Mae claims were resolved on January 6, 2013 for approximately \$10.3 billion.³² Nothing in the Lin Report or the Trustee's reliance on it demonstrates an awareness of or accounting for this additional liability.

In sum, there are three things Mr. Lin and the Trustee could have done to quantify the harm associated with breaches of representations and warranties in the Covered Trusts: reviewed loan files, accepted reunderwriting results of similar loans, or use and properly apply an alternate methodology. They did none of these. At a minimum, when presented with the information

²⁷ Bostrom Dep. (Freddie Mac) 229:7-230:5.

²⁸ *Id.* at 27:13-30, 33:6-34:14.

²⁹ *Id.* at 206:8-208:13.

³⁰ Dep. Ex. 198, Bank of America's Form 8-K (Jan. 21, 2011) (stating that "[b]ased on the models derived from the historical GSE experience, we believe we are 70 to 75% through the receipt of GSE repurchase claims"); Bank of America Corporation Form 10-Q, 46 (March 31, 2011) (stating that "[b]ased on the information derived from the historical GSE experience, including the December 31, 2010 GSE agreements, we believe we are approximately three quarters of the way through the receipt of the GSE repurchase claims that we expect to ultimately receive").

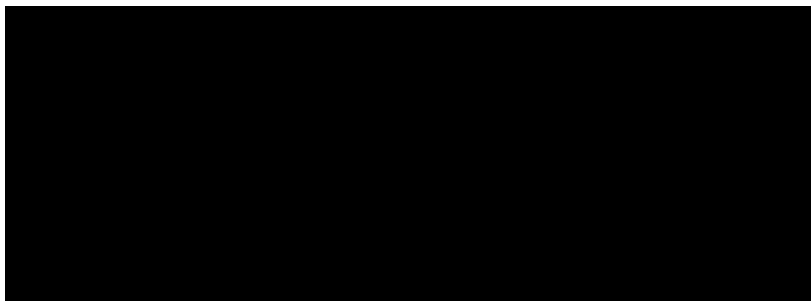
³¹ See BNYM_CW-00276993-7046 at BNYM_CW-00276993 [REDACTED]

³² Fannie Mae Form 8-K (Jan. 7, 2013).

from GBIG and BofA, Mr. Lin should have performed a scientifically sound and statistically supported analysis that accounted for all relevant data. Mr. Lin did not do this either. What follows is my reevaluation of the data then available to Mr. Lin and the Trustee. I do not adopt this approach, I am merely correcting for the obvious flaws in Mr. Lin’s approach to the limited data he was given.

IV. Simulation Study on the Repurchase Liability

In this section, I apply a simulation analysis, which calculates the repurchase liability using all possible settings and combinations of the default, severity, and breach rates. The floor is data from BofA (“BofA Data”); the ceiling is the Alternative Approach. I do not apply a success rate. Under his approach, Mr. Lin applied a success rate that in effect is a discount related to lawyer/client litigation considerations. In my experience, experts offering opinions about the calculation of damages are never involved in the acceptance or non-acceptance of the results and it is my belief that this is inappropriate for an independent outside financial consultant, which is why I do not apply a success rate here. To begin, I stratify the collateral balance for the 530 trusts at issue³³ according to the following table,³⁴ including the division of 60+ delinquent loans into two groups consisting of 180+ days delinquent and 60 to 179 days delinquent.



A. Parameter Settings

The default rate for “180+ Delinquent Loans” is set to 100%. The default rate for “60 to 179 Delinquent Loans” is set to 90%. The default rates for “Mod. Current Loans” and “Non-Mod.

³³ Mr. Lin’s Report is based on the balance of 543 Trusts. However, there are 530 Trusts involved in Bank of America’s proposed settlement with Bank of New York Mellon (the Trustee). Mr. Lin could have adjusted his results in one of two ways: 1) by adjusting the stratified collateral balance and realized losses before applying his discounts, or 2) by adjusting his “settlement figure” with proper weights after applying his discounts. He does neither. Numbers presented in tables going forward from this point in my report are based on the 530 Trusts.

³⁴ Appendices.

Current Loans / D30" range from 35% to 90% and from 11% to 50%, respectively. Both of the lower bounds are from BofA Data and both of the upper bounds are from the Alternative Approach.

The severity rate ranges from 45% to 66%. The lower bound is from BofA Data and the upper bound is from the Alternative Approach.

For the breach rate, I take the lower bound from BofA Data and the upper bound from the Alternative Approach, i.e., the breach rate is from 36.0% to 65.0%.

B. Assumptions

The values chosen by Mr. Lin are the low and high values he believes apply in all situations. As such, they represent the lower and upper extremes for calculation. In choosing these extremes, Mr. Lin makes another tacit assumption - all lower extremes would apply simultaneously. In other words, even if Mr. Lin's proportions were correct, an amazing confluence of events would have to occur for his lower bound to be attained. Mr. Lin has assumed in his calculation that the lowest default rate occurs with the lowest severity rate which then occurs simultaneously with a single unimpeachable breach rate of 36% AND a single unimpeachable success rate of 40%, ignoring the reality that the rates would vary across the 530 trusts.

Having all four extremes occur simultaneously - the lowest default rate, the lowest severity rate, the lowest breach rate, and the lowest success rate - flies in the face of common sense. From a probabilistic perspective, the likelihood that all four minima are achieved is infinitesimally close to zero.

In short, Mr. Lin presents final numbers that represent the lowest, lowest, lowest, lowest (all four extreme lows at the same time), and does so by choosing values for his variables that contradict the materials he had available in determining the range of default, severity, breach, and success.

To allow for the natural variation that should be in Mr. Lin's numbers, I run a simulation where ALL values between the lowest and highest values are considered, excluding success rate.

Further, I use some of Mr. Lin's lowest and highest values, as described in the previous section, where corrected values of the default rate, severity rate, and breach rate are taken from Mr. Lin's support materials. This gives some range to the breach rate, as well as making the default rate and severity rate more realistic based on Mr. Lin's materials.

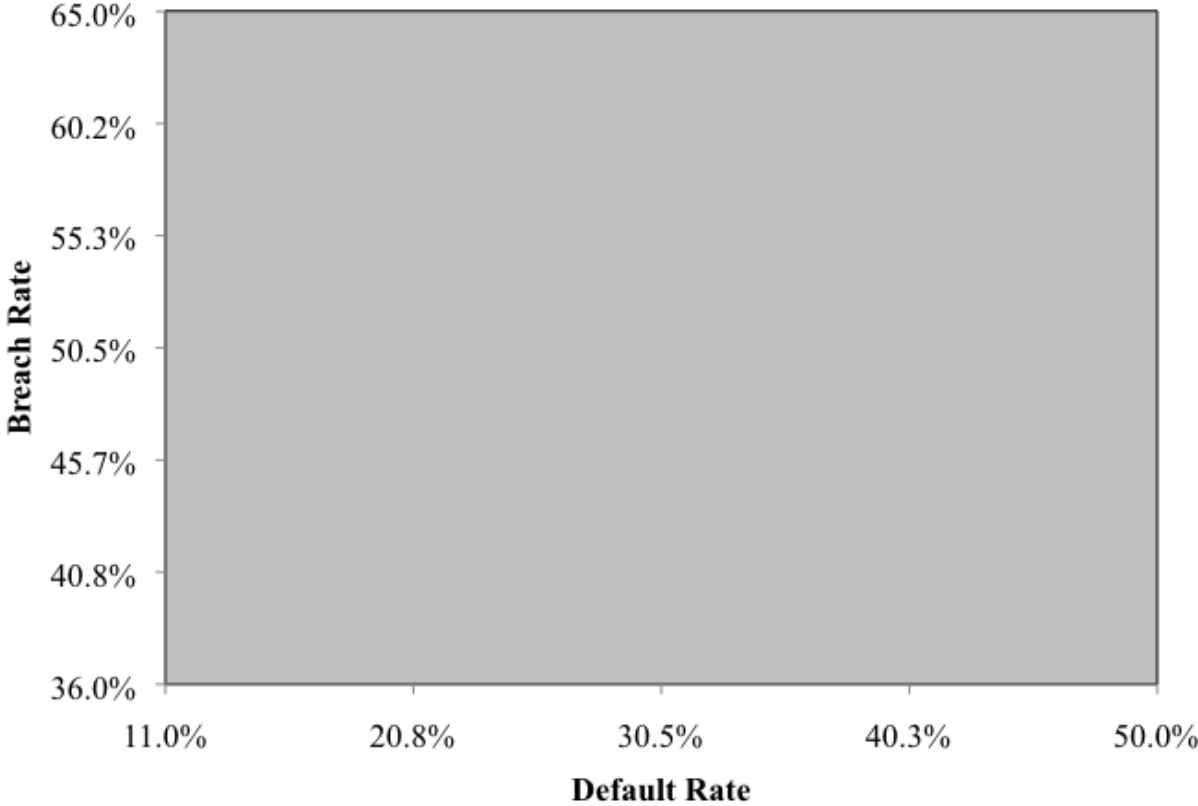
The simulation works by selecting a random value in each of the ranges described above. I do this for each of the rates described above. By selecting values from each of the ranges and using them in Mr. Lin's approach, I replicate his approach with the success rate eliminated from the computation. By doing this no less than 1000 times, I get the distribution of repurchase liabilities by considering a broad range of potential outcomes given the limited information provided to Mr. Lin.

As an example, if the breach rate can take on a low value of 36% and a high value of 65%, then in one iteration of the simulation I choose a random value in the range (36%, 65%). In the next iteration, I choose another value in this range, and so on until I have repeated this process no less than 1,000 times. If the default rate ranges from a low value of 11% and a high value of 50%, then in one iteration of the simulation I choose a random value in the range (11%, 50%). In the next iteration, I choose another value in this range, and so on until I have repeated this process no less than 1,000 times. Note that each of the three rates is chosen in each iteration. Following along this same example, the default rate and the breach rate are chosen from their respective ranges simultaneously:

[(11%, 50%), (36%, 65%)]

Note also that all combinations of the two ranges are possible. Chart 1 shows the possible distribution of outcomes for both variables at the same time. Any point in the gray area in the chart is a possible selection. I extend this description to three dimensions to represent the situation in the simulation when all three values are being selected (a cube where all points are equally likely). In the example above, I use the uniform distribution for the selection of values for each of the three variables. The uniform distribution gives equal probability to all values between the lowest and the highest value in the range.

Chart 1: Possible Combinations of Default Rate and Breach Rate in a Simulation with the Uniform Distribution - All Combinations are Possible and Equally Likely



I use the triangular distribution as an alternative. The triangular distribution applies the most probability to the center of the range and less probability as one moves away from the center, so that the probability distribution looks like an isosceles triangle. Applying this in the same way in two dimensions (say, breach rate and severity), combinations of points are more likely in the center of the graph and less likely towards the extremes. Chart 2 shows this example.

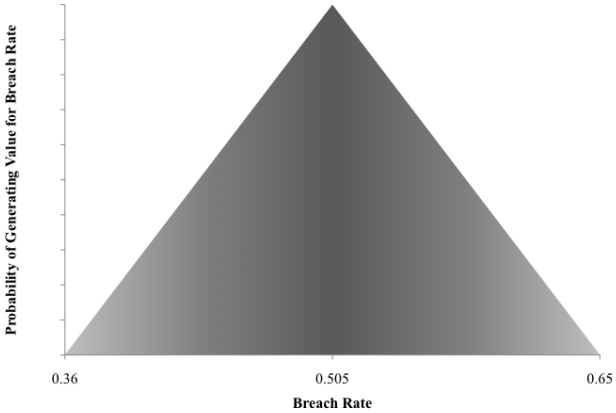
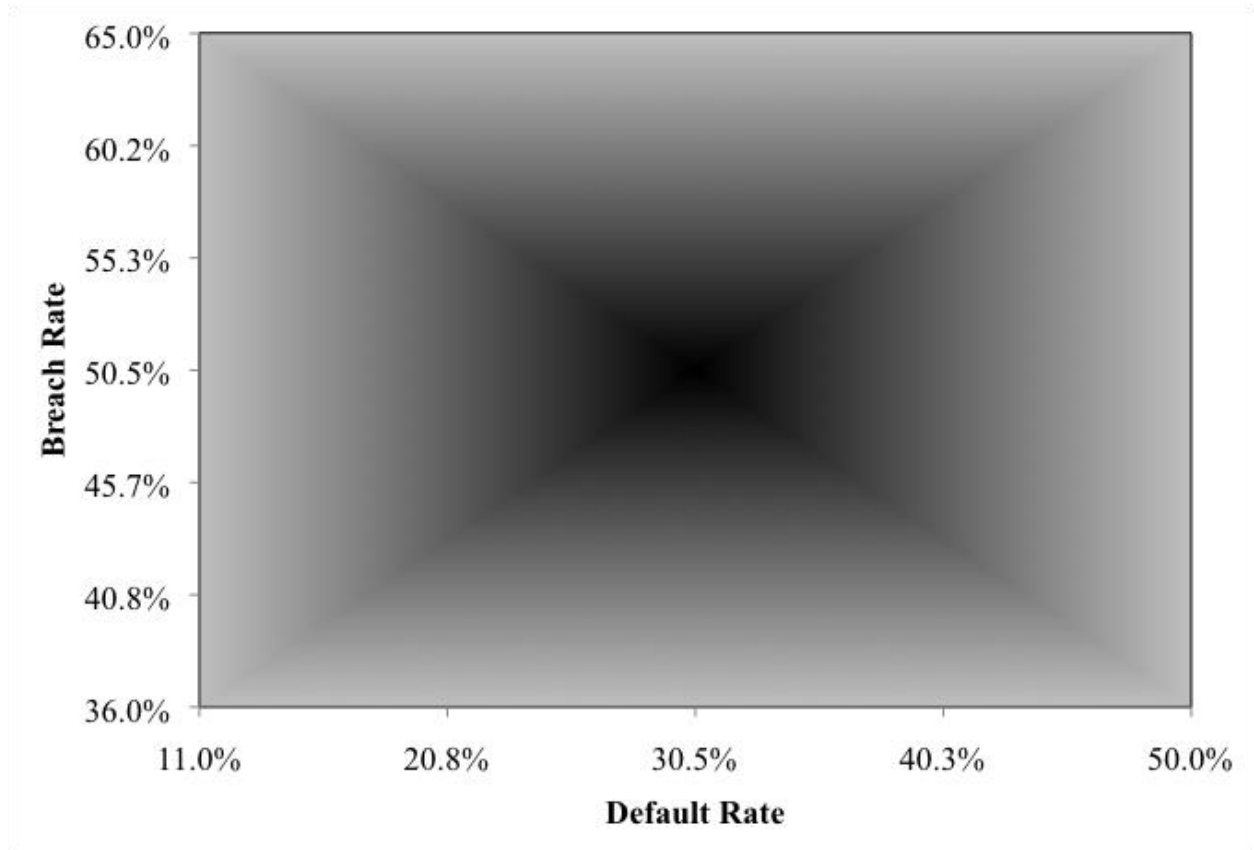


Chart 2: Possible Combinations of Default Rate and Breach Rate in a Simulation with the Triangular Distribution - All Combinations Possible but Central Points are More Likely



The triangular distribution gives the same expected outcome for the combinations of all the three variables, but a more reasonable calculation of the potential variability in the outcomes. Again, the process is extended to three variables to replicate Mr. Lin’s approach (without the success rate), but allowing all values on each variable instead of just the extreme values. Use of either set of distributions allows computation of the 95% confidence range on the outcomes, something Mr. Lin did not provide.

C. Overview of Simulation Methodology

Using the same approach as Mr. Lin and the ranges taken from his support materials, I replicate Mr. Lin’s process, but using the full ranges as opposed to the two most extreme values. For liquidated loans (category 1 in Mr. Lin’s table), the calculation for iteration k ($k=1, \dots, 2000$) is

$$\text{Repurchase Liability}(1,k) = \text{Losses} \times \text{BreachRate}(k)$$

For 180+ Delinquent Loans, 60-179 Days Delinquent, Modified Current Loans, and Non-modified Current Loans (categories 2, 3, 4, and 5 in the modified Lin table), the calculation for iteration k is

$$\text{Repurchase Liability}(c,k) = \text{Balance} \times \text{DefaultRate}(k) \times \text{SeverityRate}(k) \times \text{BreachRate}(k)$$

where c = 2, 3, 4, or 5

The values DefaultRate(k), SeverityRate(k), and BreachRate(k) are random selections for the kth iteration for each of these three variables identified by Mr. Lin in his approach, using the uniform distribution to generate the random variables. The process is repeated separately with the triangular distribution used for each of the three variables. The total repurchase liability for the kth iteration is:

$$\text{TotalRepurchase}(k) = \text{Repurchase}(1,k) + \text{Repurchase}(2,k) + \text{Repurchase}(3,k) + \\ \text{Repurchase}(4,k) + \text{Repurchase}(5,k)$$

Repeating this process no less than 1,000 times gives the likely distribution for the repurchase liability, using Mr. Lin's assumptions and his corrected ranges. Ordered from the smallest to largest, the middle value is the median amount, the 25th value is the lower 95% confidence bound, and the 975th value is the upper 95% confidence bound. This simulation method is a common approach to dealing with multiple variables taking on different possible values in a complex function (such as taking a product of four values).

D. Application of Simulation on the Repurchase Liability (Trust Level)

This simulation process can be executed for each of the trusts individually, instead of for the aggregated totals used by Mr. Lin. Mr. Lin did none of his calculations at the trust level. Had he done so, to obtain his results he would have to assume that the default rate, breach rate, severity rate, and success rate were the minimum amounts for each of the 543 trusts - in other words,

having the lowest lowest lowest lowest values occur 530 times. This is the implication and result of his approach.

In this section, I perform simulation analysis on the trust level. Within each iteration, the total repurchase liability for each of 530 Covered Trusts is calculated and then the total repurchase liability of the 530 Covered Trusts is obtained by summing the individual total repurchase liabilities. After no fewer than 1,000 iterations, the distribution of the repurchase liability is shown below.

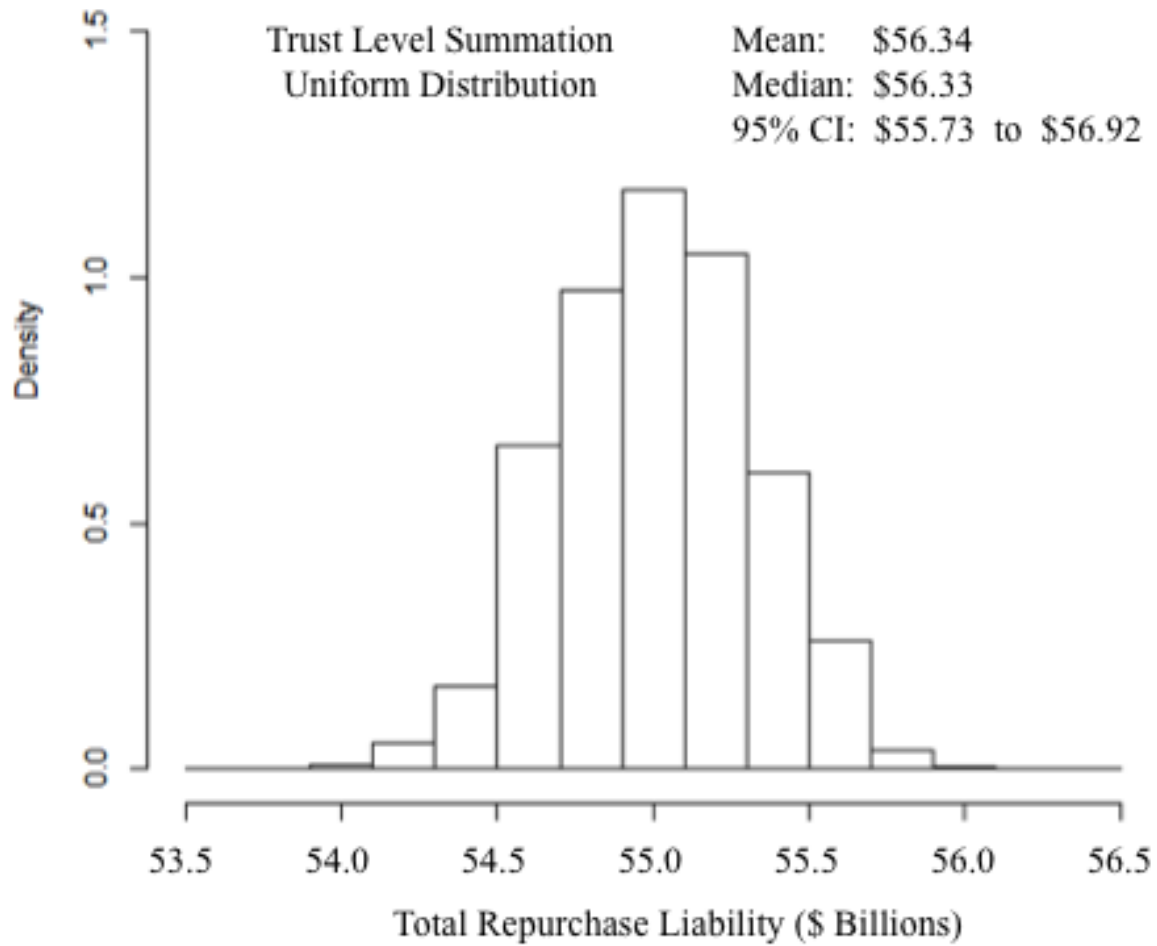
1. Uniform Distribution

The estimated average total repurchase liability would be \$56.34 billion. Note that the confidence interval for this estimate is very small, a range of only (\$55.73, \$56.92). This may seem counterintuitive that the confidence interval is small when the individual trusts are used, but this result is consistent with standard statistical theory.³⁵ Because there are 530 trusts, the randomization would lead to the result that for every value generated that is below the mean for each trust, there is likely a result that is similarly the mean for each trust. As they sum up, these positive and negative deviations offset across the trusts. The sum represents a much better estimate of the total repurchase liability every single time the simulation is run.

Another way to think about the confidence interval is that there are no fewer than 1,000 iterations for the totals in the previous section, but there are $(530) \times$ (no fewer than 1,000 iterations) for the totals in this section, so the effective sample size is much larger and reduces the variation in the estimates by about a factor of 15. If one accepts Mr. Lin's "funnel approach" and the ranges discovered in his support materials, and one uses the individual trusts instead of the summaries Mr. Lin uses, one can create a much more realistic and reliable estimate than Mr. Lin did. Mr. Lin did not attempt to compute a reliability range, nor did he acknowledge that the values he was calculating were extremes for every single trust from flawed and unsupported ranges.

³⁵ Specifically, the Central Limit Theorem.

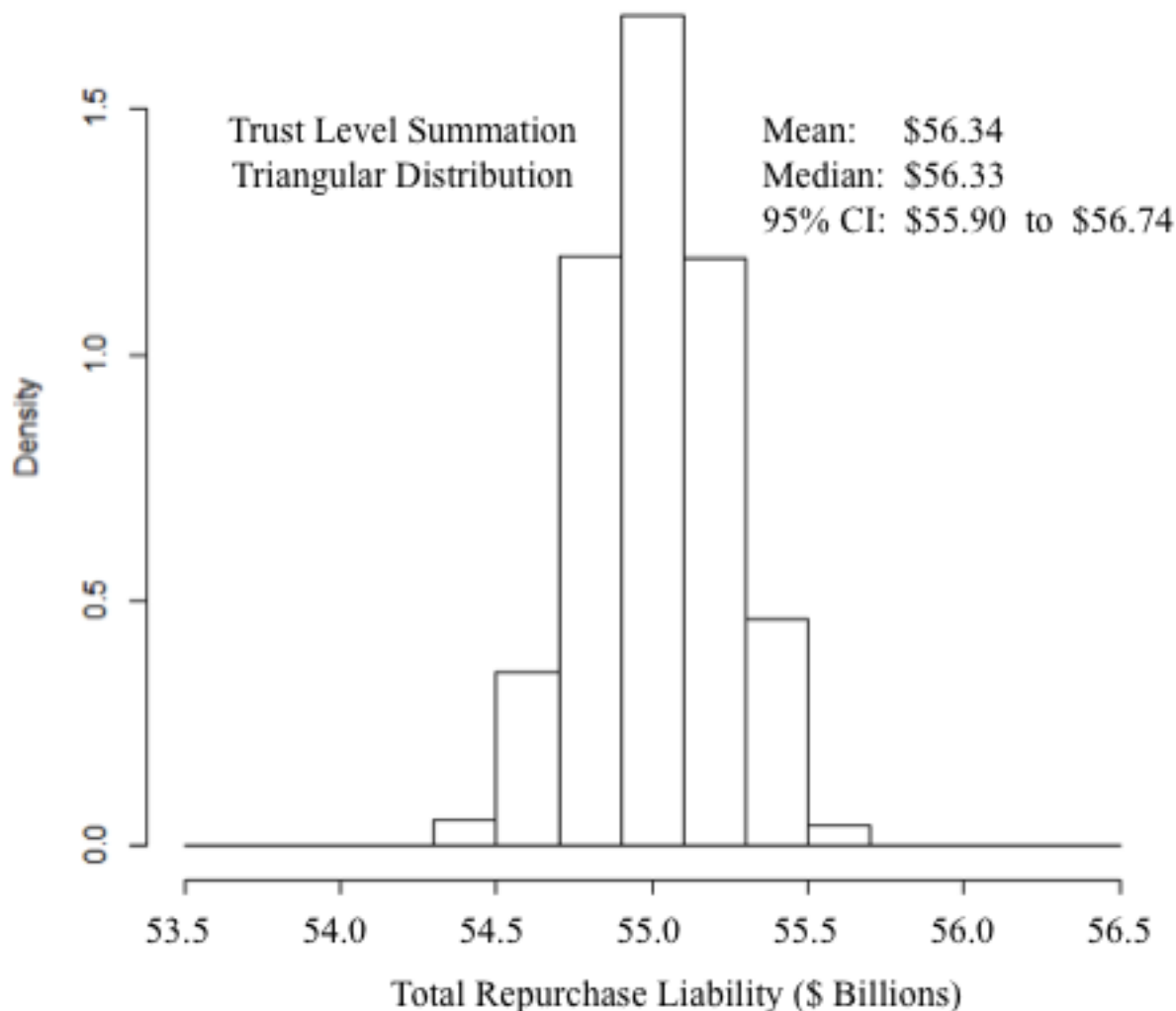
Chart 3: Distribution of total repurchase liability Outcomes in a Simulation with the Uniform Distribution Applied to Default, Severity, and Breach Rates at the Trust Level



2. Triangular Distribution

The estimated average total repurchase liability would again be \$56.34 billion, with a 95% confidence interval \$55.90 to \$56.74 billion, somewhat narrower than the previous range for the uniform distribution.

Chart 4: Distribution of total repurchase liability Outcomes in a Simulation with the Triangular Distribution Applied to Default, Severity, and Breach Rates at the Trust Level



Therefore, using a scientifically valid approach to the use of the limited information provided to Mr. Lin, I conclude that the estimated average total repurchase liability is \$56.34. It is *not* my conclusion that \$56.34 billion represents the *actual* repurchase liability, only that had Mr. Lin pursued a scientifically sound approach to the task, he would have arrived at a similar figure rather than of his repurchase liability figure of \$22.1 billion to \$27.6 billion.³⁶

³⁶ See Lin Report at 8 (backing the purported 40% success rate out of Mr. Lin’s settlement range to identify the repurchase liability). As set forth herein I reject the notion that a success rate should be applied. It is effectively a discount related to litigation considerations and, in my experience, experts offering opinions about the calculation of

V. Adverse Effects on Investors

For any investor, there are deleterious effects of breaches that affect each of the investments made. The loss to the investor starts when the loan is made and applies to all loans with breaches of representations and warranties, not just the defaulted loans. A loan with a breach of representations and warranties should not have been made, meaning it was so risky that the lender's guidelines did not allow the loan (presumably because the risk was too high so the loan could not be adequately priced). Alternatively, for some breaches of representations and warranties, the risk of the loan was higher and this additional risk was reflected in the way the loan should have been priced. For example, a loan that was made to a real estate investor but priced as if the loan were made to a person who represented that the loan was for a primary resident is underpriced. Loans to investors are riskier than to primary owners who will reside in the house. If the risk is higher, a higher interest rate should have been charged for the loan, and this higher interest rate return would have passed through to the investor who was purchasing the loan (and the increased risk) in a pool of loans. Thus, the risk is not just for defaulted loans, but for all loans that have material defects. The proper interest rate should have covered this increased risk.

With respect to how breaches of representations and warranties adversely affect trusts and investors, I describe and conclude that among the consequences of breaches of representations and warranties are:

1. artificially inflated ratings and bond prices together with depressed yields,
2. increased risk of loss, including loss of credit enhancement and credit support, resulting in lower bond values,

damages are never involved in the acceptance or non-acceptance of the results. However, in order to quantitatively respond to Mr. Lin's application of a success rate, I note the following applications of a success rate to the \$54.79 estimated repurchase liability figure set forth above:

- 40% success rate x \$54.79 bn = \$21.9 bn (this success rate represents the rate Mr. Lin applied)
- 50% success rate x \$54.79 bn = \$27.4 bn (this success rate represents the low end of the range from the Alternative Approach)
- 75% success rate x \$54.79 bn = \$41.1 bn (this success rate represents the high end of the range from the Alternative Approach)

3. lack of confidence in the RMBS market with resulting adverse effects on capital markets more broadly, and
4. overwhelmed protective mechanisms in RMBS, such as the repurchase rights, mortgage insurance, monoline coverage, foreclosure and other loss mitigation mechanisms.

Number 1 is a direct effect of breaches - the securities receive an artificially high rating from the credit rating agencies, prices for the securities are artificially high, and the yield is lower than expected because of increased losses.

Number 2 is a ripple effect that resulted from the initial problems with the mortgage markets. As the mortgage decline worsened, the monoline insurers quit offering credit enhancements or offered such enhancements at a much higher cost which is passed on through the pricing of the securitization to the investor.

Number 3 is another ripple effect, making it increasingly difficult to sell the securities purchased for the investor and forcing the sales to be at greatly reduced prices, continuing the loss for an investor even if they invested a relatively stable security.

Finally, as alleged in numerous suits filed against most of the major lenders, repurchases of defective loans effectively stopped as a flood of repurchases were pursued by investors and trusts. The high rate of defaults swamped lenders and servicers who could not keep up with the greatly increased number of defaults, causing servicing to decline in quality leading to further losses as workouts for borrowers were abandoned. Mortgage insurance was exhausted early in the process, with many mortgage insurers going out of business. These effects are all inter-related, causing a spiral down in the mortgage markets since at each stage the players in the market were overwhelmed with loans that shouldn't have been made, and investors received less than fair value in the returns captured by the trusts and disbursed through the waterfalls.

I state the foregoing to a reasonable degree of certainty based on my review of the materials cited herein and my knowledge and awareness of relevant industries and practices, and I reserve the right to supplement my opinions.

EXHIBIT A

CHARLES D. COWAN, Ph.D.
ANALYTIC FOCUS LLC



KEY QUALIFICATIONS

Charles D. Cowan is Managing Partner of ANALYTIC FOCUS LLC. Dr. Cowan has 40 years of experience in statistical research and design. He consults for numerous public and private sector entities on the design, implementation, and evaluation of research and the synthesis of statistical and sampling techniques for measurement.

Dr. Cowan has designed some of the largest and most complex research programs conducted by the Federal Government, including the Post Enumeration Program conducted by the Bureau of the Census to evaluate the 1980 Decennial Census, the Economic Cash Recovery valuations conducted by the Resolution Trust Corporation in 1990-95, and many evaluation studies conducted for the Justice Department, the Department of Defense, the Department of Housing and Urban Development, and the Treasury Department. He has provided expert advice to corporations and government agencies on the incorporation of complex research designs in demographic and economic measurement problems, including:

- Development of procedures used by the Resolution Trust Corporation and the FDIC for determination of the value of all assets held by the RTC\FDIC taken from failed banks and S&Ls. Results from this research were used in quarterly reports to Congress on the loss to the American taxpayer that resulted from these failures. These estimates of anticipated recoveries on assets were also used by the RTC and FDIC for financial reporting, leading these agencies to their first clean opinions from the GAO in their annual review of agency financial statements.
- Establishment of audit and sampling methods to determine the completeness and reliability of reporting and record systems. These procedures were used to both expand and streamline bank examinations for safety and soundness and also compliance measurement for the FDIC. These sampling techniques are applied in the audit of Federal agencies concerned with regulatory review of operations and systems, and related systems for banks, regulatory agencies, and law firms;
- Application of econometric and biometric procedures for measurement of credit risk in large portfolios of loans. These models are frequently used for a variety of purposes within financial institutions, such as the pricing of loans, the management of customers long term, decision making on workouts for delinquent loans, and for establishment of economic and regulatory reserves.
- Evaluation of research conducted for the Department of Defense, for the National Institutes of Health, and for the Department of Agriculture, each in response to Congressional inquiries on the validity of published results, and also for defendants in lawsuits involving evidence proffered by plaintiffs in furtherance of their suit.

- Model fitting and development of projection methods to measure the likelihood of loss or errors in recording in loans held by banks or put up for auction; measurement of the likelihood of fraud and/or noncompliance in systems, including bank holding companies, trading activities for brokers, and systems for compliance with health department and judicial requirements;
- Incorporation of population demographic models with financial assessment models to predict risk for insurance companies and corporations in terms of number and value of potential claims in mass tort litigation.
- Development of procedures used by the Bureau of the Census for apportionment of population for revenue sharing purposes and the estimation of the undercount in the Decennial Census of Population and Housing. These procedures include application of capture-recapture methods to measure the size of the undercount in the decennial census, use of network sampling as an alternative measure for population size, and measurement of the reliability of data collected in the Census.
- Development of statistical methods to quantify the size of populations, including nomadic populations for the Census of Somalia, the undercount and overcount in the Census of Egypt, the number of missing children in Chicago, IL, and the number of homeless persons and families needing services in several large cities with transient populations.

Dr. Cowan teaches graduate and undergraduate courses in survey methods, statistics, and computer methods for analysis. He is the co-author of two books, one on evaluation of survey and census methods and one on econometric measures related to the welfare of the U.S. economy. He has written numerous articles on statistical methods, sampling, rare and elusive population research, and optimization techniques.

Prior to cofounding ANALYTIC FOCUS LLC, Dr. Cowan was a Director with ARPC and with Price Waterhouse, where he specialized in financial research, survey research, and audit sampling. From 1991 to 1996, Dr. Cowan was the Chief Statistician for the Resolution Trust Corporation and the Federal Deposit Insurance Corporation, where he designed research necessary to measure the loss from the Savings & Loan Crisis of the late 1980's and capitalization requirements for the RTC funds from the U.S. Treasury. Dr. Cowan also served as the Chief Statistician for the U.S. Department of Education, where he designed large-scale surveys of educational institutions to measure resource needs and availability, and for Opinion Research Corporation, where he designed predictive models of demand for automobile manufacturers, banks, and large horizontally diverse firms like GE and AT&T. Dr. Cowan worked for the U.S. Bureau of the Census, where he was the Chief of the Survey Design Branch and developed many of the techniques in use today for the evaluation of coverage in surveys and censuses.

EDUCATION

Ph.D., Mathematical Statistics, The George Washington University, 1984

M.A., Economics, The University of Michigan, 1973

B.A., English and B.A., Economics, The University of Michigan, 1972

PROFESSIONAL EXPERIENCE

Co-Founder, ANALYTIC FOCUS_{LLC}, January, 2002 to present.

Director, ARPC, November, 1999 to December, 2001.

Director, PricewaterhouseCoopers LLP, January 1997 to November, 1999.

Chief Statistician, Federal Deposit Insurance Corporation / RTC, 1991 to 1996.

Chief Statistician, Opinion Research Corporation, 1989 to 1991.

Chief Statistician, National Center for Education Statistics, US Dept. of Education, 1986 to 1989.

Bureau of the Census: Assistant Division Chief, International Statistical Programs Center, 1984 to 1986; Staff Liaison for Statistical Litigation Support, 1983 to 1984; Chief, Survey Design Branch, Statistical Methods Division, 1978 to 1983; Acting Chief, Survey Analysis and Evaluation Branch, Demographic Surveys Division, 1976 to 1978; Office of the Chief, Statistical Research Division, 1975 to 1976

Survey Research Center, Oregon State University: Manager, 1974 to 1975

Institute for Social Research, U. of Michigan: Assistant Study Director, 1972 to 1974.

PROFESSIONAL ASSOCIATIONS

Adjunct Full Professor, Statistics, University of Alabama – Birmingham, 2002-present.

Associate Professor, Statistics, George Washington University, 1993 - 1998.

Visiting Research Professor, Survey Research Laboratory, U. of Illinois, 1983 - 1989.

Consultant, Dept. of Community Psychiatry, Johns Hopkins U., July 1985 - Dec 1987.

PROFESSIONAL SOCIETIES - MEMBERSHIPS

American Statistical Association (ASA)

American Association for Public Opinion Research (AAPOR)

International Association of Assessment Officers

PROFESSIONAL SOCIETIES - POSITIONS

President, Research Industry Coalition, 1999-2000

Council Member, Research Industry Coalition, Representative from ASA, 1995-2000

President, Washington/Baltimore Chapter of AAPOR, 1998

Program Chair, American Association for Public Opinion Research, 1991-2

Program Chair, Section on Survey Research Methods, ASA, 1989-90

Secretary-Treasurer, AAPOR, 1985-1986

Associate Secretary-Treasurer, AAPOR, 1984-1985

Editorial Board, Public Opinion Quarterly, 1980-1984

Editorial Board, Marketing Research, 1989-2000

Chair, Conference Committee, AAPOR, 1982-1989

Chair, Committee on Privacy and Confidentiality, ASA, 1980-1981

PUBLICATIONS

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Exhibit B
Documents Relied On

		Advisor's Opinions
	6/7/2011	Brian Lin's 6/7/2011 Opinion
		Deposition Transcripts
	10/2-3/2012	Lundberg Deposition Transcripts, October 2-3, 2012
	10/16-17/2012	Lin Deposition Transcripts, October 16-17, 2012
	11/29/2012	Robertson Deposition Transcript, November 29, 2012
	12/5/2012	Waterstredt Deposition Transcript, December 5, 2012
	12/18/2012	Bostrom Deposition Transcript, December 18, 2012
		Other Documents
	1/21/2011	BAC Form 8-K, select earnings excerpts (Dep. Ex. 198)
	3/31/2011	BAC form 10-Q
	5/6/2011	Email from [REDACTED] [REDACTED] (BNYM_CW-00276993-7046)
	9/27/2011	Evaluation of the Federal Housing Finance Agency's Oversight of Freddie Mac's Repurchase Settlement with BOA (Dep. Ex. 201)
	1/7/2013	Fannie Mae Form 8-K
		The subprime meltdown: A Primer, Part 1, by Faten Sabry (Dep. Ex. 393)
	5/5/2011	E-mail from Patrick to Mayer Brown re Requested by Your Experts (BNYM_CW-00000278-80) (Ex. 19 to Doc. No. 301; <i>also</i> Dep. Ex. 22)
		BofA Mortgage Credit Round Up (December Remittance) (BNYM_CW-00000301-57) (Ex. 19 to Doc. No. 301; <i>also</i> Dep. Ex. 151)
		Dimensioning the Housing Crisis (Goodman) (BNYM_CW-00000358-69) (Ex. 19 to Doc. No. 301; <i>also</i> Dep. Ex. 152)
Reliance 1		Amherst Report - ASF Session (Goodman) (BNYM_CW-00000281-300) (Ex. 19 to Doc. No. 301; <i>also</i> Dep. Ex. 150)
Reliance 2		All Consortium deals (BNYM_CW-00000206-207) (Ex. 13 to Doc. No. 301; <i>also</i> Dep. Ex. 21)
Reliance 3		[REDACTED] (BNYM_CW-00254178)

Appendix A

The following principal balance table is based on Reliance 2 and Reliance 3,

^a 543 Trusts	Balance	Losses	^b 530 Trusts	Balance	Losses
Liquidated Loans		\$25.00	[REDACTED]	[REDACTED]	[REDACTED]
Non- Liquidated Loans	\$183.90		[REDACTED]	[REDACTED]	[REDACTED]
60+ Delinquent Loans	\$72.50		[REDACTED]	[REDACTED]	[REDACTED]
Mod. Current Loans	\$12.80		[REDACTED]	[REDACTED]	[REDACTED]
Non-Mod. Current Loans	\$98.60		[REDACTED]	[REDACTED]	[REDACTED]
^a BNYM_CW-00000206			^b BNYM_CW-00254178		

[REDACTED]

[REDACTED] - [REDACTED] - [REDACTED]

[REDACTED]

[REDACTED] - [REDACTED]

[REDACTED]

[REDACTED] - [REDACTED] - [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Appendix B

The following table is based on Amherst Report, Reliance 1

Investor Loan Type	Re-Default Rate after Modification			
	3 month	6month	9 month	12 month
Fannie Mae	15.20%	27.60%	42.50%	52.50%
Freddie Mac	16.20%	28.70%	44.20%	55.80%
Government-Guaranteed	21.60%	42.90%	55.90%	62.30%
Private	28.10%	42.10%	52.50%	58.20%
Portfolio Loans	9.20%	18.20%	24.80%	30.10%
Total	20.00%	33.80%	44.70%	51.40%

I build a regression model to predict the re-default rate of 18 months after modification.

Dependent variable Y: Since the re-default rate takes value from 0 to 1, a logit transformation is applied on the re-default rate. The values after logit transformation are the observations of dependent variable Y.

Independent variables: 1) *Time*: takes values 1, 2, 3,..., corresponding to 3 month , 6 month , 9 month after modification,..., respectively, which is a continuous variable; 2) *ID*: Investor Loan Type ID taking values “Others” and “Portfolio Loans”, corresponding to Fannie Mae, Freddie Mac, Government-Guaranteed, Private and Portfolio Loans, respectively, which is a categorical variable.

The Model $Y \sim \text{Time} + \text{ID}$

Regression Coefficients

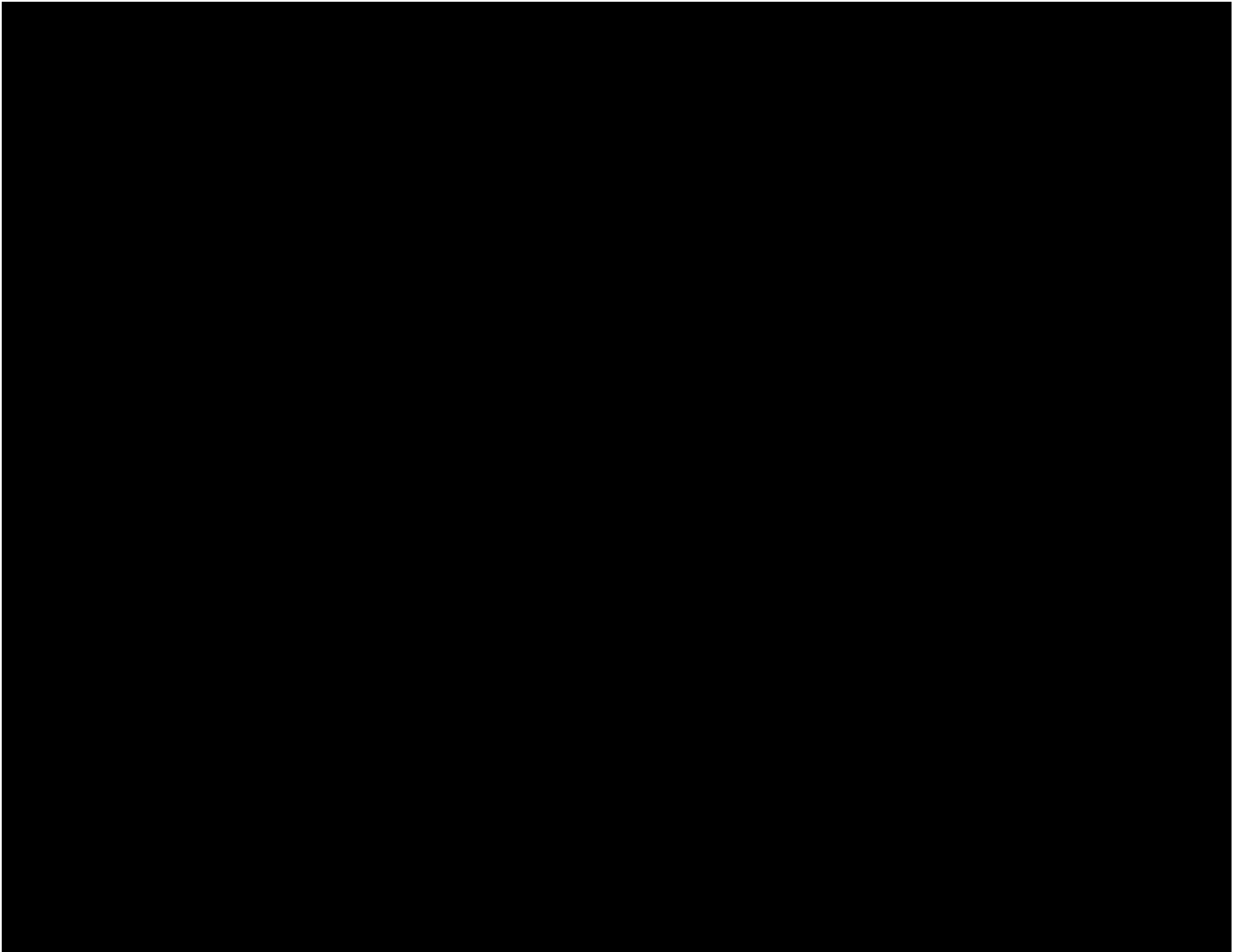
	Estimate	P-value
Time	0.54575	2.80e-08
ID: Others	-1.80824	2.25e-09
ID: Portfolio Loans	-2.80042	9.92e-11
Adjusted R-squared:	0.9201	

Prediction

For the Portfolio Loans, which has the lowest re-default rate, the predicted re-default rates are 61.6% and 82.7% at the month 18 and 24 after modification, respectively.

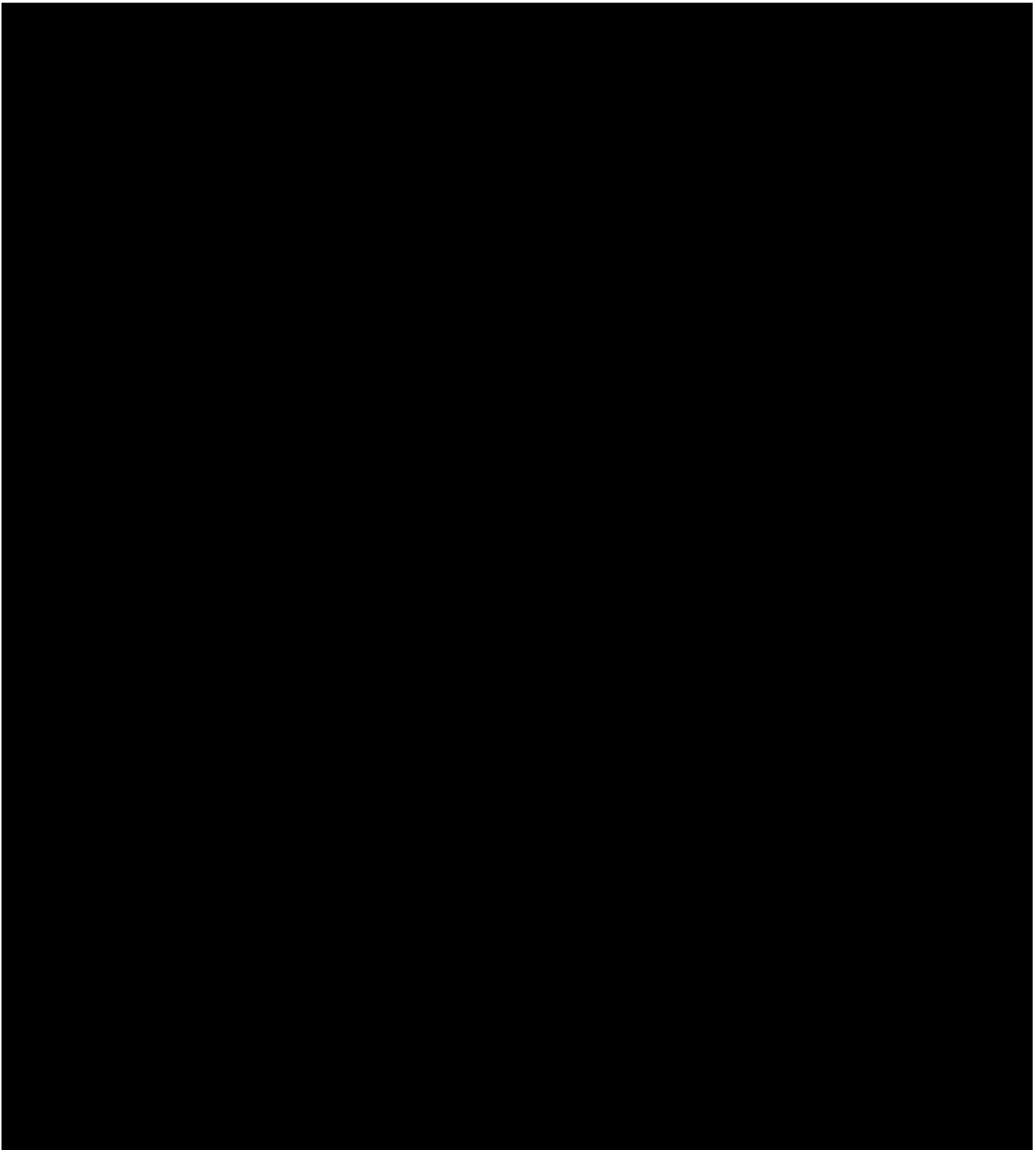
Appendix C

The following table is based on Reliance 3.

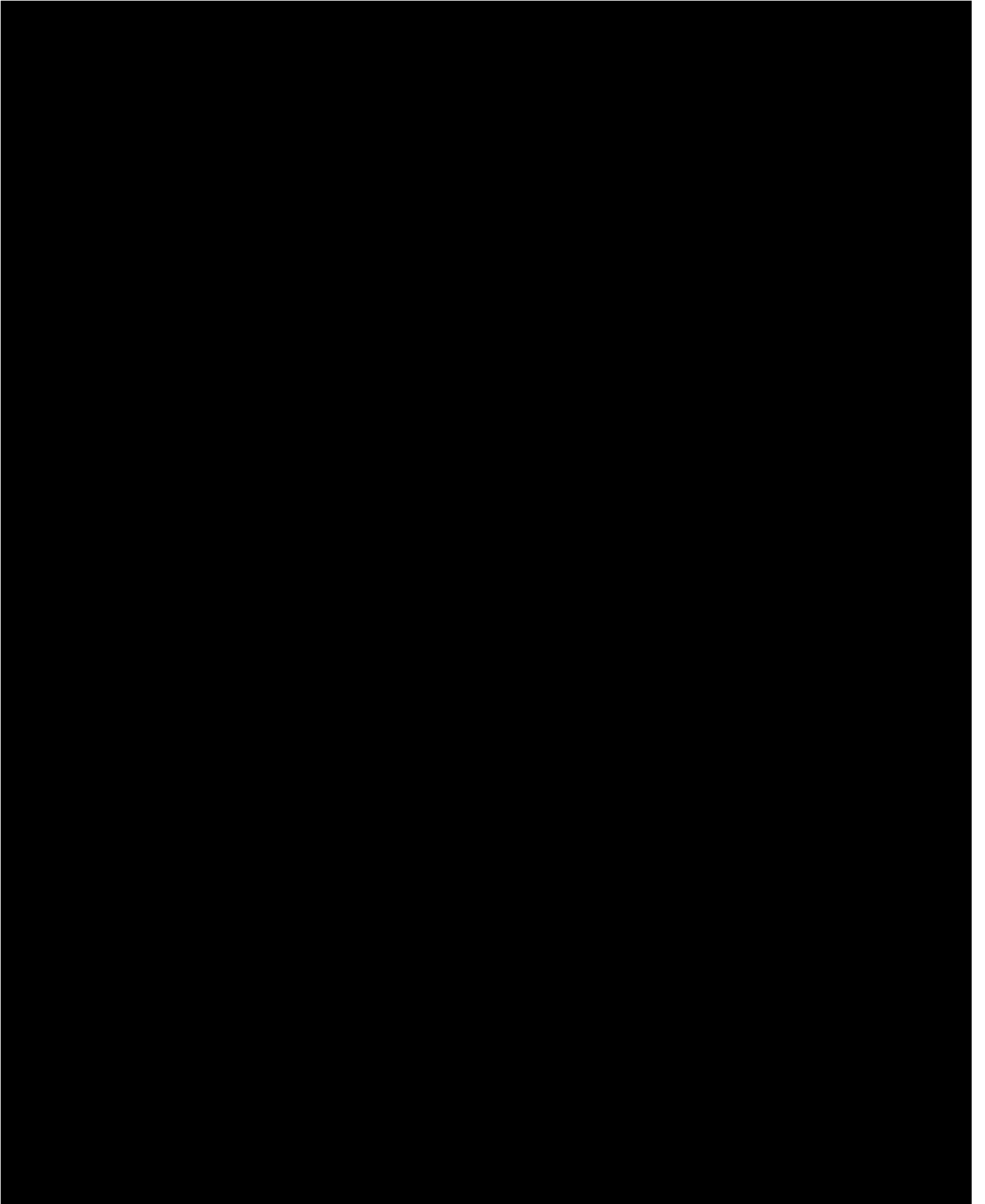


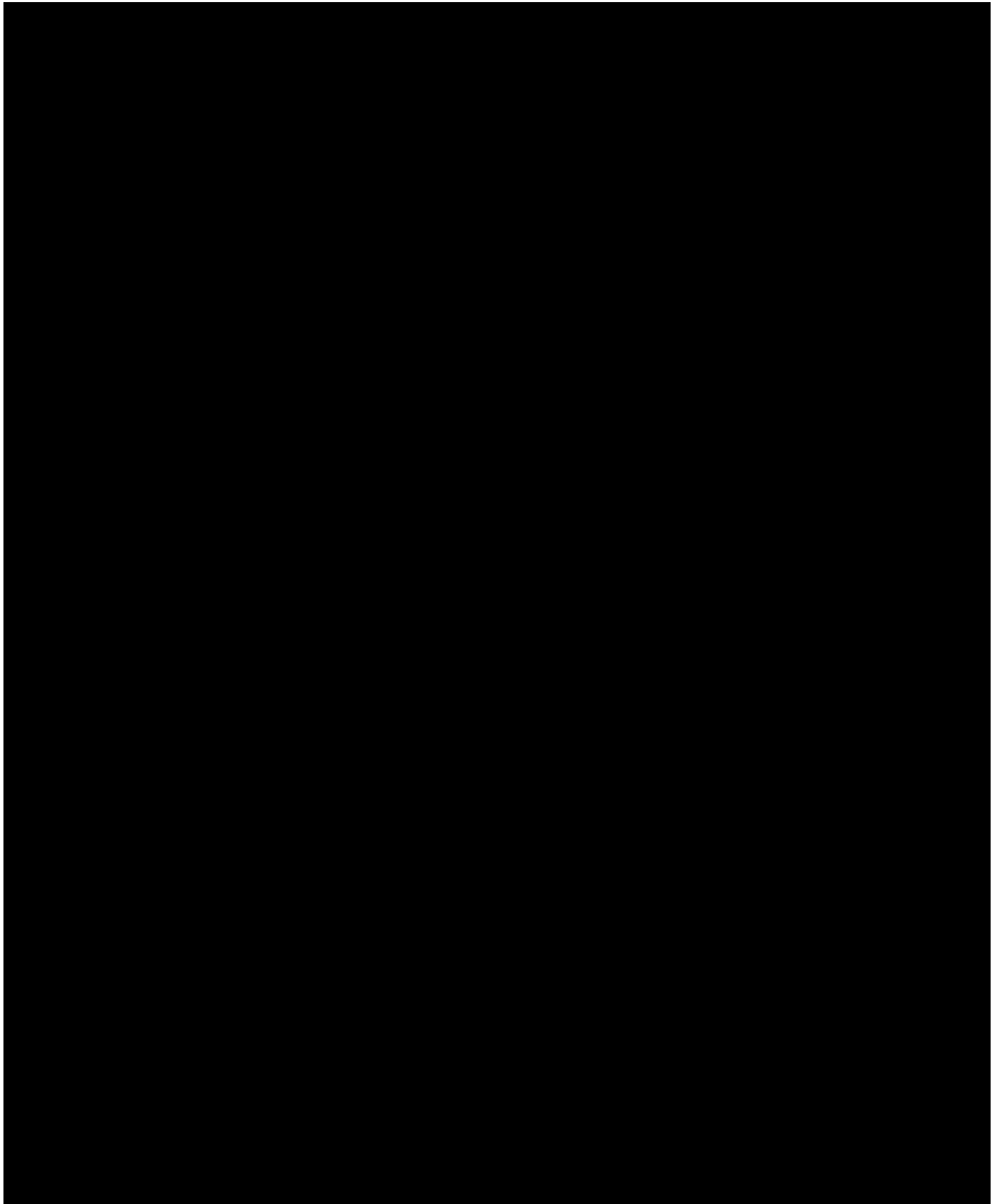
Appendix D

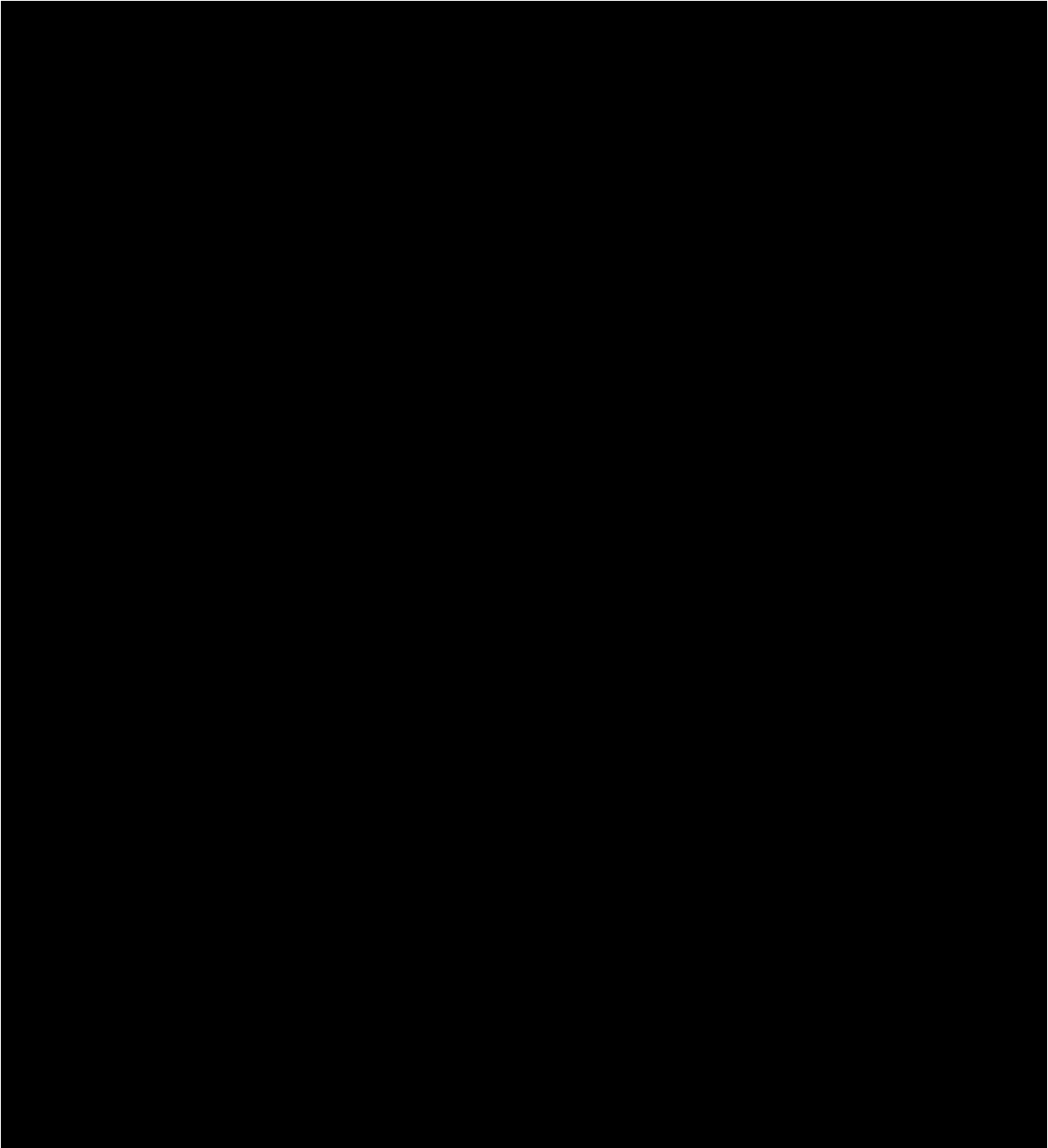
The following table is based on Reliance 3.

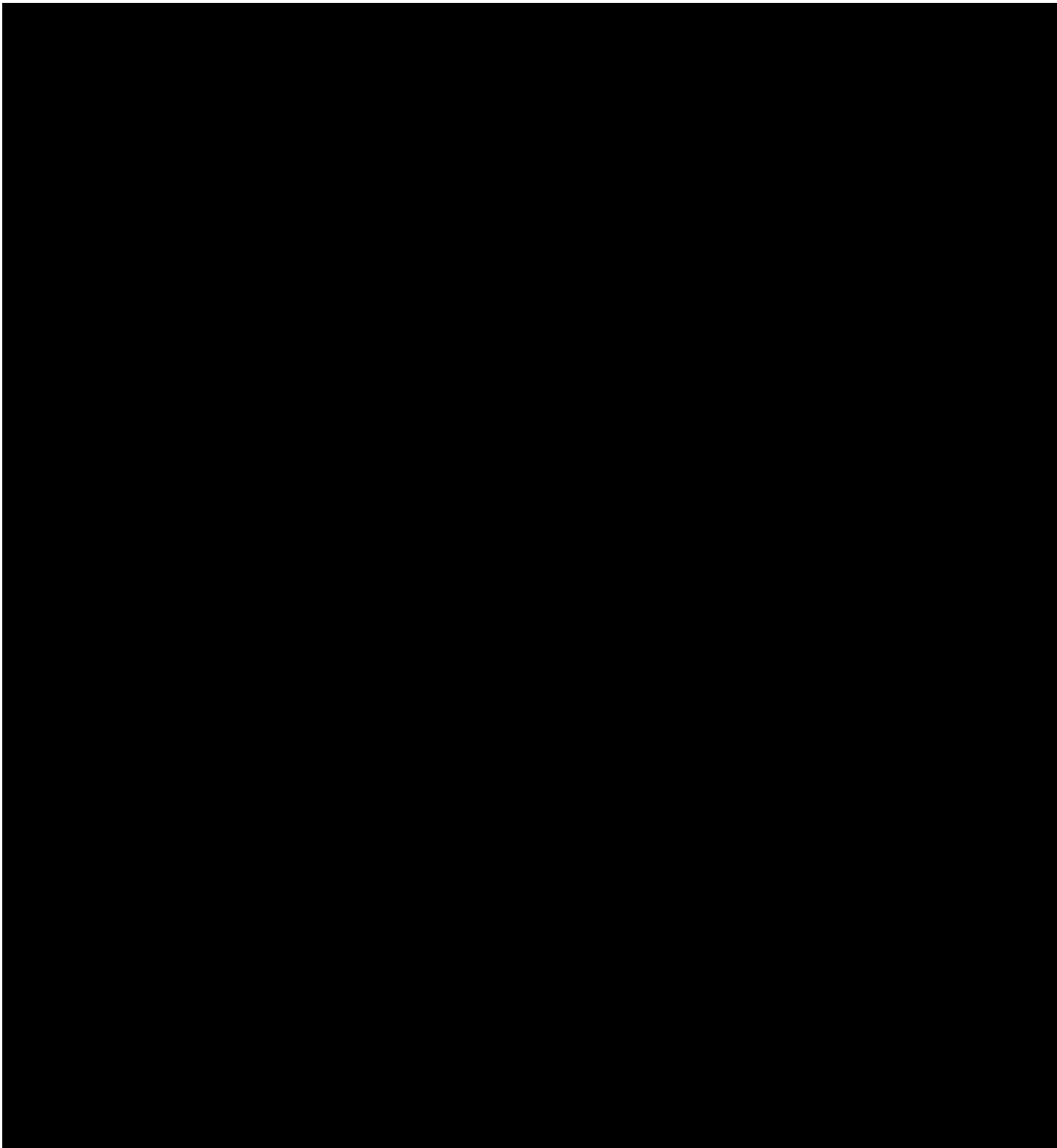


Prediction









Appendix E

The following principal balance table is based on Reliance 1 and Reliance 3.

^a 543 Trusts			^b 530 Trusts		
	Balance	Losses		Balance	Losses
Liquidated Loans		\$25.00	[REDACTED]	[REDACTED]	[REDACTED]
Non- Liquidated Loans	\$183.90		[REDACTED]	[REDACTED]	[REDACTED]
60+ Delinquent Loans	\$72.50		[REDACTED]	[REDACTED]	[REDACTED]
Mod. Current Loans	\$12.80		[REDACTED]	[REDACTED]	[REDACTED]
Non-Mod. Current Loans	\$98.60		[REDACTED]	[REDACTED]	[REDACTED]
^a BNYM_CW-00000206			^b BNYM_CW-00254178		

