www.primaticsfinancial.com

8401 Greensboro Drive, Suite 550
McLean, Virginia 22102 | 703.342.0040

Material Differences between Straight Line and SFAS 91 Effective Yield Amortization

Written by: Abbas Valliani, Managing Director | Joe Chen, Director

8401 Greensboro Drive, Suite 550
McLean, Virginia 22102 | 703.342.0040

SFAS91 CHALLENGES: IS STRAIGHTLINE METHOD A GOOD PROXY FOR EFFECTIVE YIELD METHOD?

Loan origination fee is an important source of income and business for banks and financial institutions. However, many loan servicing and process systems do not have the built-in support for recognizing loan fee income according to SFAS91 requirement. Finance professionals in many organizations have to use spreadsheets and manual processes to ensure the fee recognition is correct and reasonable, which hinders efficiency and increases control risk. Also, straightline amortization method is often used as a simplifying approach in places where effective yield method is required under SFAS91. This paper compares the amortization results from applying these two methods to a wide range of loans and fees scenarios to study the potential financial impact. On average across the loan life, straightline method amortizes 9.3% of the original fee slower than effective yield method. **Over 49% of times, straightline method is slower than effective yield method by more than 10% of the original fee balance..**

A. Challenges

SFAS No. 91 establishes the accounting for nonrefundable fees and costs (referred to as loan deferred balances) associated with lending, committing to lead, or purchasing a loan or group of loans. It applies to all types of loans as well as to all types of lenders such as banks, thrift institutions, mortgage banks, finance and investment companies and other financial institutions.

The fee income associated with loan origination, funding commitment, and loan modifications is an integral part of business growth drivers as financial institutions continuously seek innovative products to meet the market demands and to expand fee based businesses. The development of asset securitization market provides added incentives for lenders to focus on loan originations and product development. However, such growth can be hindered if the accounting recognition for the loan fee income is not in full compliance with GAAP requirement.

Unlike many cash-based accounting functions such as loan funding and principal and interest payment that have solid system support from loan process (origination and servicing) systems, the complex requirements of SFAS 91 create fundamental issues for many accounting professionals. Today's loan process systems are designed for operation purposes in general and normally do not have a separate accounting engine that is sophisticated to apply the SFAS 91 accounting rules. In addition, when multiple loan products are handled through multiple loan systems, it often creates inconsistencies in amortization treatments.

B. The Complexities

Many institutions have discovered complexities and difficulties in implementing SFAS 91 deferred balance amortizations. Some of the common challenges are:

- Missing proper amortization treatments rules for different products: term loan, revolving facility and non-revolving facility. SFAS 91 requires that: for term loan, the deferred balance needs to be amortized as adjustment to loan yield; for revolving facility, the deferred balance needs to be amortized using straightline method at facility level, and revolving loan draws have no impact for amortization; for non-revolving facility, the deferred balance needs to be pro-rated to the term loan when the draw occurs and amortized as adjustment to term loan yield. No amortization occurs at facility level and any remaining deferred balances due to unused commitment need to be recognized into income upon non-revolving facility expiration.

- The limited support on complex payment schedule. Flexible loan payment terms are often demanded in the market place and require a system that is capable to generate the contractual cash flows based on complex payment schedules. While loan process systems support the customization of payment schedule for service purpose, most lack the function to calculate the effective yield based on the future cash flows by taking into account of the deferred balances.

- Difficulties in determining major or minor loan modification. SFAS 91 requires either fully recognizing or carrying over the unamortized balances of current loan contract when the loan undergoes a modification or restructuring that is other than TDR, depending on whether the modification is major or minor. The decision is based on the test on the modified loan yield vs. comparable new loan's average yield, as well as on material change (NPV) test. The loan modification history impacts the benchmark loan selected for the material change test and the discount rate used for calculating the NPV of modified loan. These complex accounting rule requirements are normally not supported by loan process systems.

- Difficulties in dealing with data changes due to corrections. Loan data can often be changed due to corrections made by data quality checks. To capture the impacts from data correction on deferred balance amortization is challenging as it would require the system to identify all impacted loans and re-process. For example, a data correction on a facility would impact not only the amortization on the facility but also the term loans draw under the facility. In addition, all events happened on the term loans such as payment and modification will need to be re-processed to properly account for the impact.

C. Quick Option

Without proper system support, accounting professionals often have to reply on the simple process logic existing in loan process systems, which is normally a straight line amortization method, and use an off line quantification process to validate that the simplified process is not materially different from the SFAS 91 requirement, or to book additional amortization adjustment if the difference is material. The quantification process normally is set up with a list of simplified assumptions that covers the issues that are not addressed, such as modification decision, facility fee pro-ration and data correction impacts. The process is also normally conducted at an aggregated level due to limited data and manual process nature. This option often exposes the organization to heightened audit risks and potential process and control deficiencies, and does not provide an accurate fee earning picture due to the assumptions and aggregation in calculations.

D. Materiality and Probability: Straight-Line vs. Effective Yield

Besides the other issues with the straightline method (facility fee pro-ration and modification decision), a question people will ask is: how different is the amortization result between straightline and effective yield method for term loans. A study is carried out to find the answer.

A total number of 1,260 sample term loans are selected and both effective yield and straightline methods are applied to run the amortization for these loans. The unamortized balance factor throughout the loan life (at each month end) is compared between the two methods to examine the difference materiality – a total of 39,060 comparison data points. Here, the unamortized balance factor is defined as the unamortized balance as a percentage of the original deferred balance. For example, suppose a loan has a original deferred balance of $200, and as of the 10th month, the unamortized balance is $140 under straightline method and $120 under effective yield method. The unamortized factor as of 10th month would be 70% under straightline and 60% under effective yield method and the difference is 10%.

Table 1 below shows the sample population. There are four drivers that impact amortization results: the loan maturity term, loan rate, payment schedule and the deferred balance as a percentage of loan principal balances. The sample data is selected based on the commercial loan lending arrangements. The loan term includes 6 month term to 5 years. The loan rate spans from 7% to 10%. The payment schedule includes interest only, scheduled monthly P&I, monthly fixed principal payment + interest, a interest only period followed by monthly scheduled P&I and monthly interest combined with quarterly principal payment. The net deferred balance as a percentage of loan balance represents the fee rate (e.g. 1% of loan balance) netted against deferred direct origination cost. Positive deferred balance percentages represent net deferred cost and negative percentages represent net deferred fees. All sample loans uses $100,000 as original loan balance[1].

Table 1: Samples

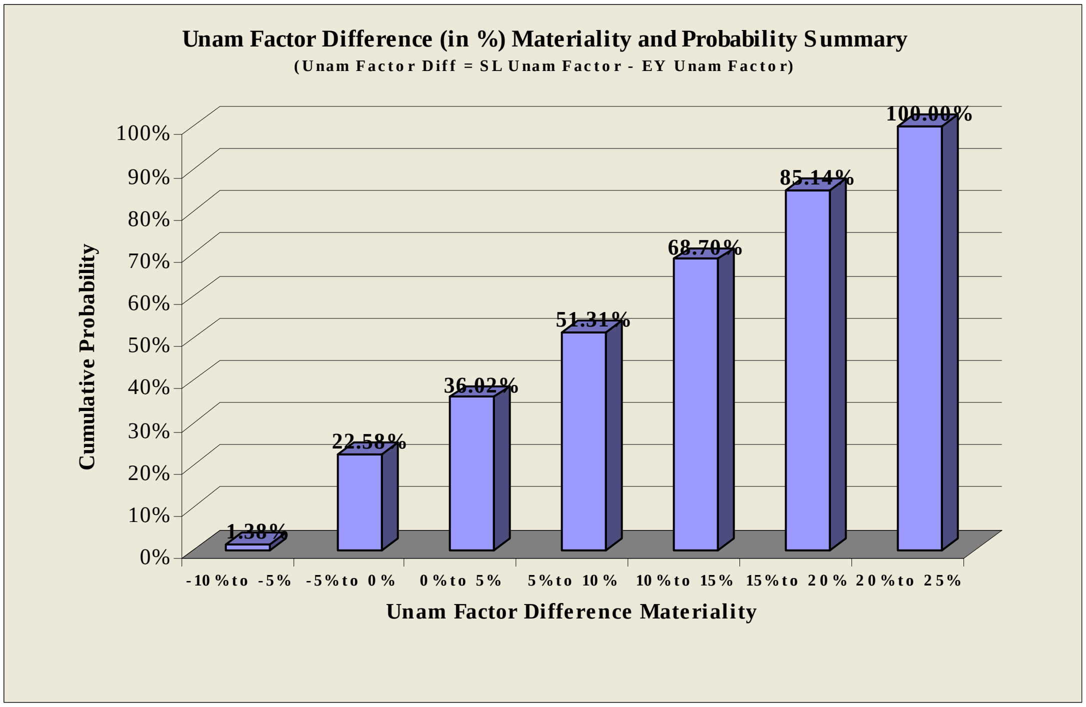
Loan Maturity Term	Loan Rate	Payment Schedule	Net Deferred Balance as % of UPB
6 month	7%	Monthly IO & Balloon	-1.50%
1 year	7.50%	Scheduled monthly P&I	-1.25%
2 year	8%	Monthly fixed principal payment (1/n term) + Interest: e.g. for 2 year, the principal payment is 1/24 of original balance	-1.00%
3 year	8.50%	IO in the first half of the loan term and sheduled monthly P&I in the 2nd half of the term	-0.75%
4 year	9%	Quarterly % principal (10%) + monthly Interest + Balloon	-0.50%
5 year	10%		-0.25%
			0.50%

1 Average Difference across All Loans

The average unamortized factor difference is 9.31%, which is calculated as [straightline unamortized factor – effective yield unamortized factor], based on 39,060 month end unamortized balance factor comparisons. In other words, on average, straightline method amortizes 9.31% of net deferred balances less than effective yield method.

Looking at the probability distribution as in the graph below, 51.31% of the total months compared have a difference between -10% and +10% of original deferred balances, which leaves 48.69% of months when the straightline method amortizes less than effective yield method by more than 10% of original deferred balance. This is a quite large occurrence with material difference (>10%). Note that within the 22.58% of months when straightline method amortizes faster than or equal to effective yield method, there are 1,260 months (3.3%) that are the final loan maturity months which have zero unamortized balance under both methods. The net is 19.28% of total months having straightline method with a faster amortization rate, mostly within the -5% to 0% bucket.

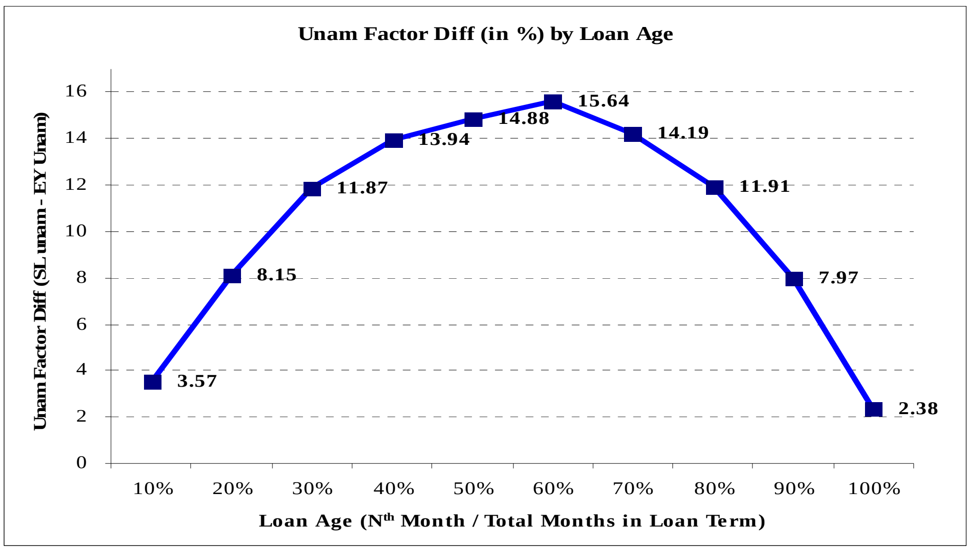
[1] The loan principal balance can be any amount and will not impact the results as the deferred balance, payment schedule and effective yield are all proportion to the loan principal balance.



2 Average Difference over Loan Life

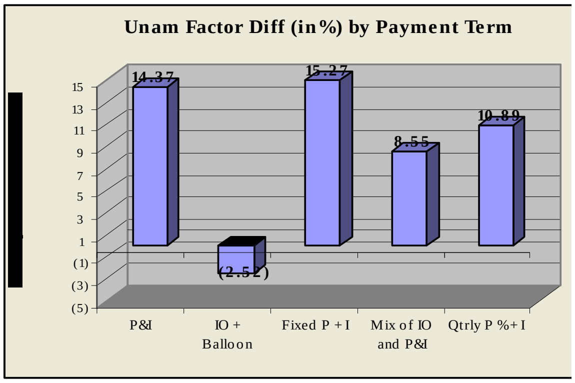
The graph below illustrates the average difference over the life of the loan. The x-axis represents the age of the loan as calculated by dividing the age (in month) by the total number of months in the loan life. For example, for a 2 year loan with 24 months, the first month age is expressed as 4.16% (1/24) and the second month is expressed as 8.33% age (2/14). Each month over the loan life is bucketed by 10% incremental in age % and the unamortized factor differences of each month within the age bucket is averaged to reach the average unamortized factor difference.

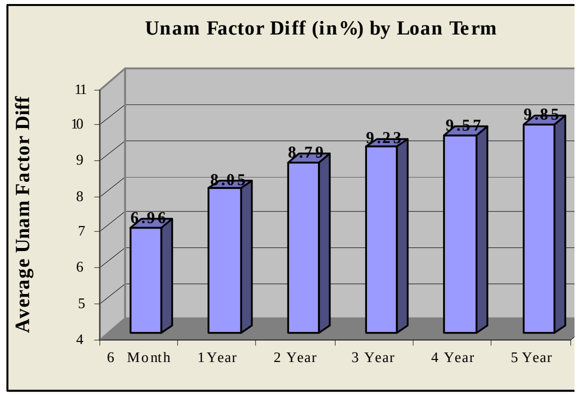
As the graph shows, the average unamortized factor difference increases during the initial periods of loan life and reaches the peak level at 15.64% of original deferred balance in the 50%-60% age bucket, and decreases gradually afterwards as the loan ages towards maturity. The effective yield method generates faster amortization amounts in initial periods and slower amortizations in later periods, while the straightline amortization generates a constant amortization amount over the loan life. The difference in unamortized factor will continue to expand as long as the per month amortization rate of effective yield method exceeds that of straightline method. After that point of time, effect yield amortization rate will continue to decrease and drop below the straightline amortization rate, thus bringing down the unamortized factor difference and eventually to zero as the loan matures.

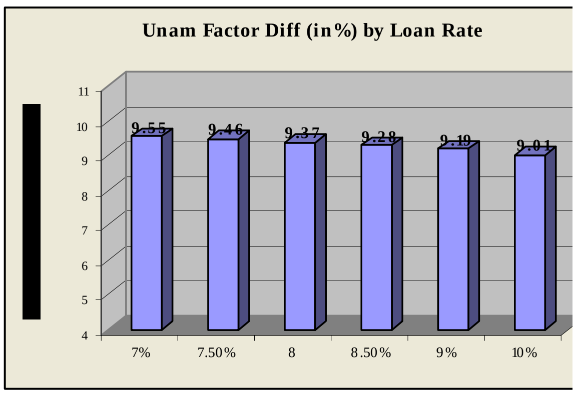


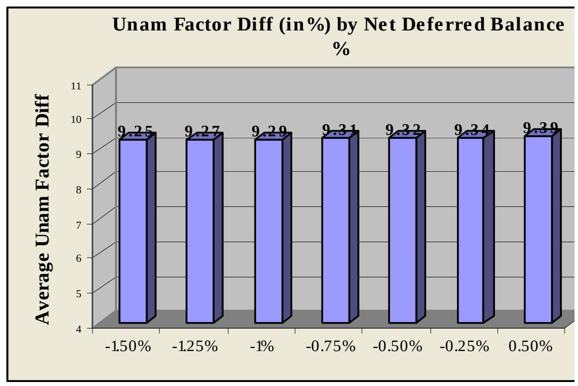
3 Average Differences by Loan and Fee Data

The graphs below shows the average unamortized factor differences grouped by the four drivers: payment term, loan term, loan rate and deferred balance as a percentage of loan principal balance. The loan term and payment schedule have significant impacts on the difference, which we will explore the underlying reasons later, whereas the loan rate and deferred balance as a percentage of loan principal balance have muted impacts. With the exception of interest only payment schedule, all measurements indicate that straightline method has a slower amortization than effective yield method.









<u>Payment Schedule</u>

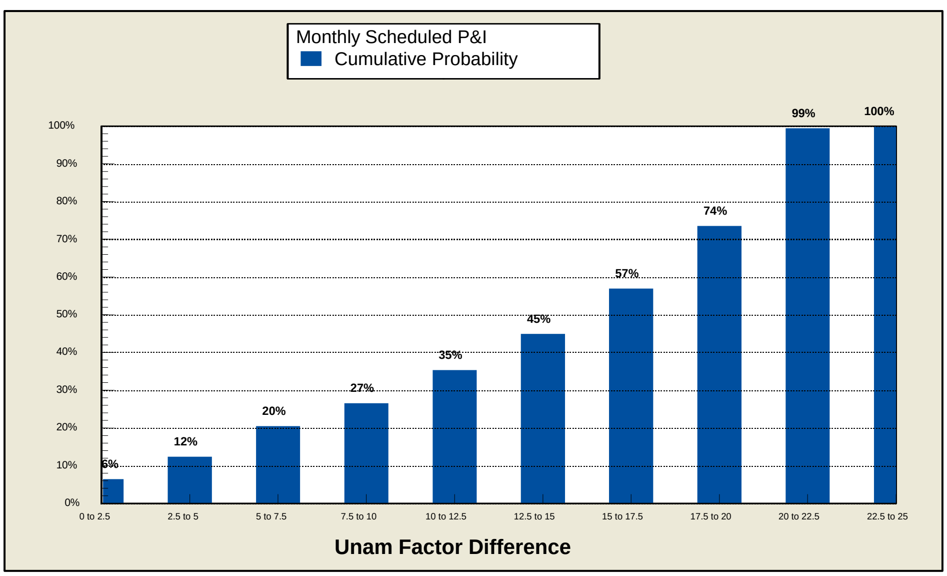
Straightline method applies a constant amortization amount over the loan life. Effective yield method requires maintaining a constant yield throughout the loan life by recognizing amortization income as adjustment to loan stated interest income. Two factors determine the effective yield amortization amount: the spread between yield and stated loan rate and the loan balance. All else being equal, the higher the spread, the higher amortization adjustment. Similarly, all else equal, the higher the loan balance, the higher amortization adjustment.

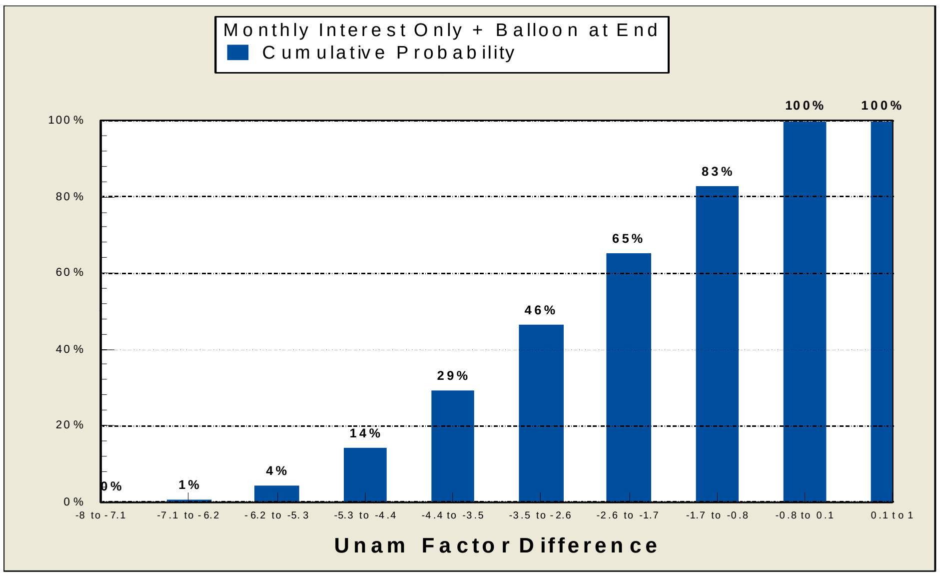
With interest only payment schedule, the effective yield method has the smallest amortization in the initial period and gradually increases amortization amount as loan ages. In net deferred fee (discount) cases, loan yield is higher than stated loan rate therefore the higher loan yield income the more amortization amount. As loan ages, the loan balance increases over time (discount becomes less due to amortization and principal balance stays the same) and loan yield income increases, thus leading to higher amortization amount. Conversely, in net deferred cost (premium) cases, loan yield is lower than stated loan rate and the lower the loan yield income the higher amortization. As loan ages, the loan balances decreases as amortization reduces the premium and principal stays the same, leading to lower loan yield income and higher amortization. Because straightline method equally amortizes in each period, the straightline method will amortize faster.

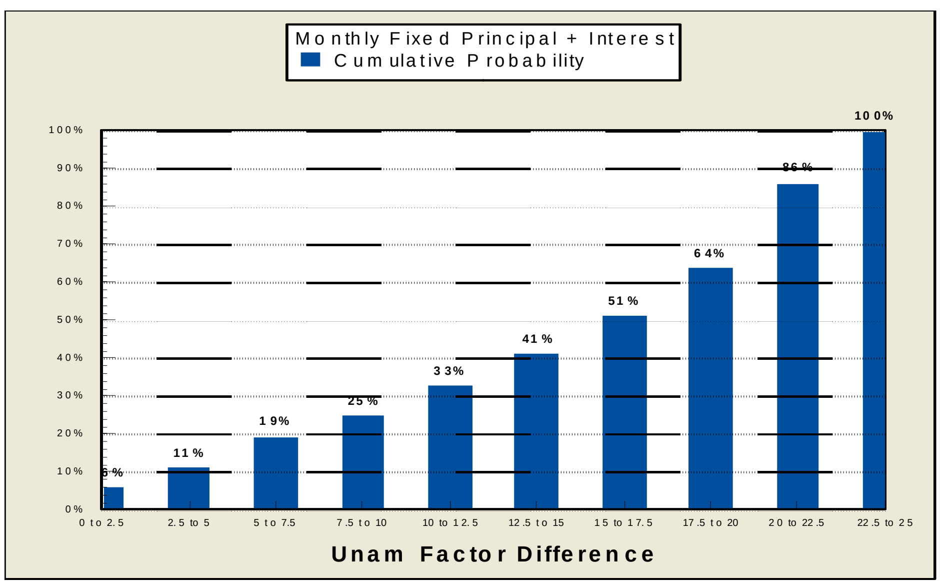
In other payment schedules, the loan balances decreases over time as principal payments are made. Given a constant spread, the amortization amount will start with the highest amount in initial periods when the loan balance is the highest, and decrease over time. Compared to the equal amortization in straightline method, the effective yield method will amortize faster.

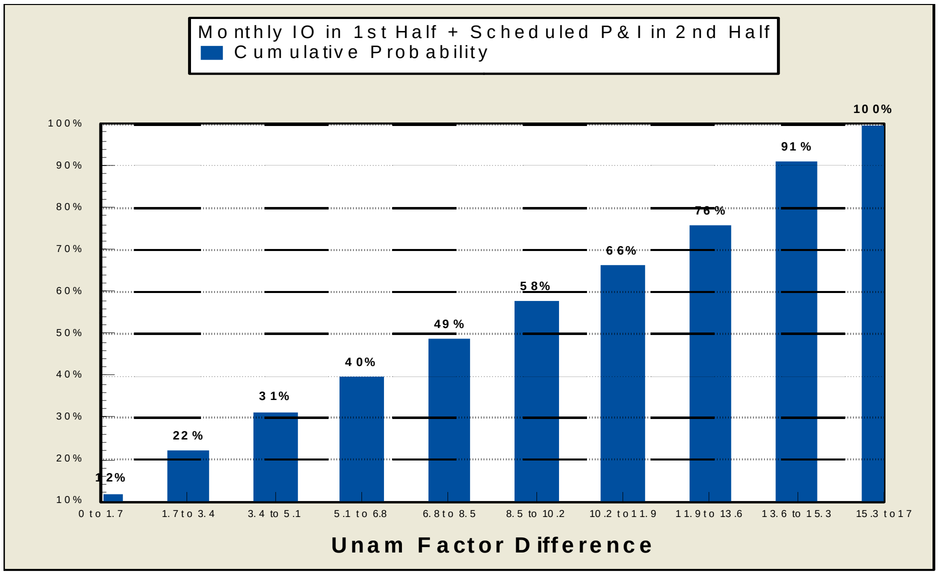
Loan Term
As noted earlier, the difference between effective yield and straightline method reaches peak when loan age is from 50% to 60% of its term. The longer the loan term, the more periods when effective yield will have faster amortization rate than straightline method rate, and thus the higher "peak" in cumulative amortization differences. In addition, as the effective amortization rate continues to decrease after the "peak", it takes more periods to pair down the cumulative amortization difference. Both lead to a higher average unamortized factor difference for longer term loan.

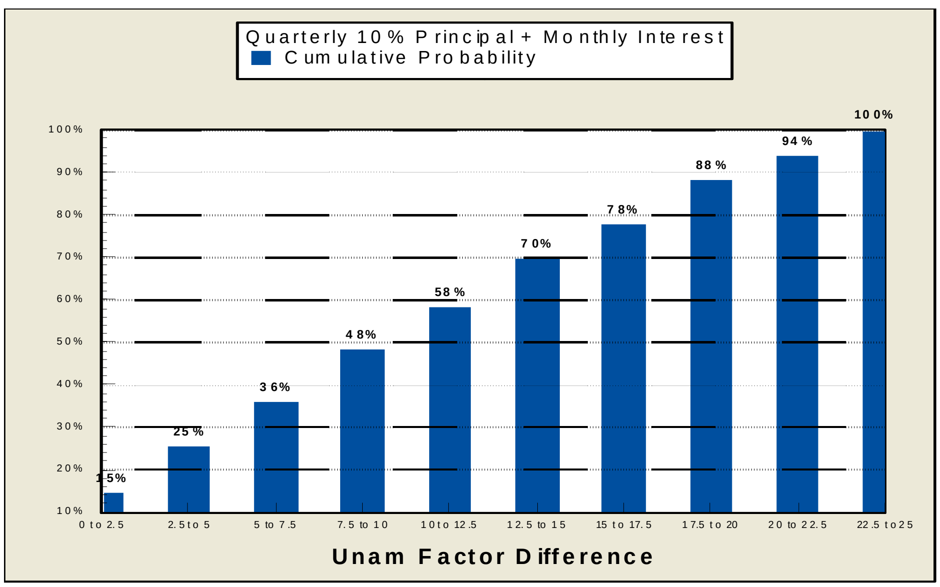
Probabilities by Payment Schedule
The tables below show the probabilities of unamortized factor differences over the loan life, for different payment schedule types. The x-axis represents the unamortized factor difference in percentage points (%) as calculated as straightline unamortized factor – effective yield unamortized factor. The y-axis represents the cumulative probability. Other than interest only payment schedule, all other payment schedules including monthly P&I, monthly fixed P+I, mix of IO and P&I and quarterly P% + I, have significant portion over the life of loan that have over 10% of original deferred balances in unamortized factor difference.




Monthly Interest Only + Balloon at End
Cumulative Probability
100%
80%
60%
40%
20%
0%
0%
1%
4%
14%
29%
46%
65%
83%
100%
100%
-8 to -7.1
-7.1 to -6.2
-6.2 to -5.3
-5.3 to -4.4
-4.4 to -3.5
-3.5 to -2.6
-2.6 to -1.7
-1.7 to -0.8
-0.8 to 0.1
0.1 to 1
Unam Factor Difference


Monthly Fixed Principal + Interest
Cumulative Probability
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
11%
19%
25%
33%
41%
51%
64%
86%
100%
0 to 2.5
2.5 to 5
5 to 7.5
7.5 to 10
10 to 12.5
12.5 to 15
15 to 17.5
17.5 to 20
20 to 22.5
22.5 to 25
Unam Factor Difference





Conclusion

SFAS 91 amortization brings significant challenges to system development and accounting operation. To rely on simplified approach such as straightline method can introduce the risk of inaccurate financial results that have material impact. The risk is especially high for longer maturity term loans that have other than interest only payment schedules.

PRIMATICS
FINANCIAL

www.primaticsfinancial.com

8401 Greensboro Drive, Suite 550
McLean, Virginia 22102 | 703.342.0040

For more information, contact:

Abbas Valliani, 703-342-0044
Joe Chen, 703-342-0451