Project	**Accounting for Financial Instruments**
Topic	**Recognition of Credit Impairment Losses – Models 2, 4, and 5(A and B)**

Introduction

1. At the 17 November 2010 meeting, the Boards discussed a variety of alternative models for recognition of credit impairment with the objective of identifying those alternatives that would satisfy the individual objectives of each Board. That discussion resulted in narrowing down the models under consideration from seven alternatives to the following alternatives:

   (a) *Alternative Model 2*: Immediate recognition of the amount of the credit losses expected to emerge that can be reliably estimated for a period that is either the full expected life of the financial assets, where feasible, or a portion of the expected life.

   (b) *Alternative Model 4*: Recognition of lifetime expected credit losses using a time-proportionate approach for a good book and full recognition of lifetime expected losses for a bad book.

   (c) *Alternative Model 5*: Time-proportionate approach (for a good book) with a mechanism to accelerate recognition of expected losses and full recognition of lifetime expected losses for the bad book.

2. It is important to note that **Model 5 is an overlay, or modification, of Model 4**. Model 5 was proposed with the objective of building allowance balances more

quickly for assets with front-loaded loss patterns. So Model 5 could be used when the loss pattern is accelerated[1] as an overlay for Model 4.

3. This paper provides discussion around each of the models (including two variations for Model 5). It describes each model for the recognition of credit losses, its principle, the resulting presentation of amounts in the financial statements and pros and cons of each model. The paper also compares and contrasts the models using illustrations.

4. Because these models have been discussed in previous meetings, much of the information below has already been provided in other Board papers[2]. Information may be duplicated below in order to provide similar information on each Model in a single memo to provide an easy reference for the accompanying illustrations.

Alternative models

Alternative 2: Immediate recognition of losses expected to emerge within a period that can be reliably estimated (which is a portion of the expected life or, where feasible, the full expected life of the financial assets)

Objective

1. The overarching objective of this alternative is to address fundamental problems with the current incurred loss impairment model. Many believe that the fundamental problem with the current impairment model under both U.S. GAAP and IFRS is that reserves for credit losses tend to be at their lowest level before an economic cycle trends downward and actual losses begin to emerge. Therefore, the model would seek to (a) achieve earlier recognition of credit losses based on entities' expectations and (b) increase the level of reserves relative to current levels before an economic cycle trends downward by allowing the consideration of

[1] Model 4 would be used when the loss pattern is unknown, expected to be relatively even over the life, or expected to be heavier at the end of the life.
[2] See Agenda Papers 9A and 9B (October 2010 IASB meeting), Agenda Paper 1C/Memorandum 70 (10-12 November 2010 joint meeting), and Agenda Papers 13A and 13B/Memorandums 71A and 71B (17 November 2010 joint meeting).

losses expected to emerge within a period beyond the reporting date that can be reliably estimated.

2. Under this alternative, the estimate of expected credit losses at each reporting date would represent *the amount of the credit losses expected to emerge within a period that can be reliably estimated (which is a portion of the expected life or, where feasible, the full expected life of the financial assets)*. This alternative could encompass recognition of the full life loss for certain financial assets, to the extent that the time horizon for which management can predict expected credit losses captures the full expected life of the financial assets. The staff believes this would be the case for financial assets with shorter-term expected lives. For asset classes with longer expected lives, the staff believes entities would consider the loss emergence pattern based on its experience. If losses typically emerge early for that asset class, entities would take that into consideration in determining the amount of credit losses to recognize. After considering historical loss experience, entities would make qualitative adjustments considering current conditions and expected future events and economic conditions that are reasonable and supportable. The staff envisions that this approach would be implemented by grouping loans with similar characteristics, including average lives and loss emergence patterns.

3. Therefore, the recognition principle under Alternative 2 includes two concepts:

   (a) The amount of credit losses to be recognized reflects the time horizon for which management can reliably predict losses.

   (b) For shorter term financial assets, the amount of credit losses to be recognized may consider the full expected life of the financial assets; for longer term financial assets, the amount of credit losses to be recognized considers losses that management expects to emerge over a period that reflects a portion of the expected life of the financial assets. This estimate would be updated every reporting period, reflecting changes in

economic circumstances as well as changes in the composition of the loans being evaluated for impairment.

4. With respect to (a) above, the staff believes the forecast period for information considered may not necessarily correspond with the loss emergence pattern for a particular asset class. However, the staff believes that there is a practical outer boundary in terms of how far into the future an entity can reliably predict expected credit losses (by using specific projections) considering the full information set. Although Model 2 is not based on lifetime expected losses, the staff does believe that an entity could calculate a lifetime expected loss estimate[3]. Such an estimate could be based on specific projections for the current period and then an average loss rate for the more distant future.

5. With respect to (b) above, the notion of considering expected credit losses for a portion of the expected life of the financial assets in the impairment model means that the recognition of expected credit losses would take into account the early emergence pattern of losses for relevant asset classes.

6. The staff believes the objective of Alternative 2 as described in this section is conceptually consistent with the following stated objective of the FASB's proposed Update:

> *An entity shall recognize in net income at the end of each financial reporting period the amount of credit impairment related to all contractual amounts due for originated financial asset(s) that the entity does not expect to collect and all amounts originally expected to be collected for purchased financial asset(s) that the entity does not expect to collect.*

7. That is, the staff believes that the broad principle would be articulated very similarly to the objective in the proposed Update. However, as described above, it could potentially differ in the amount of credit loss that would be captured. The proposed Update contemplated a methodology for pools of financial assets whereby entities would apply a life loss rate to the principal balance of the pool

[3] See arguments supporting the lifetime expected loss calculation outlined in Agenda Paper 1B/Memorandum 69 of the 10-12 November 2010 joint meeting.

and immediately recognize credit impairment expense (or reversals of credit impairment expense) in net income. This alternative would capture a life loss for some, but not all, asset classes.

Description

8. This alternative would have the following features:

(a) *Amount of credit loss estimate*: Under this alternative, the estimate of expected credit losses at each reporting date would represent the amount of the credit losses expected to emerge that can be reliably estimated for a period that is either the full expected life of the financial assets, where feasible, or a portion of the expected life.

(i) For open portfolios, the staff believes the amount of the credit loss would be determined based on application of a loss rate to the principal balance of the pool at each reporting date. The loss rate would typically be based on historical loss experience as a starting point, and then would be adjusted for differences in the nature of the assets being evaluated, as well as changes in economic conditions. This adjustment would consider information beyond the reporting date that is reasonable and supportable. (However, the Boards have not yet discussed the techniques for determining loss rates or the exact measurement of the expected loss for both a pool of financial assets and individual financial assets, assuming both units of account will exist in the impairment model.)

(b) *Timing of recognition*: An entity would recognize all expected credit losses (and changes in expected credit losses) as determined above in the current period. This estimate would be updated in every reporting period, considering changes in the composition of the assets being evaluated, as well as changes in economic conditions.

Financial statement presentation

9. This alternative would be reflected in the financial statements as follows:

   (a) From a balance sheet perspective, the allowance for credit losses would represent management's best estimate of credit losses expected to emerge over a period for which losses can be reliably estimated (often up to the full expected life of the financial assets).

   (b) The carrying amount of the financial assets that are held for collection of contractual cash flows would represent management's best estimate at a given reporting date of the amount of cash flows expected to be collected after credit losses expected to emerge that can be reliably estimated (for a period that is either the full expected life of the financial assets, where feasible, or a portion of the expected life).

   (c) Upon transition, there would be an adjustment to bring the allowance balance to the expected credit loss amount described in this alternative. Thereafter, in each reporting period, the income statement would include an expense that reflects changes in the expected loss, with a corresponding adjustment of the allowance. Presumably, the loss rate and the portfolio balance will change at each reporting date, which would drive the changes in the estimate each period.

   (d) The allowance would always remain positive and could not carry a negative balance. A change in expectations could not result in reversing credit impairment unless it was previously recognized as a charge in net income.

   (e) Both favorable and adverse changes in expected credit losses would be recognized, so the model would be symmetrical.

Pros, Cons, and Challenges

Pros

10. *Addresses fundamental problems with current impairment model* As discussed earlier, many believe that the fundamental problem with the current impairment model under both U.S. GAAP and IFRS is that reserves for credit losses tend to be at their lowest level before an economic cycle trends downward and actual losses begin to emerge ("too little too late"). The basic elements of this model—the elimination of the probable threshold, lengthening of the loss coverage period relative to the current incurred loss model, and immediate recognition of the expected loss estimate (with current recognition of changes in the estimate)—achieves the fundamental objectives of earlier loss recognition of credit losses and a more accurate reflection of management's estimate of credit losses expected to emerge in the allowance balance.

11. *Accommodates open portfolios* Immediate recognition of expected losses does not require that a distinction be made between existing loans and new loans because it considers the portfolio at a point in time regardless of the age of the individual financial assets included in the portfolio.

12. *Reduced operational complexity* Recognizing both initial expected credit losses and subsequent changes in expectations immediately eliminates some of the complexity of a model that would require a time-proportionate approach. Also, lengthening the period to consider the period over which losses are expected to emerge relative to the incurred loss model but potentially not to the full expected life addresses existing problems with credit loss reserving while minimizing the operational burden of applying the model. Beyond the outer boundary in terms of how far into the future an entity can predict credit losses, any estimate of expected credit losses would need to default to statistical average losses. If losses generally emerge early for most asset classes, the staff questions the need to add complexity by requiring an incremental loss computation for the "tail" based on statistical average losses in order to capture a full life loss.

13. *Conveys information about loss emergence* As compared to Alternative 1 (immediate recognition of a full life loss for all asset classes, i.e. the FASB Exposure Draft approach), this alternative provides more information to users of financial statements about loss emergence patterns for the financial assets. That is, for longer-term financial assets for which the expected loss estimate would not typically cover the full expected life, the amount of the expected loss estimate would reflect consideration of historical loss emergence patterns in determining the amount of the credit losses expected for a time horizon shorter than the expected life. Alternative 1would not consider loss emergence patterns because it would require recognition of a full life loss in all cases. As compared to Alternative 4, this alternative would accelerate the recognition of losses for assets where losses typically emerge early.

14. *Reliability of loss estimate* Limiting the period for which losses are expected to emerge to a portion of the full expected life emergence period for longer-term assets will increase the reliability of the estimate because the longer the loss forecasting period, the greater the uncertainty that is introduced in the loss estimation process. Limiting the coverage period is responsive to the feedback received from most users of financial statements who oppose recognition of a life loss for all classes of financial assets primarily due to concerns about the reliability of life loss estimates.

Cons

15. *Does not convey economic information to users* Because losses do not occur in a single period, some believe immediate recognition may not be an accurate reflection of the economics of lending activity. However, unless the timing of the loss is known, allocation approaches attempting to show the relationship between impairment expense and interest revenue also may not provide an accurate reflection of the economics of lending activities.

16. *"Day 1" loss recognition* Some have expressed concern that an approach that requires immediate recognition of expected credit losses results in recognizing a

Day 1 loss. Others believe that this is not a compelling issue because, conceptually, in an open pool, there is no "day 1" (beginning date) or maturity date. Pools are fluid because loans are added and removed (via maturity) on an ongoing basis. Further, the allowance is not allocated to the loans within the pool, but rather held against the full pool at that point in time, so there is no loss upon origination or acquisition of any particular loan.

17. *Comparability* This approach may not result in comparable results across entities given that entities may have different interpretations of the losses that can be reliably estimated. Therefore, the coverage period inherent in the expected loss estimate may differ from entity to entity. In addition, entities will have different loss patterns for various asset classes based on the specific characteristics of the portfolio, underwriting standards, etc. Therefore, historical loss emergence patterns would be expected to differ somewhat across entities.

Alternative 4: Recognition of lifetime expected credit losses using a time-proportionate approach

Objective

18. The objective of this approach is to approximate (broadly) the main aspect of the IASB ED while giving operational concessions[4]. The main aspect of the IASB ED was to capture the relationship between interest income and loss expectations. The IASB ED resulted in initial losses being allocated over the life of an asset such that credit adjusted effective interest (in addition to contractual interest income) is presented in net income. Changes in expected losses were recognised immediately. The balance sheet amount always reflected the present value of the expected future cash flows on a financial asset discounted at the original (credit risk adjusted) effective interest rate.

[4] There is a trade off to giving operational concessions (such as a decoupled interest rate, not maintaining the initial EL estimate, and allowing entities to use an undiscounted EL estimate in a time-proportionate approach). For each operational concession that is given, the model moves further from the main aspect of the IASB ED.

Description

19. This model is based on the approach that the Expert Advisory Panel (EAP) put forward as addressing the operational difficulties of the IASB exposure draft *Amortised Cost and Impairment* (IASB ED) for open portfolios. This approach maintains the relationship between interest and loss expectations that was a fundamental aspect of the IASB ED. It also results in a balance sheet allowance that can be understood by users (as described further below).

20. A time-proportionate approach would have the following main features:

    (a) *Amount of credit loss estimate*: The credit loss estimate would be the full amount of the losses expected over the life of the portfolio of assets. However, the timing of recognition would depend on whether an asset is in a good book or in a bad book.

    (b) *Timing of recognition of credit losses*: The EL estimate is made at the end of each period for the assets in the portfolio at that date. As long as the assets are in the good book that expected loss (EL) estimate is then apportioned to the time period passed (ie ratio of weighted average age to weighted average life (WAL)). When there is a change in EL estimate the allowance account is adjusted to reflect the time-proportionate amount of that change in estimate. For the bad book, ELs are fully provided for (so when an asset, or group of assets, is moved to the bad book the lifetime ELs are recognised fully in the allowance account, as are the effects of any subsequent changes in EL estimates on the bad book).

Financial statement presentation

21. This alternative would be reflected in the financial statements as follows:

    (a) **Statement of financial position – Allowance account:** represents the EL as estimated at the reporting date apportioned to the time period that has passed for the good book *plus* the full lifetime EL for the bad book.

(b) **Statement of financial position – Carrying amount of asset:** represents the present value of all expected cash flows, excluding all expected credit losses (ie the IAS 39 amount) *less* the allowance account which will comprise all expected credit losses for the bad book and the expected credit losses as estimated at the reporting date apportioned to the time period passed for the good book.

(c) **Profit or loss:** Reflects the effect of allocating expected losses over the life of financial assets for the good book (rather than immediately recognizing them) so that the relationship between the interest rate on an asset and the expected credit losses is maintained (as was proposed in the ED). In more detail, in each period the income statement would reflect adjustments for the amount that would have otherwise been recorded up through the current period had the revised estimate been the initial estimate. The income statement would also include provision expense related to any incremental allowance required to be established due to the immediate recognition of credit losses (and changes in those estimates) for assets moved to the bad book.

(d) **Upon transition**: entities would have to establish as the allowance the target allowance balance.

Pros

22. *Addresses fundamental problems with current impairment model* Similar to Alternative 2, eliminating the incurred loss notion currently required under both U.S. GAAP and IFRS partially addresses this issue due to perceived accounting limitations to increasing reserves. Further, this model would incorporate forecasts and consider lifetime expected losses.

23. *Conveys information about the economics of lending activities to users* A primary reason for supporting recognition over time of expected credit losses is that it more appropriately reflects the economics of the lending activity. For this reason, many constituents (including the Basel Committee and the EAP) agreed

that expected losses should be recognized over the life of the assets. For a pool of financial assets, actual losses occur over the expected life of the pool; therefore, recognizing the expected credit losses over that expected life could provide a better matching of the timeframe over which losses occur.

24. *No "Day 1" loss* Because this approach would allocate estimated expected credit losses over the WAL of financial assets, there would be no immediate charge to earnings. This enables the carrying amount of the financial asset on day one to represent its fair value and prevents losses being recognized as a result of lending activities undertaken on market terms. Also allocating losses (ie not immediate recognition) would mitigate the concerns of many that immediate recognition would have significant implications on the required capital that an entity is required to maintain for regulatory purposes.

Cons

25. *Concern about deferring losses* **The IASB ED and IASB only redeliberations have not had an objective of setting a particular allowance level**. Some, including U.S. Banking Regulators, have expressed concern that an approach that would recognize expected credit losses over time would result in deferring losses for recognition in future periods. Constituents that have expressed support for an approach that would recognize expected credit losses over time have generally also supported imposing a minimum 'floor' amount. For example, by using a good / bad book distinction which stops allocation once a loan is considered bad (with the full lifetime expected losses being recognised), in effect, a floor is established. However, some are concerned that even under such an approach, in an early loss pattern scenario recognition of credit losses through a bad book overlay will occur when the losses occur, rather than *in advance* of when actual losses occur. For these types of early loss pattern scenarios, Alternative 5 may provide an acceptable method to combat concerns about insufficient allowance balances. However, it is noted that moving to an approach that focuses on the

adequacy of the allowance balance necessarily moves away from satisfying the objective in the IASB ED (see next paragraph).

26. *May not achieve objective of IASB ED* The objective of Model 4 is to (broadly) approximate the main aspect of the IASB ED; that is, to allocate losses in P&L over the life of the instrument considering the interest revenue was meant to compensate for those losses.

27. *Potential operational complexity* Some are concerned that an allocation approach would be operationally complex. An allocation approach in an open portfolio presents operational considerations. In addition to the WAL of the portfolio, entities would also need to calculate the weighted average age (WAA) of the portfolio so as to know at what point the portfolio is at each assessment date. Such calculations would involve tracking and retaining origination patterns and other data (including historical balance data). However, the EAP suggested this as an operational alternative that should be further investigated. This provides comfort that the operational challenges should be manageable (subject to further input from constituents). In addition, Model 4 requires good and bad books to be identified.

Model 5: Time-proportionate approach used when early loss pattern is known and reliable

28. This alternative is similar to Model 4, but would be used when an entity is able to determine (with reliable and supportable information) that a portfolio has a front-loaded loss pattern. When used, Model 5 would base the analysis on lifetime expected credit losses; however, an entity would use historical data to determine the loss pattern for a group of assets. There are at least two approaches that could be applied to accelerate loss recognition when a front-loaded loss pattern suggests such acceleration is appropriate (ie if the objective is to build up an allowance balance quicker or have a total allowance balance of (close to) 100% of expected losses over whatever time frame is described as the appropriate estimation period):

    (a) *Approach A:* notional sub-portfolios

(b) *Approach B:* separate EL estimates

Model 5 – Approach A: notional sub-portfolios

Objective

29. Because this is an overlay of Model 4, the mechanics would be the same as Model 4 (ie a time-proportionate approach) while taking into consideration early loss patterns. The objective of this approach is to build up an allowance account quicker than Model 4. The 'build up' each period is to the time-proportionate amount of the EL estimate. Because this is another modification to Model 4, it continues to move further away from the main aspect of the IASB ED (see paragraph 71).

Description

30. When a front-loaded loss pattern is known, that portfolio would be notionally sub-divided into two or more sub-portfolios to reflect distinct loss patterns over the life of an asset. As a result at least one sub-portfolio would have a shorter WAL than the entire portfolio which, in turn, may accelerate the recognition of expected losses in some scenarios (compared to Model 4). A bad book would continue to be used with the total ELs immediately recognised[5].

31. To describe the approach in a little more detail, assume an open portfolio with a WAL of 5 years. 95% of the lifetime EL is expected to occur in the first 2 years of the life, and the remaining 5% is expected in the final 3 years of the life. The open portfolio is divided into a 2-year portfolio and a 3-year portfolio. When loans are first issued, they are included as part of the 2-year portfolio. Once loans in that portfolio (that have not been written off or transferred to the bad book) have reached an age of 2 years, they are transferred to the 3-year portfolio.

32. A separate WAA is calculated for both the 2-year and 3-year portfolios.

[5] So all of the allocation discussions refer only to the 'good' portfolio.

33. A separate EL estimate is calculated for both the 2-year and 3-year portfolios. The EL estimate on both sub-portfolios would be the lifetime EL for *that* (synthetic) sub-portfolio. As a result, the 2-year portfolio EL estimate is not a 'true' lifetime EL estimate.

34. A separate time-proportionate allowance balance is calculated for both the 2-year and 3-year portfolios using the corresponding WAA and WALs. The 2-year EL estimate is allocated over 2 years in the 2-year portfolio and the 3-year EL estimate is allocated over 3 years in the 3-year portfolio. The time-proportionate allowance balances for the 2-year and 3-year portfolios are added together to determine the total allowance balance. Provision expense is calculated by taking into consideration any write-offs and transfers to the bad book in the current year and the remaining amount necessary to arrive at the calculated time-proportionate allowance balance.

35. This alternative would have the following features:

    (a) *Amount of credit loss estimate*: The amount of the expected credit losses would be a lifetime estimate based on the WAL of each sub-portfolio (eg for the 2-year portfolio, the EL estimate would be those expected to occur in the next 2 years). A separate estimate would be required for each sub-portfolio. The timing of recognition would depend on whether an asset is in the good book or in the bad book (similar to Model 4).

    (b) *Timing of recognition of credit losses*: Timing of recognition would be similar to Model 4. However, each sub-portfolio has a separate calculation based on different age and life, thereby accelerating the recognition of some expected losses.

Financial statement presentation

36. The staff believe this would be the same as for Model 4 (at least as it relates to what the amounts represent). However, the amounts presented in the financial statements will differ slightly from Model 4 because of the more granular analysis

of the entire portfolio and using a shorter than lifetime EL estimate for the shorter-term sub-portfolio. The allowance is built up to the time-proportionate amount quicker than, but not necessarily to the same amount as, Model 4 in the earlier years of the portfolio (see 'Con' below relating to the Allowance balance, and the Illustrations below).

Pros

37. *Similar to Model 4* Because this model is an overlay of Model 4, it has the same pros as previously identified for Model 4.

38. *Accelerates losses in an early loss pattern* Because this model takes a more detailed look at the loss pattern of an entire portfolio, loss recognition can be accelerated (thereby reducing the concern from Model 4 that losses are deferred)[6].

Cons

39. *Potential operational complexity and burdens* Again, because this model is an overlay of Model 4, it retains some of the same operational complexities including concerns with a floor, bad book approach, calculations of WAAs, etc. Further, there would be additional complexity in formulating guidance for when assets should be split into notional sub-portfolios and how this should be done (which would be expected to decrease comparability between entities). Related to that point, it may also be operationally complex to determine how to treat any change in the early loss pattern (eg when data suggests subsequently that 95% of losses are expected to occur in the first 3 years of the portfolio instead of 2). Also, by having to calculate separate EL estimates and ages, entities would have increased operational burden (as opposed to only calculating one estimate per portfolio).

40. *Allowance balance not as high as may have been anticipated* In a steady state scenario the accumulation of the allowance balance can be counterintuitive and not result in an allowance build up as quickly as the Boards may have anticipated.

[6] Whether this is in fact the case varies by the life of portfolios and by how extreme the difference in loss rates is between sub-portfolios.

For example, assume a portfolio with an overall WAL of 5 years that is split into two sub portfolios of 2 and 3 years. If the WAA of a 2-year portfolio remains around 1 year (eg in a steady-state open portfolio scenario), the allowance balance for that 2-year portfolio would always be only 50% of the total EL estimate for that portfolio. And for the 3-year portfolio similarly only around 50% of the 3 year ELs would be provided for. So the allowance account is not significantly front-loaded relative to Model 4 (at least for a steady state open portfolio). Also the EL estimate is only based on the ELs for those loans currently in the sub-portfolios – so the full lifetime ELs are not accounted for a loan from inception. There is a lag effect in terms of when the ELs of loans are recognised in the 'later' sub-portfolios (so in the fact pattern described a new loan's ELs are only considered in the 3 year pool analysis after year 2). These factors mean that the allowance balance may not be as great as Model 4 or Model 2 in some situations.

41. *Lack of comparability* One concern with this approach, similar to Model 2, would be how to determine the appropriate early loss period, and when using that pattern is required. If guidance is not provided on how to determine when an early loss period can be identified (similar to providing guidance on what is the 'coverage period' in Model 2), then different entities could use different loss periods for similar types of loans. This leads to decreased comparability among financial statements.

42. *Not conceptually consistent with IASB ED* Because the EL estimate on both sub-portfolios would be the lifetime EL for that portfolio, the shorter-term portfolio estimate is not a 'true' lifetime EL estimate (eg estimate over the life of the entire portfolio before dividing into sub-portfolios). In addition, it focuses solely on creating an allowance balance and allocation of losses, as opposed to the relationship of those losses to interest income. A disconnect is created between the life of the loans (being the period over which interest income is recognised) and the period over which allowance balances are accumulated. Therefore, as

mentioned above, this approach moves away from the concepts underlying the IASB ED or Model 4.

Model 5 – Approach B: separate EL estimates

Objective

43. Because this is an overlay of Model 4, the mechanics would be the same (ie a time-proportionate approach) while taking into consideration early loss patterns. In doing so, this approach may result in building up an allowance balance quicker, and to a higher amount in a steady state and some other scenarios, than Models 4, 5A, and 2. Because this is another modification to Model 4, it continues to move further away from the main aspect of the IASB ED (see paragraph 71).

Description

44. As with Model 5A, this alternative is based on Model 4 with an overlay to deal with front-loaded ELs. However, unlike Model 5A, this approach would not divide the portfolio into separate sub-portfolios. Instead, it would adjust the EL allocation for the good book based on the timing of expected losses. A single WAA for the entire portfolio is calculated. If the WAA is greater than the early loss period (eg 2 years for the previous example), then the entire 2-year EL would be recognised. Incrementally, a time-proportionate amount of the three-year EL would be recognised. The total of the 2-year EL and the time-proportionate amount of the 3-year EL would represent the target allowance balance for the good book. If the WAA of the portfolio has not yet reached 2 years, then only a time-proportionate amount of the 2-year EL is recognised (with the WAL used in that calculation being 2 years). A bad book would continue to be used.

45. To describe the approach in a little more detail, assume an open portfolio with a WAL of 5 years, total lifetime EL of 100 CU, and the same loss pattern as described above. Two EL estimates are calculated:

(a) An EL estimate for the next 2 years (when 95% of the losses are expected to occur) of 95 CU – this EL estimate would be required under Model 2; and

(b) An EL estimate for the final 3 years (when 5% of the losses are expected to occur) of 5 CU – this EL estimate would be the difference between a lifetime EL and the first 2-year EL estimate calculated above.

46. A time-proportionate allowance balance is separately calculated on the 2-year EL estimate and the 3-year EL estimate. For the allowance balance using the 2-year EL estimate, the WAA up to a total of 2.0 is used (because this portion of the losses are expected to occur within a 2 year period). When the WAA is greater than 2.0, 100% of the 2-year EL estimate (ie 2 year WAA / 2 year WAL = 100%) is added to the proportion of the 3-year EL estimate to calculate a total time-proportionate allowance balance.

47. For the allowance balance using the 3-year EL estimate, the WAA over 2.0 is used with the total WAL of 5 years. If the WAA of the total portfolio is less than 2.0, the percentage of WAA to WAL is only applied to the 2-year EL estimate.

48. For example, using the same information as above, assume the following scenarios:

(a) WAA of the total portfolio is 1.8 years. The total allowance balance is calculated as: 95 EL estimate X 1.8 WAA / 2.0 WAL = 85.5 allowance balance

(b) WAA of the total portfolio is 2.5 years. The total allowance balance is calculated as: (95 EL estimate X 2.0 WAA / 2.0 WAL) + (5 EL estimate X 2.5 WAA / 5 WAL) = 95 + 2.5 = 97.5 allowance balance.

49. Provision expense is calculated by taking into consideration any write offs and transfers to the bad book in the current year and the remaining amount necessary to arrive at the calculated time-proportionate allowance balance.

50. This alternative would have the following features:

(a) *Amount of credit loss estimate*: The amount of the expected credit losses would be a lifetime estimate divided between the early loss period and the remaining life. The timing of recognition would depend on whether an asset is in the good book or in the bad book (similar to Model 4).

(b) *Timing of recognition of credit losses*: Timing of recognition would be similar to Model 4 in that a time-proportionate amount is recognised each period. However, because there are two separate EL estimates, and one has a shorter life, and therefore potentially a higher percentage of WAA to WAL, the recognition of EL is accelerated.

Financial statement presentation

51. The staff believes the nature of the components would be the same as for Model 4. However, the amounts will differ from Model 4 because of the more granular analysis of the entire portfolio. The allowance is built up quicker and maintained at a higher amount than under Model 4 when EL are expected to occur earlier in the life of the instruments.

Pros

52. *Similar to Model 4 and 5A* Because this model is an overlay of Model 4, it has the same pros as previously identified for Models 4 and 5A.

53. *Higher allowance balance maintained* Because this model takes a more detailed look at the loss pattern of an entire portfolio, loss recognition can be accelerated and because only one WAA is used, the percentage of WAA to WAL is higher for the shorter EL estimate period (the early loss period). As a result, the allowance balance will be higher than under Models 4 and 5A, and when the WAA is greater than the early loss period, it will be higher than Model 2. Having a higher allowance balance is a 'pro' if the objective is to have an allowance balance established that at least equals expected losses by the time they occur. Note that the IASB ED did not have such an objective.

Cons

54. *Potential operational complexity and burdens and lack of comparability* Again, because this model is an overlay of Model 4, it retains the same operational complexities including concerns with a floor, bad book approach, calculations of WAAs, etc. As with Model 5A, by having to calculate separate EL estimates, entities would have increased operational burden (as opposed to only calculating one estimate per portfolio). Again, as with Model 5A and 2, creating guidance to define how to determine what is the early loss period would be necessary in order to create comparability between entities.

Illustrations

55. The following examples will be used to illustrate Models 2, 4, 5A, and 5B and the results (both allowance balance and periodic provision expense). Only the results (both numerically and graphically) are shown in the body of the paper. More details on the amounts issued and EL estimates at each period are provided in the Appendix.

56. The examples below are provided with the following general assumptions:

    (a) Open pool of loans being built up and then run down

    (b) Expected life of entire portfolio is always 5 years

    (c) 95% of losses are expected to occur evenly over the first 2 years

    (d) 5% of losses are expected to occur evenly over last 3 years

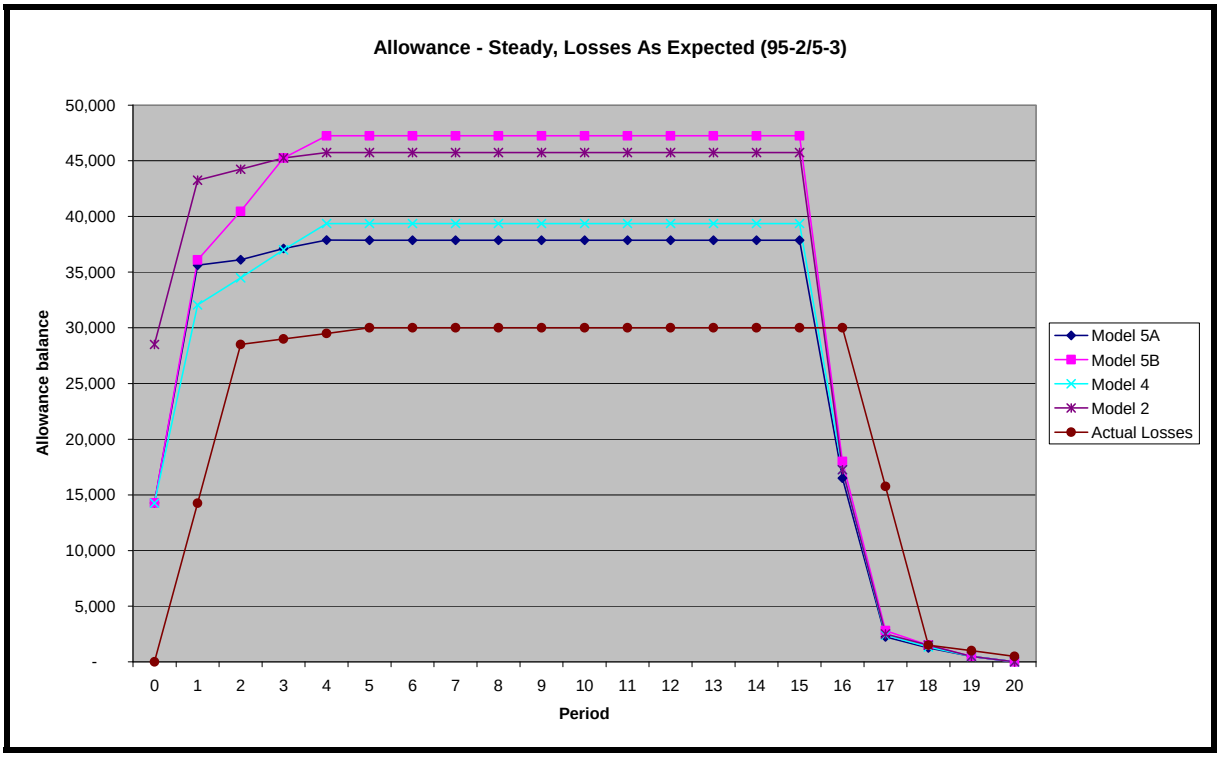
    (e) Loans are always issued / written off / transferred to the bad book / transferred to another portfolio on the last day of the period

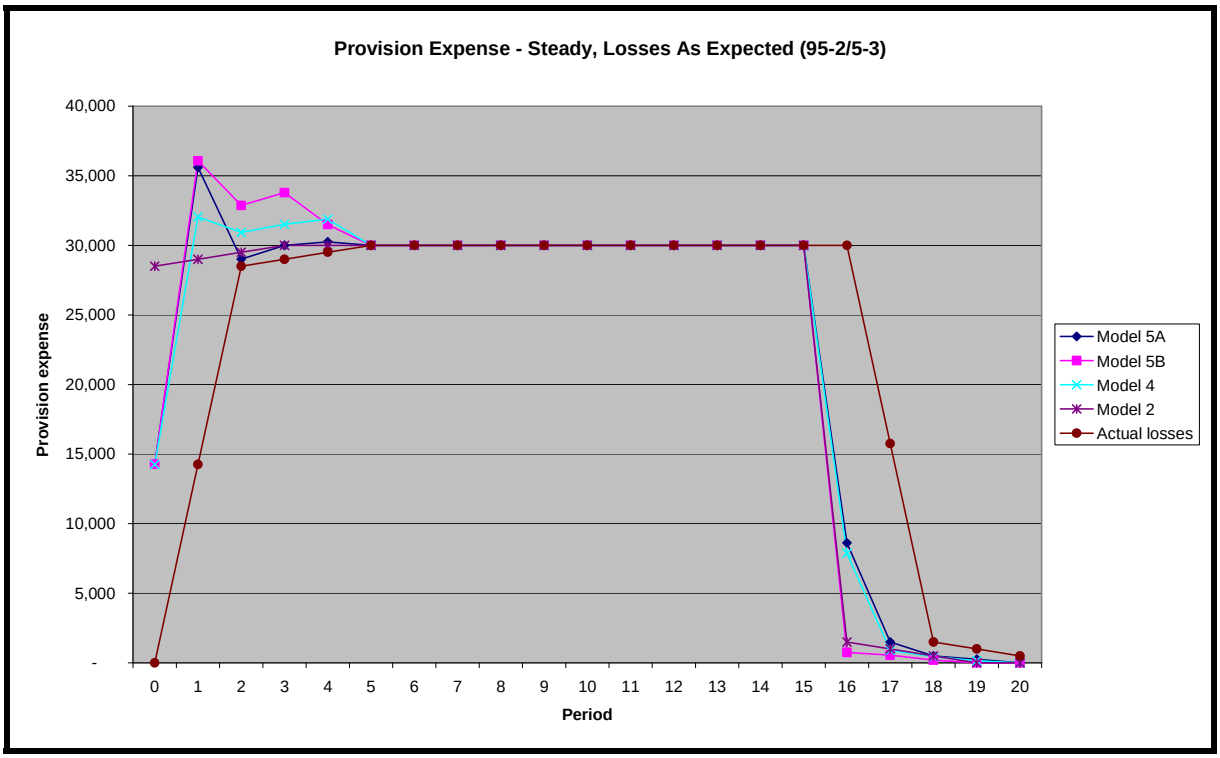
    (f) Amount transferred to bad book is the expected loss for the single upcoming year (this is a simplifying assumption made for illustrative purposes only)

57. The first example also assumes a build up to a steady state (ie same amount of loans issued every period) and that losses occur exactly as expected. The results under each of the models when losses occur exactly as expected are as follows:

Illustration 1 – Steady state, Losses occur as expected										
	Model 5A		Model 5B		Model 4		Model 2			
T	Allowance Balance	Provision Expense	Allowance Balance	Provision Expense	Allowance balance	Provision expense	Allowance Balance	Provision Expense		Actual Losses
0	14,270	14,270	14,270	14,270	14,259	14,259	28,500	28,500		-
1	35,625	35,605	36,095	36,075	32,053	32,044	43,250	29,000		14,250
2	36,126	29,001	40,465	32,871	34,488	30,936	44,250	29,500		28,500
3	37,126	30,000	45,250	33,785	37,000	31,512	45,250	30,000		29,000
4	37,876	30,250	47,250	31,500	39,375	31,875	45,750	30,000		29,500
5	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
6	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
7	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
8	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
9	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
10	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
11	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
12	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
13	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
14	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
15	37,875	30,000	47,250	30,000	39,375	30,000	45,750	30,000		30,000
16	16,500	8,625	18,000	750	17,250	7,875	17,250	1,500		30,000
17	2,250	1,500	2,800	550	2,400	900	2,500	1,000		15,750
18	1,250	500	1,500	200	1,350	450	1,500	500		1,500
19	500	250	500	-	500	150	500	-		1,000
20	-	-	-	-	-	-	-	-		500
Total Provision Expense All periods (0-20)	480,000	All	480,000	All	480,000	All	480,000			
Middle periods (5-15)	330,000	Middle	330,000	Middle	330,000	Middle	330,000			
Beginning periods (0-4)	139,126	Beginning	148,500	Beginning	140,625	Beginning	147,000			
Ending periods (16-20)	10,875	End	1,500	End	9,375	End	3,000			

58. Graphically, the results for a steady state when losses occur as expected is shown as follows:

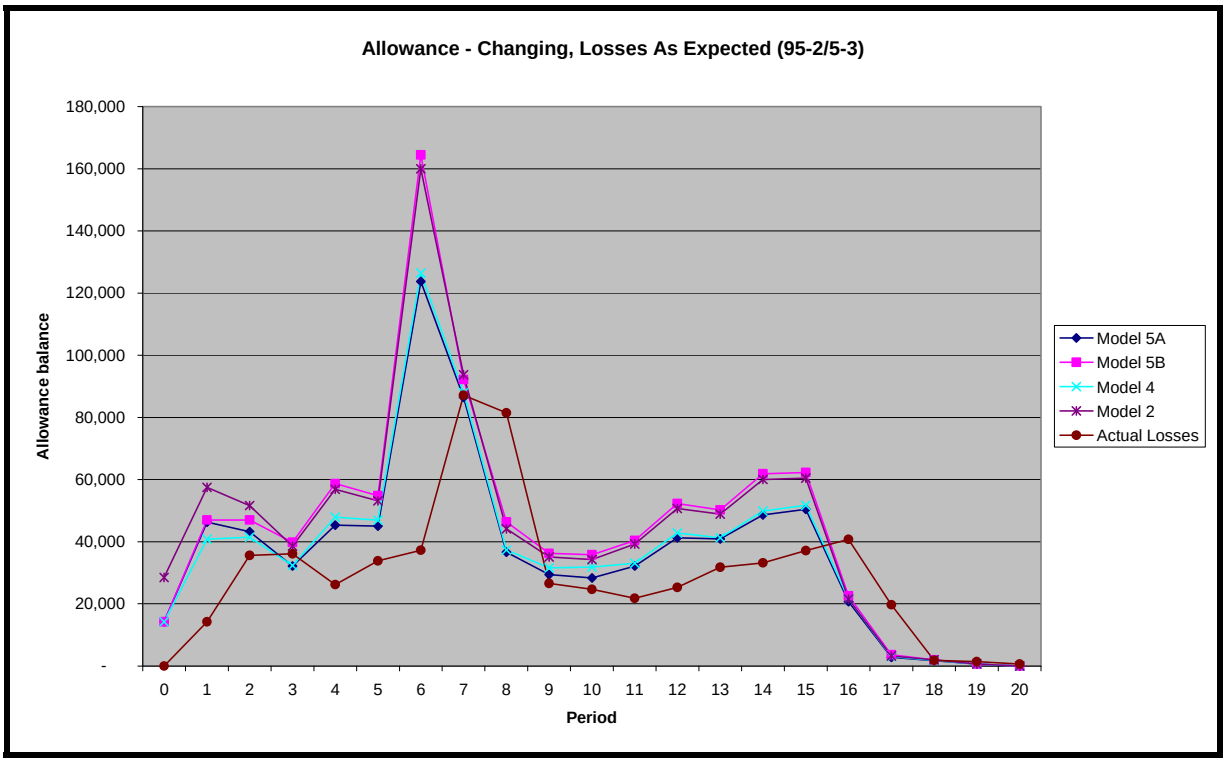


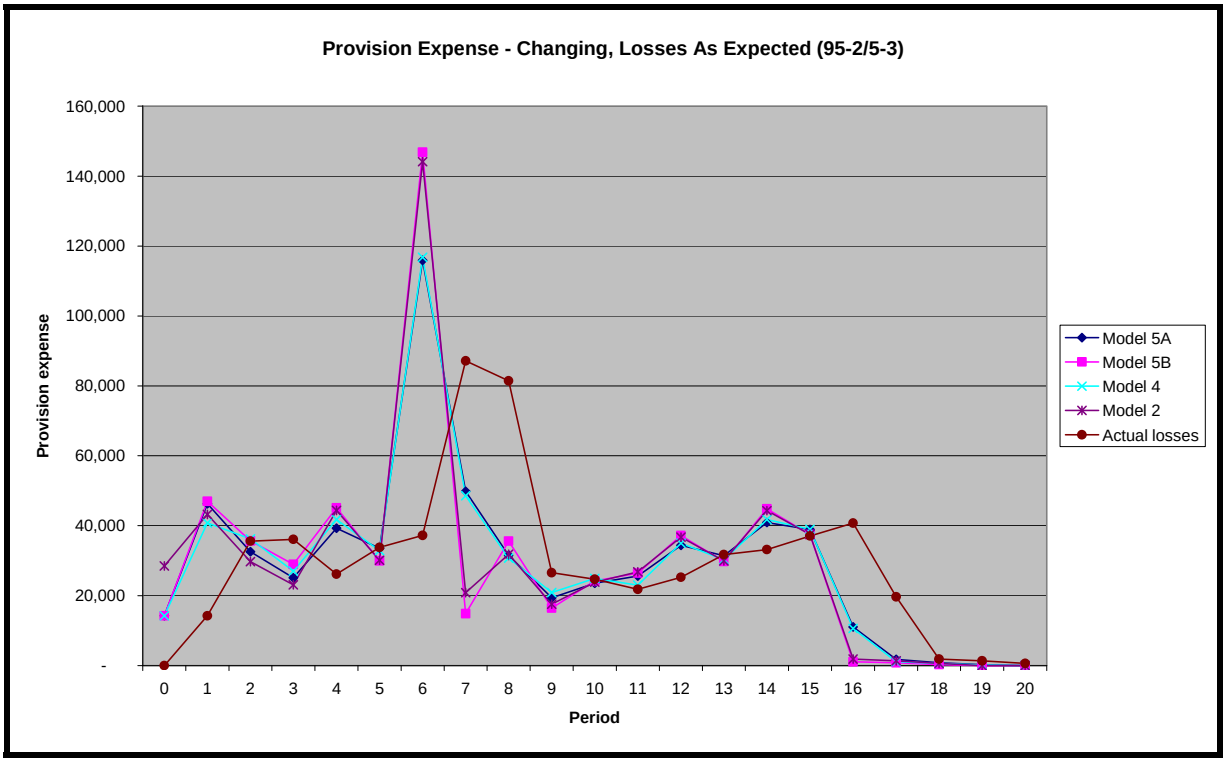


59. The second illustration (in addition to the general assumptions above) also assumes that losses occur exactly as expected, but no longer in a steady state (portfolio balance changes from period to period). The results under each of the models using these assumptions are as follows:

Illustration 2 – Changing portfolio, Losses occur as expected										
	Model 5A		Model 5B		Model 4		Model 2			
T	Allowance Balance	Provision Expense	Allowance Balance	Provision Expense	Allowance balance	Provision expense	Allowance Balance	Provision Expense		Actual Losses
0	14,270	14,270	14,270	14,270	14,259	14,259	28,500	28,500		-
1	46,313	46,293	46,973	46,953	40,838	40,830	57,500	43,250		14,250
2	43,251	32,563	46,993	35,645	41,454	36,240	51,625	29,750		35,625
3	32,199	25,073	39,779	28,911	32,332	27,003	38,625	23,125		36,125
4	45,317	39,306	58,671	45,080	47,886	41,742	56,813	44,375		26,188
5	45,042	33,537	54,824	29,965	46,940	32,866	53,125	30,125		33,813
6	123,732	115,940	164,432	146,858	126,473	116,783	160,000	144,125		37,250
7	86,478	49,871	92,175	14,869	87,963	48,615	93,725	20,850		87,125
8	36,612	31,559	46,331	35,580	37,292	30,754	44,100	31,800		81,425
9	29,443	19,382	36,242	16,461	31,626	20,884	35,100	17,550		26,550
10	28,346	23,577	35,782	24,215	31,860	24,909	34,275	23,850		24,675
11	32,144	25,624	40,391	26,434	33,062	23,027	39,250	26,800		21,825
12	41,276	34,407	52,277	37,161	42,760	34,973	50,700	36,725		25,275
13	40,887	31,399	50,256	29,766	41,256	30,284	48,888	29,975		31,788
14	48,621	40,896	61,890	44,796	49,835	41,741	60,050	44,325		33,163
15	50,437	38,916	62,252	37,462	51,720	38,984	60,450	37,500		37,100
16	20,725	11,050	22,540	1,050	21,581	10,624	21,563	1,875		40,763
17	2,808	1,771	3,616	763	3,045	1,152	3,250	1,375		19,688
18	1,697	764	2,000	259	1,817	647	2,000	625		1,875
19	625	303	625	-	625	183	625	-		1,375
20	-	-	-	-	-	-	-	-		625
Total Provision Expense All periods (0-20)	616,500	All	616,500	All	616,500	All	616,500			
Middle periods (5-15)	445,108	Middle	443,568	Middle	443,821	Middle	443,625			
Beginning periods (0-4)	157,505	Beginning	170,859	Beginning	160,074	Beginning	169,000			
Ending periods (16-20)	13,888	End	2,073	End	12,605	End	3,875			

60. Graphically, the results for a non-steady state when losses occur as expected is shown as follows:

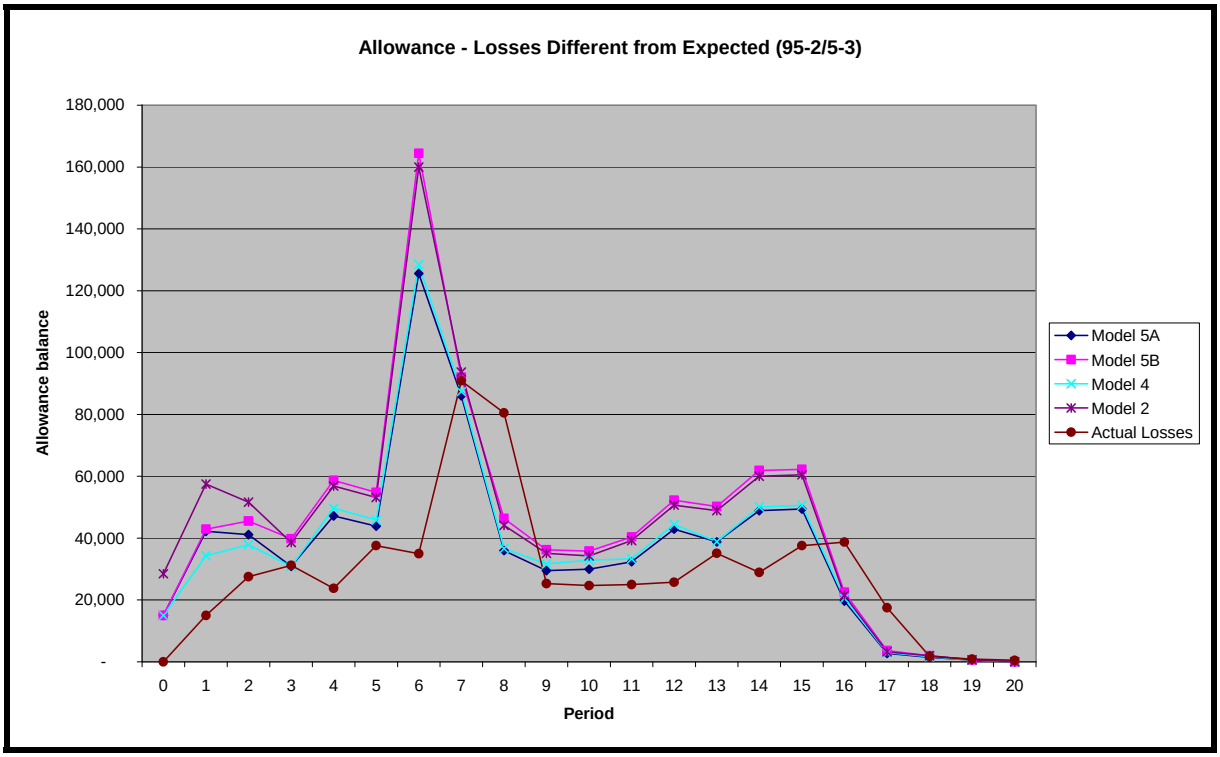


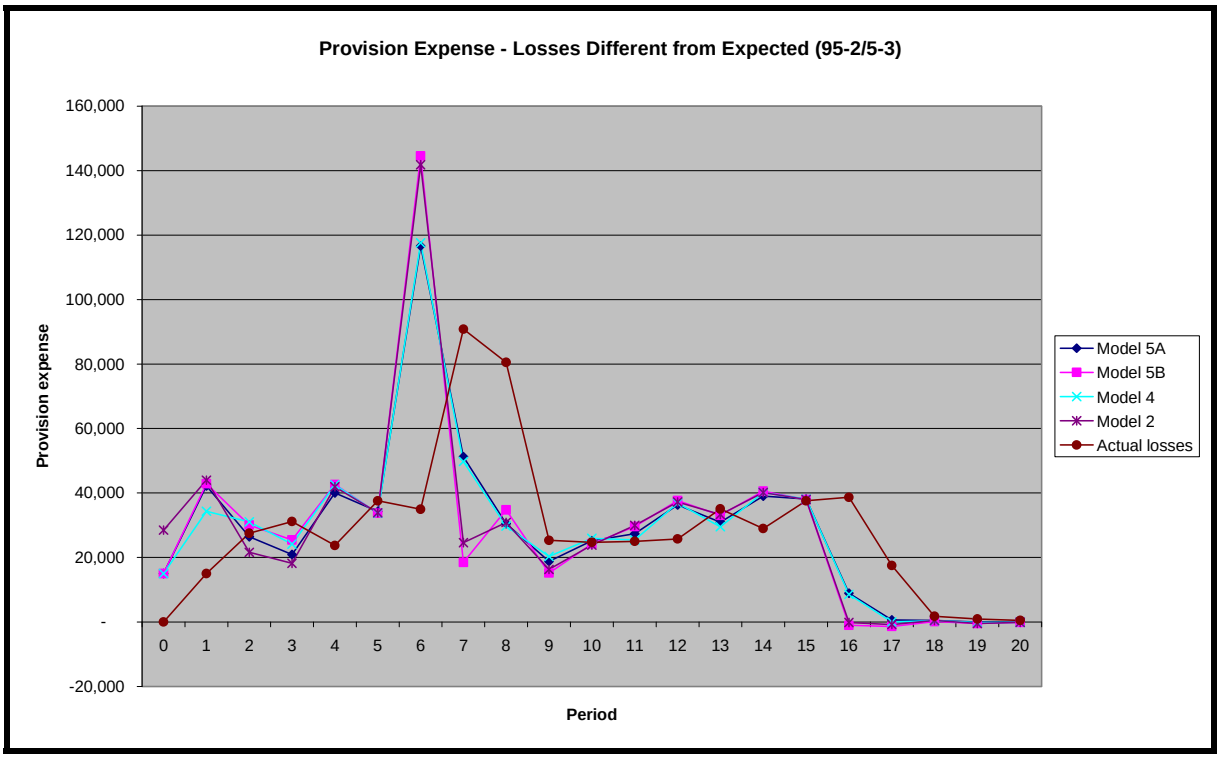


61. A third illustration builds on the general assumptions above, but also assumes that losses do NOT occur exactly as expected. As a simplifying assumption, the expected loss estimate was not updated to reflect the changing loss patterns as would occur in practice. Therefore, the allowance balance under all approaches appears skewed when compared to actual losses in certain periods. The results under each of the models using these assumptions are as follows:

Illustration 3 – Changing portfolio, Losses do NOT occur as expected										
	Model 5A		Model 5B		Model 4		Model 2			
T	Allowance Balance	Provision Expense	Allowance Balance	Provision Expense	Allowance balance	Provision expense	Allowance Balance	Provision Expense		Actual Losses
0	15,018	15,018	15,018	15,018	15,008	15,008	28,500	28,500		-
1	42,250	42,232	42,931	42,912	34,341	34,333	57,500	44,000		15,000
2	41,138	26,388	45,506	30,075	37,903	31,062	51,625	21,625		27,500
3	30,896	20,959	39,778	25,472	30,867	24,164	38,625	18,200		31,200
4	47,179	40,033	58,670	42,643	49,633	42,516	56,813	41,938		23,750
5	43,898	34,269	54,828	33,708	45,825	33,742	53,125	33,863		37,550
6	125,590	116,642	164,437	144,559	128,457	117,581	160,000	141,825		34,950
7	86,008	51,267	92,064	18,477	87,364	49,757	93,725	24,575		90,850
8	35,985	30,477	46,330	34,766	36,641	29,777	44,100	30,875		80,500
9	29,501	18,816	36,242	15,213	31,638	20,297	35,100	16,300		25,300
10	29,972	25,172	35,782	24,239	32,859	25,921	34,275	23,875		24,700
11	32,369	27,397	40,392	29,610	33,313	25,455	39,250	29,975		25,000
12	42,936	36,317	52,279	37,638	44,438	36,875	50,700	37,200		25,750
13	38,774	30,938	50,257	33,078	38,854	29,515	48,888	33,288		35,100
14	48,873	39,049	61,886	40,579	50,076	40,173	60,050	40,113		28,950
15	49,409	38,136	62,252	37,966	50,617	38,140	60,450	38,000		37,600
16	19,629	8,920	22,539	- 1,013	20,461	8,544	21,563	- 188		38,700
17	2,742	613	3,616	- 1,423	2,994	34	3,250	- 813		17,500
18	1,466	474	2,000	134	1,678	433	2,000	500		1,750
19	583	17	625	- 475	598	- 179	625	- 475		900
20	-	- 83	-	- 125	-	- 98	-	- 125		500
Total Provision Expense All periods (0-20)		603,050	All	603,050	All	603,050	All	603,050		
Middle periods (5-15)		448,480	Middle	449,832	Middle	447,234	Middle	449,888		
Beginning periods (0-4)		144,629	Beginning	156,120	Beginning	147,083	Beginning	154,263		
Ending periods (16-20)		9,941	End	-2,902	End	8,733	End	-1,100		

62. Graphically, the results in a non-steady state when losses do NOT occur as expected is shown as follows:





Takeaways from illustrations

63. The analysis of each of the models has been described above. Some further takeaways resulting from the illustrations above are in the following paragraphs.

64. *Generalisations are hard to make* Because of the infinite number of assumptions and fact patterns that can be used in applying the models, deriving accurate generalisations is not practical. For example, if the early loss period were actually 3 years and the later loss period was only 2 years, different information would be provided. In addition, if the expected life was 10 years (or 20 years, etc) and the early loss period was still 2 or 3 years, you may obtain different general results. Also, how pronounced the front-loading is affects the relative outcomes. Further, if there were more or less amounts added to the portfolio each period (changing the balances used above), the weighted average age could also change providing different results. **So, the following observations can only be related to the illustrations above and cannot be considered to hold true in all scenarios**.

65. *Steady state results* In a steady state, all models result in the same provision expense. However, Model 5B has the highest allowance account (because it is based on a lifetime expected loss estimate), followed by Model 2. The importance of the allowance account in determining the Boards' preferences obviously depends on the objective that they believe is more important (ie adequacy of the allowance account or, for the IASB, broadly approximating the IASB ED and its associated objectives).

66. *Model 5B results in very similar information to Model 2* When assuming an early loss period of 2 years where 95% of losses occur, the results (both provision expense and allowance balance) are similar after the build up period. In these illustrations, when the WAA is greater than 2, then the allowance of Model 5B is greater than Model 2 because Model 5B is based on a lifetime expected loss estimate.

67. *Model 5A may not be an acceleration of losses as compared to Model 4* Under Model 5A, in many periods in both the steady state scenario and the changing

portfolio balance scenario, the allowance balance approximates or is less than the balance under Model 4. Therefore, Model 5A does not appear to be an acceleration of losses relative to Model 4. Even in a steady state scenario, new loans are being added to the portfolio and early loss emergence patterns would suggest that accelerated loss recognition should result for those loans.

68. *Provision expense for models* Other than for a steady state, the provision expense for all models follows the same general pattern in the middle periods. The pattern depends on the expected loss estimate as well as actual losses during the period. Models 5B and 2 have a little earlier recognition for losses than 5A and 4.

69. *Interest income* The main focus of the recent joint Board discussions has been the amount of the allowance balance. It is noted that the IASB ED sought to reflect a relationship between the timing of EL recognition and interest income – Model 4 still aims to broadly achieve this objective. Models 2, 5A and 5B upset the relationship between interest income and EL recognition by recognising ELs over a period shorter than the life of the asset. Some staff therefore believe that it is inappropriate to overemphasise the adequacy of the allowance as the basis for selecting a preferred impairment model.

Closing

70. Given the analysis and the discussions held to date, the staff agrees that Model 2 is operationally less complex. The staff notes that not all loss patterns are early loss patterns, and believes that in those situations, using a Model 2 approach would not meet the objective of trying to allocate losses over the same period (ie the life of the instrument) in which the interest revenue was meant to compensate for those losses. However, the staff also notes that if the objective of the Boards is to maintain an allowance balance that represents 100% of all EL, then Model 4 would not meet that objective including, but not only, in an early loss pattern scenario.

71. As mentioned in paragraph 18, the staff notes that the objective of the Model 4 (which the IASB has been discussing during its redeliberations) is to broadly approximate the main aspect of the original IASB ED while making it operationally less complex. There is a trade-off though to making the model operationally easier. As soon as modifications start to be made to the principles and guidance of the IASB ED, the results start to move away from what they would have been under the IASB ED. In other words, because a credit-cost adjusted effective interest rate is no longer being calculated, interest revenue recorded in future periods may not reflect the effective return of the portfolio. Model 4 tries to replicate the credit-cost adjusted effective interest rate notion by recognising a time-proportionate amount of the expected loss estimate. Models 5A and 5B move even further from the IASB ED by using an accelerated pattern (and therefore interest income in future periods will be even higher than under Model 4) – they would no longer approximate the IASB ED.

72. Therefore, the staff believes that if the objective of the Boards is to, as closely as possible, reflect the economics of the lending transaction (ie that the interest charged on a product is meant to cover losses on similar products over the life of the products), then Model 4 would be most appropriate.

73. But, if the objective of the Boards is to have the allowance balance represent 100% of the EL estimate (even if that estimate is over a period shorter than the life time), then Models 2 and 5B would be more appropriate. Of these Model 2 would be less complex operationally.

Appendix

A1. The following provides more details for the estimates used to calculate the results in the illustrations above, and provided to help understand how the results were calculated. The assumptions used are described in paragraphs 56, 57, 59 and 61. Only periods 5 through 9 are presented below.

Illustration 1 in Paragraph 57 - Steady state, Losses occur as expected - Models 5B, 4, and 2

Assumptions														Results					
														Model 5B		Model 4		Model 2	
t	Amount BOY	Amount repaid EOY	Amt to bad book	Amount issued EOY	Amount EOY	2-Yr EL	3-Yr EL	EL at EOL	Bad Book EL	Default	WAL for 2-Yr EL	WAL for total port	WA A	Allow Bal	Prov Exp	Allow Bal	Prov Exp	Allow Bal	Prov Exp
	A	B	C	D	E = A - B - C + D	F	G	H = F + G	I = C	J	K	L	M	N = (calc based on M) + I	O = N - (N(t-1) - J)	P = (M / L x H) + I	Q = P - (P(t-1) - J)	R = F + I	S = R - (R(t-1) - J)
5	4,868,750	970,000	30,000	1,000,000	4,868,750	15,750	3,000	18,750	30,000	30,000	2	5	2.50	47,250	30,000	39,375	30,000	45,750	30,000
6	4,868,750	970,000	30,000	1,000,000	4,868,750	15,750	3,000	18,750	30,000	30,000	2	5	2.50	47,250	30,000	39,375	30,000	45,750	30,000
7	4,868,750	970,000	30,000	1,000,000	4,868,750	15,750	3,000	18,750	30,000	30,000	2	5	2.50	47,250	30,000	39,375	30,000	45,750	30,000
8	4,868,750	970,000	30,000	1,000,000	4,868,750	15,750	3,000	18,750	30,000	30,000	2	5	2.50	47,250	30,000	39,375	30,000	45,750	30,000
9	4,868,750	970,000	30,000	1,000,000	4,868,750	15,750	3,000	18,750	30,000	30,000	2	5	2.50	47,250	30,000	39,375	30,000	45,750	30,000

Illustration 1 in Paragraph 57 - Steady state, Losses occur as expected - Models 5A

Assumptions																						Results	
2 - Year Portfolio											3 - Year Portfolio											Model 5A	
t	Amount BOY	Amount to 3-yr EOY	To Bad Book	Amount issued EOY	Amount EOY	EL on 2-Yr portfolio	Bad Book EL	Defaults	WA L	WAA	Amount BOY	Amount repaid EOY	To Bad Book	Amount from 2-yr EOY	Amount EOY	EL on 3-yr Port	Bad Book EL	Defaults	WAL for 3-yr	WAA	Allow Bal	Prov Exp
	A	B	C	D	E = A - B - C + D	F	G = C	H	I	J	K	L	M	N = B	O = K - L - M + N	P	Q = M	R	S	T	U = (J / I x F) + (T / S x P) + (G + Q)	V = U - (U(t-1) - (H + R))
5	1,957,250	971,500	28,500	1,000,000	1,957,250	14,250	28,500	28,500	2	1.00	2,911,500	970,000	1,500	971,500	2,911,500	1,500	1,500	1,500	3	1.50	37,875	30,000
6	1,957,250	971,500	28,500	1,000,000	1,957,250	14,250	28,500	28,500	2	1.00	2,911,500	970,000	1,500	971,500	2,911,500	1,500	1,500	1,500	3	1.50	37,875	30,000
7	1,957,250	971,500	28,500	1,000,000	1,957,250	14,250	28,500	28,500	2	1.00	2,911,500	970,000	1,500	971,500	2,911,500	1,500	1,500	1,500	3	1.50	37,875	30,000
8	1,957,250	971,500	28,500	1,000,000	1,957,250	14,250	28,500	28,500	2	1.00	2,911,500	970,000	1,500	971,500	2,911,500	1,500	1,500	1,500	3	1.50	37,875	30,000
9	1,957,250	971,500	28,500	1,000,000	1,957,250	14,250	28,500	28,500	2	1.00	2,911,500	970,000	1,500	971,500	2,911,500	1,500	1,500	1,500	3	1.50	37,875	30,000

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Illustration 2 in Paragraph 59 – Changing, Losses occur as expected - Models 5B, 4, and 2

Assumptions														Results					
														Model 5B		Model 4		Model 2	
t	Amount BOY	Amount repaid EOY	Amt to bad book	Amount issued EOY	Amount EOY	2-Yr EL	3-Yr EL	EL at EOL	Bad Book EL	Defaults	WAL for 2-Yr EL	WAL for total port	WAA	Allow Bal	Prov Exp	Allow Bal	Prov Exp	Allow Bal	Prov Exp
	A	B	C	D	E = A - B - C + D	F	G	H = F + G	I = C	J	K	L	M	N = (calc based on M) + I	O = N - (N(t-1) - J)	P = (M / L x H) + I	Q = P - (P(t-1) - J)	R = F + I	S = R - (R(t-1) - J)
5	5,604,000	970,000	37,250	1,000,000	5,596,750	15,875	3,375	19,250	37,250	33,813	2	5	2.52	54,824	29,965	46,940	32,866	53,125	30,125
6	5,596,750	1,455,000	87,125	5,000,000	9,054,625	72,875	9,250	82,125	87,125	37,250	2	5	2.40	164,432	146,858	126,473	116,783	160,000	144,125
7	9,054,625	970,000	81,425	600,000	8,603,200	12,300	6,400	18,700	81,425	87,125	2	5	1.75	92,175	14,869	87,963	48,615	93,725	20,850
8	8,603,200	727,500	26,550	1,000,000	8,849,150	17,550	4,600	22,150	26,550	81,425	2	5	2.42	46,331	35,580	37,292	30,754	44,100	31,800
9	8,849,150	1,455,000	24,675	500,000	7,869,475	10,425	2,050	12,475	24,675	26,550	2	5	2.79	36,242	16,461	31,626	20,884	35,100	17,550

Illustration 2 in Paragraph 59 - Changing, Losses occur as expected - Models 5A

Assumptions																					Results	
2 - Year Portfolio											3 - Year Portfolio										Model 5A	
t	Amount BOY	Amount to 3-yr EOY	To Bad Book	Amount issued EOY	Amount EOY	EL on 2-Yr port	Bad Book EL	Defaults	WAL	WAA	Amount BOY	Amount repaid EOY	To Bad Book	Amount from 2-yr EOY	Amount EOY	EL on 3-yr Port	Bad Book EL	Defaults	WAL for 3-yr	WAA	Allow Bal	Prov Exp
	A	B	C	D	E = A - B - C + D	F	G = C	H	I	J	K	L	M	N = B	O = K - L - M + N	P	Q = M	R	S	T	U = (J / I x F) + (T / S x P) + (G + Q)	V = U - (U(t-1) - (H + R))
5	2,207,250	728,625	35,625	1,000,000	2,443,000	14,250	35,625	32,063	2	1.00	3,396,750	970,000	1,625	728,625	3,153,750	1,250	1,625	1,750	3	1.60	45,042	33,537
6	2,443,000	1,457,250	85,500	5,000,000	5,900,250	71,250	85,500	35,625	2	1.00	3,153,750	1,455,000	1,625	1,457,250	3,154,375	1,875	1,625	1,625	3	1.57	123,732	115,940
7	5,900,250	971,500	79,800	600,000	5,448,950	8,550	79,800	85,500	2	1.00	3,154,375	970,000	1,625	971,500	3,154,250	1,750	1,625	1,625	3	1.33	86,478	49,871
8	5,448,950	4,857,500	22,800	1,000,000	1,568,650	14,250	22,800	79,800	2	1.00	3,154,250	727,500	3,750	4,857,500	7,280,500	5,500	3,750	1,625	3	1.60	36,612	31,559
9	1,568,650	582,900	21,375	500,000	1,464,375	7,125	21,375	22,800	2	1.00	7,280,500	1,455,000	3,300	582,900	6,405,100	3,100	3,300	3,750	3	1.17	29,443	19,382

Illustration 3 in Paragraph 61 - Changing, Losses do NOT occur as expected - Models 5B, 4, and 2

Assumptions														Results					
														Model 5B		Model 4		Model 2	
t	Amount BOY	Amount repaid EOY	Amt to bad book	Amount issued EOY	Amount EOY	2-Yr EL	3-Yr EL	EL at EOL	Bad Book EL	Defaults	WAL for 2-Yr EL	WAL for total port	WAA	Allow Bal	Prov Exp	Allow Bal	Prov Exp	Allow Bal	Prov Exp
	A	B	C	D	E = A - B - C + D	F	G	H = F + G	I = C	J	K	L	M	N = (calc based on M) + I	O = N - (N(t-1) - J)	P = (M / L x H) + I	Q = P - (P(t-1) - J)	R = F + I	S = R - (R(t-1) - J)
5	5,615,000	973,600	34,950	1,000,000	5,606,450	18,175	3,375	21,550	34,950	37,550	2	5	2.52	54,828	33,708	45,825	33,742	53,125	33,863
6	5,606,450	1,460,350	90,850	5,000,000	9,055,250	69,150	9,250	78,400	90,850	34,950	2	5	2.40	164,437	144,559	128,457	117,581	160,000	141,825
7	9,055,250	974,400	80,500	600,000	8,600,350	13,225	6,400	19,625	80,500	90,850	2	5	1.75	92,064	18,477	87,364	49,757	93,725	24,575
8	8,600,350	725,900	25,300	1,000,000	8,849,150	18,800	4,600	23,400	25,300	80,500	2	5	2.42	46,330	34,766	36,641	29,777	44,100	30,875
9	8,849,150	1,455,700	24,700	500,000	7,868,750	10,400	2,050	12,450	24,700	25,300	2	5	2.79	36,242	15,213	31,638	20,297	35,100	16,300

Illustration 3 in Paragraph 61 - Changing, Losses do NOT occur as expected - Model 5A

Assumptions																					Results	
2 - Year Portfolio											3 - Year Portfolio										Model 5A	
t	Amount BOY	Amount to 3-yr EOY	To Bad Book	Amount issued EOY	Amount EOY	EL on 2-Yr port	Bad Book EL	Default	WA L	WAA	Amount BOY	Amount repaid EOY	To Bad Book	Amount from 2-yr EOY	Amount EOY	EL on 3-yr Port	Bad Book EL	Default	WA L for 3-yr	WAA	Allow Bal	Prov Exp
	A	B	C	D	E = A - B - C + D	F	G = C	H	I	J	K	L	M	N = B	O = K - L - M + N	P	Q = M	R	S	T	U = (J / I x F) + (T / S x P) + (G + Q)	V = U - (U(t-1) - (H + R))
5	2,205,000	727,000	33,500	1,000,000	2,444,500	16,375	33,500	36,000	2	1.00	3,410,000	973,600	1,450	727,000	3,161,950	1,425	1,450	1,550	3	1.60	43,898	34,269
6	2,444,500	1,458,000	89,000	5,000,000	5,897,500	67,750	89,000	33,500	2	1.00	3,161,950	1,460,350	1,850	1,458,000	3,157,750	1,650	1,850	1,450	3	1.57	125,590	116,642
7	5,897,500	972,500	79,000	600,000	5,446,000	9,350	79,000	89,000	2	1.00	3,157,750	974,400	1,500	972,500	3,154,350	1,875	1,500	1,850	3	1.33	86,008	51,267
8	5,446,000	4,852,000	21,500	1,000,000	1,572,500	15,550	21,500	79,000	2	1.00	3,154,350	725,900	3,800	4,852,000	7,276,650	5,450	3,800	1,500	3	1.60	35,985	30,477
9	1,572,500	587,500	21,000	500,000	1,464,000	7,500	21,000	21,500	2	1.00	7,276,650	1,455,700	3,700	587,500	6,404,750	2,700	3,700	3,800	3	1.17	29,501	18,816