# Australian Bankers' Association

Submission to the
**Reserve Bank of Australia**

Inquiry into Credit Card Systems

# ABA Supplementary Submission: Cost of Capital and Interchange Fees

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# Cost of Capital and Interchange Fees

## Background

A credit card business has two sources of revenue and from this revenue it must recover all costs, including the cost of capital, if it is to be a sustainable business that efficiently uses its resources. For on-us transactions, the two revenue sources are the merchant and the cardholder. For not-on-us transactions the revenue sources are the cardholder and, because there is not a direct relationship with the merchant, the interchange fees that are charged to the acquirer of the credit card transaction.

In July 2001 the Australian Bankers' Association (ABA) provided a Submission to the Reserve Bank of Australia (RBA) in regard to the designation and possible regulation of the domestic credit card network[1] in Australia. In that Submission, the ABA proposed an efficient pricing 'envelope' within which interchange fees meet efficient pricing principles. The calculation of the bounds of the envelope is based on the concept of avoidable costs:

> "What costs would issuers avoid if they were no longer to provide the services that are not necessary for the operation, maintenance and growth of the credit card system as a payment system?"[2]

The Submission further stated, in respect of the upper bound, that:

> " to be consistent with economic efficiency and the public interest, any methodology for interchange fee setting should recover no more than the stand alone cost of sustainably delivering a buy now, pay later payment functionality."[3]

The lower bound is defined in terms of the incremental (rather than stand alone) cost of providing the buy now, pay later payment functionality. Calculating the bounds of the envelope includes certain costs of capital. If the bounds of the pricing envelope do not include the cost of capital, the credit card business would not be pricing its product so as to recover the costs of all relevant resources used in providing the credit card product. This could lead to the non-recovery (or under-recovery) of its capital costs and thus to the inefficient use of capital. In short, it would not be efficient.

The Attachment to the Submission (The Avoidable Cost Model: Identification of Costs and Implementation) contains the cost categories that would be included in the calculation of the bounds of the efficient pricing envelope.[4] Included in Table A.1 are references to the following capital costs:

[1] "Network refers to that complex of inter-relationships, not to physical interconnections", ABA Submission, p. 42.
[2] Ibid, p. 51.
[3] Ibid, p. 52.
[4] Ibid, p. 77.

| Cost Element | Included in the stand alone costs of the buy now, pay later functionality? |
|---|---|
| Funding the free period | Yes |
| Funding other outstanding balances | No |
| Cost of equity capital | Yes |

On 8 August 2001 Dr John Veale, Head of the RBA Payments Policy Department, sent a letter to the ABA asking the ABA to provide additional information in several areas.[5] One of the areas was:

> "4. Explain what are the costs of capital in issuing that you propose to include in your methodology and how these costs will be calculated."

The answer to this question comprises a discussion of two key and related components:

- What capital is employed in operating a credit card issuing business?
- What is the structure and cost of the capital employed?

## What Capital Is Employed?

### *Enterprise Capital*[6]

Capital can be defined as the funds used by an enterprise[7] to finance its operations on a sustainable basis. "Financing operations" refers to the ability to obtain the resources required to produce the goods and services provided by an enterprise. The body of knowledge in regard to enterprise capital is vast and will not be addressed in this document other than to note some key characteristics.

- Capital is required to bridge the timing difference between the time when an enterprise pays for the resources (labour, raw material, machinery, hardware, software etc) it consumes in its end-product(s) and when the enterprise receives payment from the end-user(s) for those end-product(s).
- Capital is used to support short-term (e.g. trade receivables) and longer-term (e.g. facilities, major software systems etc) resource needs.
- There is risk in providing capital funds to an enterprise; the drivers of that risk include economic cycles, variability of end-user demand, *forces majeures* etc. The cost to the enterprise of the capital they obtain reflects the risks that the providers of capital assume. Risk is commonly considered the exposure to uncertain change and adverse change is appropriately emphasized. Annualised standard deviation of return is the generic measurement of risk in most markets but other statistical measures such as skewness, kurtosis, the entire probability distribution of returns and the maximum cost of adverse developments are also incorporated.

[5] The letter was a follow-up to the meeting between the RBA, the ABA and its advisers held on 7 August 2001.

[6] The term "capital" refers to any source of funds used to finance the operations of an enterprise, including debt and equity. Specific references to debt capital and non-debt (equity) capital will be specifically noted.

[7] Enterprise is used in a generic sense and can include a stand-alone business, divisions or subsidiaries of a larger business, business units (lines of business), product lines, business activities etc.

- Economic analysis of a business unit and specific funding decisions are properly based on the capital structure (explicit or implicit) of the business unit.[8]

## Capital Requirements and Credit Card Issuing – Accounting Records

The capital employed in credit card issuing relates to the resources that the issuers consume in providing the functionality of the credit card and the benefits that are obtained by the joint consumers of those functionalities: the cardholder and the merchant. From a traditional accounting perspective, these resource are represented by items that comprise the book assets of the credit card issuing business. For a credit card issuer these traditional accounting entries include:

- The account receivable created when a cardholder uses his or her card. The receivable created can have two components:
  - The value financed from the transaction date to the statement due date.
  - The value financed from statement due date until the balance is actually paid, for those cardholders that utilise the extended credit functionality of the credit card.
  - This capital requirement typically is the largest capital requirement for a credit card issuer. Only the first of these (financing up to the statement due date) is related to the buy now, pay later payment functionality.
- The need to finance longer term investments in facilities (e.g. card processing centres) and related fixtures; software systems and hardware; etc. This is typically the second largest need for a credit card issuer.
- The net working capital needs to finance payroll, purchase of supplies etc. These are a relatively small portion of a credit card issuers' total financing requirements.

The capital requirements as determined by accounting records at a point in time, however, do not take into account the economic need to hold capital in order to bear the risks that the business is exposed to. That is, additional capital is required to provide a financial "cushion" against potential volatility in cash flows resulting from operational risk (e.g. hardware or software failures) and financial risk (e.g. unanticipated levels of fraud and credit losses).

## Capital Requirements and Credit Card Issuing – Sunk Costs

The resources consumed are not limited to the assets quantified on the balance sheet of an issuer using traditional accounting methods. As pointed out in the ABA's Submission of July 2001, banks incurred large losses rolling out the credit card systems, which lasted well into the 1990s. An important question is whether these losses (to the extent not already recouped) should be considered sunk investment expenditures, which form a significant part of the capital base, and on which issuers and acquirers are entitled to earn a competitive rate of return.

[8] The body of knowledge states that capital investment decisions should be made based on a business units weighted average cost of capital, not the weighted average cost of capital of the total enterprise or the immediate source of funds. See e.g. *Principles of Corporate Finance*, R. Brealey and S. Myers.

Although traditional accounting methods may not capture (i.e. capitalise) these unrecovered losses, they represent resources that have been funded and for which a return (and repayment) is expected at some point. Not to include them would be to let current accounting practices determine the measurement of true economic profits. It is acknowledged, however, that it is in practice difficult to measure these costs now for the Australian industry, including because financial institutions did not need to disaggregate their costs to the extent that they do today prior to financial deregulation, and the capacity to do so took some time to develop. Nevertheless, their existence should in principle be allowed for.

According to Joshua Gans and Stephen King,[9] however, these expenditures should not form part of the cost base for the purposes of determining interchange fees. Their argument is that issuers and acquirers can recover these costs from other, unregulated, means such as cardholder fees and merchant service fees, respectively. However, this argument is wrong, because while issuers and acquirers each incurred sunk expenditures, these expenditures were made for the purpose of creating a credit card *network*, for the benefit of both cardholders and merchants.

The fallacy here is the same as in any proposal to pick out particular elements of costs and assign them either to cardholders or to merchants exclusively, when in fact they *jointly* consume the credit card services in question. It is simply not true that expenditures that were sunk by issuers, for example, were *solely* for the benefit of cardholders and therefore 'properly' recoverable solely in cardholder fees. By creating a base of cardholders, issuers created benefits for merchants; thus the sunk costs so incurred are properly recoverable in interchange fees.

Moreover, the Gans/King argument ignores competition between open and closed schemes. If, as they argue, sunk expenditures by participants in open schemes are prohibited by regulation to be recovered through interchange fees, and therefore must be recovered through cardholder charges, open schemes will be significantly disadvantaged vis-a-vis closed schemes, which are able to recover those costs from both parties in a balance which reflects market factors, notably the respective price elasticities of demand for the services by merchants and cardholders.

The logic of the above argument applies to all costs incurred by the issuers: operating costs such as cardholder solicitation and importantly, the costs of providing the interest free period that is the core element of the buy now, pay later functionality; capital costs for "hard assets" such as computer hardware; capital costs for bridging timing differences in the exchange of value such as the cardholder receivables; and costs related to initial investments to grow the network that have yet to be recovered (sunk costs). All of these costs are properly attributable to both cardholders and merchants therefore should be counted in the cost base for the purposes of calculating the efficient pricing envelope.

### Recovery of the Cost of Capital Employed

The identification of capital employed in an enterprise and the subsequent determination of the cost of that capital has become increasingly important in ensuring the resources are directed to their highest and best use and capital is efficiently deployed.

[9] "Principles for the Setting of Efficient Interchange Fees in Payments Systems", 31st [*sic*] June 2001.

## The Cost of Capital and Value Creation

One (but not necessarily the only) objective for an enterprise is to maximize shareholder value over time. Shareholder value (i.e. the shareholders' return on equity capital investment) is increased by generating an economic profit, i.e. providing a return to the shareholder (after payment of all operating costs, taxes and other capital costs) greater than what the shareholder minimally demands (the shareholders' opportunity cost of making an equity investment in the particular enterprise).

The enterprise needs to provide a return to all providers of capital at least equal to what they can earn by alternative investments that are comparable in risk.

- If a bond is issued at a 5 per cent return and over time the risk profile for bonds increases so that returns for similarly issued bonds are 8 per cent, the price of the bonds will decline so that the effective return is 8 per cent.
- If the ability of an enterprise to generate profits / cash flow (and thus to pay dividends and reinvest) is perceived by the capital markets as increasingly risky, the price of equity shares declines because the rate at which future cash flows are discounted increases. In this illustration the discount factor reflects the cost of equity capital and increases as the risk increases.

If the enterprise does not provide a return to equity investors commensurate with the risk assumed several events will occur, including: (1) potential equity providers will not invest in the enterprise and (2) the price equity investors will be willing to pay for equity shares will decline.

The requirement that an enterprise earn at a minimum[10] its cost of capital (in theory and in practice) is a fundamental tenet of market economies.

## Measuring Value Creation

Managers have increasingly used quantitative tools to determine if an enterprise is earning its cost of capital because:

- Capital markets are becoming more sophisticated and capital is more mobile (globally).
- The theory of capital cost recovery has advanced in terms of its practical usefulness (e.g. management performance measurement).
- Enterprises have financial information more readily available with which to make cost of capital assessments.
- As enterprises expand, internal business units increasingly compete for capital; allocation and measurement tools are required to make informed (i.e. economically prudent) capital allocations decisions.
- Business units that aren't earning their cost of capital are by definition being subsidised by other business units that do. If the under performing units can be identified, they are the target of performance improvement efforts or are candidates for divestiture (or liquidation) to free the capital for more efficient deployment.

[10] For those enterprises that are to survive long term without subsidies.

For a single line of business, publicly traded enterprise, management has a relatively easier task of determining whether the enterprise is efficiently using its equity capital. In this situation, capital investments are solely made for a single product or service.[11] Over time management can assess dividend levels and changes in per share prices to determine if the enterprise is earning the minimum required cost of equity capital.

In a multi-line of business, publicly traded enterprise, the ability of the enterprise to earn its total cost of equity capital is based on the ability of each line of business to earn the cost of capital that is allocated to it. Only if the sum of the contribution of the parts equals or is greater than the cost of equity requirements as a whole will the enterprise be creating value for shareholders. In theory business units that are not earning their cost of capital should not be subsidised; they should be "re-engineered" so that they are or the capital should be deployed elsewhere.

As cost of capital theories are applied to smaller and more discrete business activities in an enterprise, issues necessarily arise in regard to the allocation or assignment of various operating costs and capital to the relevant business units, products and business activities. The reason for this is that as the cost of capital is assessed with greater granularity within an enterprise, there are more and more costs that are shared across products, services and activities (common costs and common assets). Traditional cost accounting and activity based costing are two methods by which these costs can be assigned to the appropriate business activity.

The need to assign or allocate common costs does not suggest that cost of capital theory should not be applied to increasingly smaller levels of business activity within an enterprise. Rather, it merely indicates the inevitable divergence of precision of theory from the realities of the commercial marketplace. Approximation of the underlying costs and capital employed in business activities to aid in achieving the efficient allocation of capital in competitive markets is better than no consideration at all of the efficient use of capital. At the same time, there is a need to balance the effort required to improve precision with the benefit to be derived. As in most costing exercises, there are diminishing returns in regards to effort and benefit.

### Value Based Management

This document will not attempt to describe or validate all possible methods used in the determination of whether an enterprise is earning its cost of capital. The use of these methods and the resulting management decisions for which they provide the foundation is the basis for value based management (VBM). The body of knowledge regarding VBM is vast and increasingly robust, with extensive discussions of the strengths and deficiencies of each technique. Value based management tools include:

- Economic Value Added (EVA)
- Cash Value Added (CVA)
- Cash Flow Return On Investment (CFROI)
- Shareholder Value Analysis (SVA)

[11] There may be competition for capital amongst departments (e.g. for new computers versus new production equipment) but the investment regardless of where made is related to a single product line to be sold to generate sufficient revenue to pay all operating costs, taxes and provide a return to providers of debt and equity capital that support that single line of business.

- Discounted Cash Flow / Net Present Value (DCF/NPV)
- Internal Rate of Return (IRR)
- Residual Income (RI).

For illustrative purposes, the concept of EVA is briefly described below to indicate one (popular[12]) method to determine if an enterprise is earning its cost of capital and creating shareholder value.

### Value Creation and EVA

Simply stated, EVA is net operating profit minus an appropriate charge for the opportunity cost of all capital invested in an enterprise. EVA is a commercial application of the economic theory concept of "residual income". If the result of this calculation is positive, the enterprise is creating value for shareholders and the shares will trade at a premium; if it is not, the enterprise is misallocating or misusing capital. If the EVA is 0, the enterprise is returning to the shareholders an amount exactly consistent with the minimum return the shareholders require (their opportunity cost).

As mentioned above, EVA is only one of many methods used to determine if an enterprise is earning its cost of capital. To a great degree differences amongst methodologies involve robust commercial and theoretical arguments related to:

- The use of accounting profits as compared to cash flow.[13]
- The need to make performance evaluations at a point in time (e.g. annually) compared to the fact that capital is often used to obtain assets with a life greater than one year.
- The level of effort required to accurately collect relevant data compared to the incremental value of the additional accuracy obtained.

Notwithstanding the divergence between conceptual perfection and commercial practicality in the academic debate on which is the "best" tool to use for value-based management, the inclusion of the cost of capital (e.g debt and non-debt (equity)) in the management of an enterprise is a well-established and a valuable practice. Regardless of the specific framework used, the following key aspects are evident in all methodologies:

- Capital is typically comprised of debt and non-debt (equity).
- The capital structure (implicit or explicit) needs to be determined.
- The cost of capital (debt and non-debt (equity)) needs to be determined.
- The cost of capital to the enterprise (or business unit) needs to be incorporated in business decisions, including pricing of goods and services.

[12] Despite well documented concerns about the EVA approach (e.g.. adjustments to accounting profits), it continues to be widely used to help ensure capital is efficiently deployed.

[13] The EVA methodology allows for up to 165 "adjustments" to accounting profits; see "Value Based Management – Economic Value Added or Cash Value Added", Fredrik Weissenrieder, Department of Economics, Gothenburg University. As one author has stated "The stock market clearly does not wait for the accounting profession to catch up".

One of the advantages of EVA and its variations[14] is that it can be applied to any size business unit, product line or business activity as long as one is willing to assign capital and earnings across those business units, product lines or business activity. The need for an enterprise to earn its cost of capital, if it is to be viable in the longer-term, is irrefutable. This is as true for the credit card issuing business as any other enterprise.

## What is the Structure and Cost of the Capital Employed?

### *Capital Structure – A Key Determinant of the Cost of Capital*

Different sources of capital have different costs and capital structure is therefore important in that it is a key factor in an enterprise's total cost of capital. As with enterprise capital in general, the body of knowledge in regards to capital structure is extensive and will not be addressed in this document other than to highlight some key characteristics:

- Capital provided to an enterprise typically takes the form of short-term debt, long-term debt, preference shares, equity shares and other capital instruments.
  - Debt typically has first call on an enterprise's ability to pay the cost of capital and repay principal; debt is typically less expensive for an enterprise than equity capital.
  - Equity capital[15] typically has the last call on an enterprise's resources and *ipso facto* carries the greatest risk to providers of capital; the funds are generally available for an indefinite future period and dividends are paid only after all other operating and debt capital obligations are fulfilled. Equity capital typically is the most expensive form of capital for an enterprise.
- Typically the mix of capital employed by an enterprise reflects the economic characteristics of the enterprise (e.g. short term debt typically is not used to fund long-lived assets; equity is not used to fund fluctuations in working capital requirements).
- Capital theory has various methodologies for derivation of the optimal capital structure (i.e. mix of capital sources that results in the lowest total capital cost adjusted for risk). Capital markets (whether public or private) serve to validate (or refute) the theories over time.
  - The mathematical calculation that will yield the lowest weighted average cost of capital (WACC) commensurate with the enterprises earnings (EBIT), cash flow, and risk (e.g. expected standard deviation of projected earnings and cash flow).
  - Comparable capital structures of similar enterprises in similar sectors (public or private; for profit or not-for-profit; etc).
  - Assessments by investment analysts, institutional advisors and investment bankers.

[14] To some extent analysis and derivatives of the EVA methodology is a variation on the expression "imitation is the sincerest form of flattery". The debate often appears one of how far the theory can be refined without making its application commercially unwieldy (either because of lack of appropriate information or excessive resources required for its implementation as an ongoing management tool).

[15] Because capital can take on so many variations, for purposes to this document it is referred to as debt and non-debt (equity) capital.

  - Security ratings by rating agencies such as Moody's and S&P Australian Ratings.

- Inappropriate capital structures can increase the total cost of capital.
  - If there is too little equity capital, there will be an insufficient cushion for the enterprise to endure economic downturns and the risk to the debt holders will be higher; they will demand a higher return as compensation for the higher risk.
  - If there is too much equity capital, the enterprise is using more expensive capital than it needs and is not maximising shareholder value.

All enterprises use a mix of debt and equity capital to fund their operations. The determination of the most appropriate capital structure is a combination of quantitative analysis, judgement and the actual behaviour and requirements of the capital markets. By employing all of the methods available, an enterprise should be able to determine within some reasonable range the most appropriate capital structure. This structure will yield the lowest weighted average cost of capital, all things considered including risk, and will ideally lead to maximisation of shareholder value.

### Capital Structure – Credit Card Issuing

As indicated above, a credit card issuing business is primarily required to fund tangible assets; short term receivables; and the accumulated losses of the business (sunk costs). These financing needs involve capital and a cost for that capital.

Most credit card issuing businesses are a business unit within a larger enterprise. For example, the implicit capital structure of the credit card issuing business within a bank is only one component of the total banks capital structure. Each business line (e.g. personal lending, mortgage lending, corporate finance, credit cards etc) has an implicit capital structure. Taken together they constitute the capital requirements of the bank (e.g. the capital structure, risks, and cost of capital). Each business unit must earn its imputed cost of capital in order for there to be an efficient allocation of capital within the bank as a whole.

### Level and Cost of Debt Capital in Credit Card Issuing

Capital theory suggests that funding of assets should be matched to the life of the assets. Because most of the assets of a credit card issuer are short term (e.g. cardholder receivables and fluctuations in net working capital[16]), capital funding is primarily through short-term debt. The dominant capital need for a credit card issuer is to finance the receivable created when a cardholder conducts a transaction. The receivable results from the fact that the merchant receives good funds before the cardholder makes payment (i.e. actually transfers value). The issuer bridges (finances) this timing difference. This is true for domestic and international purchase transactions and domestic and international cash advance transactions. The time required to finance the cardholder receivable extends from the transaction date until the issuer receives payment from the cardholder.

[16] There is an argument that permanent net working capital should be financed with long-term capital sources such as long-term debt or equity.

Typically the average time between these two points is in the order of magnitude of 100 days although the exact duration can vary considerably between markets and within economic cycles within a market. Because the duration of the receivable is relatively short term and many issuers look to short-term debt capital markets to fund changes in these receivables, the cost of debt capital is typically the 60 or 90 day interbank borrowing cost.

As indicated in the ABA Submission, the relevant costs for the efficient pricing envelope are those related to the buy now, pay later functionality of the credit card product. For that functionality, the relevant receivable funding period is approximately from the transaction date until the statement due date. The actual calculation is described below and would be made based on information obtained by collecting the relevant data directly from the credit card issuers. For purposes of this discussion, it is assumed the study period would be one year.[17]

- Total dollar value and the number of transactions are obtained for domestic purchase transactions. The average transaction value (ATV) is calculated for a domestic purchase transaction.
- The percentage of domestic purchase turnover paid by the statement due date is obtained.[18] This is most accurately done by statistical sampling. An easier but less accurate method is to calculate the number of accounts that are paid by the statement due date.
- The average number of days between the transaction date and actual payment receipt date is obtained. The actual average number of days is obtained rather than simply performing the calculation based on the time period from the end of a billing cycle to the stated payment due date. This improves accuracy because some cardholders pay their statement before the due date.
- The relevant interbank funding rate is obtained. This is typically the average 60 or 90-day interbank lending rate during the study period.
- The cost of debt capital is calculated by multiplying together the following values: (1) the ATV, (2) the percentage of turnover paid in the free period, (3) average number of days outstanding as a percentage of the year, and (4) average funding rate.
- The result, the debt capital cost to finance purchase transactions for the buy now, pay later functionality, can be expressed as a percentage of the ATV.[19]

The cost of debt capital as calculated above is included as a cost when determining the upper or lower bound of the efficient pricing envelop. This is a readily apparent cost to include because the issuer would incur this cost as an incremental cost if they were to add buy now, pay later functionality to an existing product (such as a transaction account access card).

[17] The ABA Submission proposed a complete review of interchange fees every three years with issuer specific reviews taking place as deemed relevant by the scheme members. Typically one year of data is collected when an interchange study is conducted but this has yet to be determined under any new interchange access regime in Australia for domestic purchase transactions.

[18] Only the amount paid by the statement due date is included because cardholders that use the extended credit functionality accrue interest charges from the transaction date.

[19] There are other approaches to perform the mathematical calculation but the end result is the same. In the approach described the total cost of debt is the percentage obtained times the average transaction value times the number of domestic purchase transactions.

## Level and Cost of Non-Debt (Equity) Capital in Credit Card Issuing

The determination of the cost of non-debt (equity) capital must be approached with more judgement, backed by analytical tools. The traditional accounting approach of calculating equity capital by taking total assets and subtracting total liabilities is highly likely to be misleading and distort the true economics of the card issuing business.

- Separate formal income statements and balance sheets are not maintained for most card issuing businesses. A formal record of paid–in capital and retained earnings is not maintained.
- There is anecdotal evidence that card issuers in Australia incurred significant losses in the early years of the card issuing business and that significant unrecovered sunk costs exist. These are not recorded in the formal financial records.

### *A. Level of Non-Debt (Equity) Capital*

There are two methods that would be used to obtain a quantitative measure of the economic level of non-debt (equity) capital.

*1. Regulatory Capital Requirements Method*

On 1 October 2000 the Australian Prudential Regulation Authority (APRA) introduced prudential standards to regulate capital adequacy requirements for locally incorporated Authorised Deposit Taking Institutions (ADIs). These new standards were written to make Australian requirements consistent with the Basel Capital Adequacy Framework.

As such, the APRA prudential standards focus on three main elements:

1. Credit risk
2. Market risk
3. Form and quality of capital held by the ADI.

At this stage, APRA does not require locally incorporated ADIs to allocate capital for operational risk,[20] although this and other risk factors may be encompassed in the prudential framework in the future. In any case, it is a matter of sound financial management and sound economics to provide a capital allocation for operational risk.

APRA requires that all locally incorporated ADIs maintain a risk-based capital ratio of at least 8 per cent at all times.[21] The risk-based capital ratio is calculated by dividing the eligible capital base by total risk-weighted exposures.

*Credit Risk Exposures:*

There are four categories of risk weighting – 0, 20, 50 and 100 per cent, based on the riskiness of the counter party defaulting. These risk-weighted categories represent the broad judgement of APRA about the credit risk of various types of portfolios.

To determine the total credit risk exposure, an ADI categorises its assets into each of these four groups on a line-by-line basis. Each asset is then multiplied by the per cent risk weighting to provide the risk-weighted exposure.

[20] Building Societies and Credit Unions are required to make this allocation.
[21] At least half of the ratio must be in the form of Tier 1 capital.

The sum total of these risk weighted exposures is the amount used as the credit risk component of total risk exposure.

*Market Risk Exposures:*

ADIs are required to calculate capital requirements based on market risk of their trading book. Credit card operations do not operate a trading book and as such do not need to provide market risk capital based on their credit card operations.

*Eligible Capital Base:*

The eligible capital base is split into 2 categories. Tier 1 capital and Tier 2 capital. At least half of the eligible capital must take the form of Tier 1 capital.

- Tier 1 capital comprises such items as paid-up ordinary shares; general reserves; retained earnings; current year's earnings net of expected dividends and tax expenses; etc.
- Tier 2 capital is limited to a maximum of 100 per cent of the ADI's Tier 1 capital and is comprised of such items as revaluation reserves, general provisions for doubtful debts, subordinated debt, limited life redeemable preference shares etc.

Once the risk weighted exposures and eligible capital base have been determined, the eligible capital base is divided by the risk-weighted exposures to provide the actual capital ratio. This can then be compared to the minimum required capital ratio (8%) to determine what adjustments are required.

Under this approach, the APRA defined capital requirements can be applied to a credit card portfolio. During 2001 the banks that issue credit cards have been working through the application of these requirements both at the total bank level and at the line of business level (e.g. credit card issuing, mortgage lending, corporate finance etc).

Specific attention was being focused on this issue of capital requirements and capital costs related to credit card issuing during the period when the credit card issuers were preparing an authorisation submission for the ACCC. When the ACCC turned the domestic credit card interchange fee issue over to the RBA and the RBA announced its intention to designate the domestic credit card network, these resources were diverted to address broader issues raised during the initial designation process. As such, because the application of APRA capital adequacy standards is not a trivial exercise, conclusions in regard to level of non-debt capital for credit card issuing have not been fully determined at this writing.

At this stage, subject to subsequent revision to the APRA standards, it appears that the non-debt capital requirements for a credit card issuer would be at least 8% of cardholder receivables. Ultimately, the non-debt capitalisation determined in this manner could be applied to the buy now, pay later functionality of the credit card product because a similar calculation can be done independently for the cardholder receivables related to the extended credit functionality of the credit card.

*2. Comparable Company Equity Capital Method*

The second method to estimate the non-debt (equity) capital requirements for the credit card issuing business will be to look at the capital structure of companies whose primary business is credit card issuing. There are not many of these "monoline" issuers and they tend to be domiciled in the United States. Notwithstanding any differences in capital markets and capitalisation requirements between the two countries, the typical non-debt (equity) capital to total capital of these monoline issuers is in the 7 per cent to 15 per cent of assets range.

***B. Cost of Equity Capital***

The cost of non-debt (equity) capital is more difficult to ascertain with pinpoint accuracy. The cost of equity capital is the combination of dividends paid and share appreciation over time.[22] This requires forecasting and forecasting by its nature involves uncertainty. Notwithstanding the uncertainty involved, there are two methods that will be used to estimate the cost of non-debt (equity) capital.

One method, which has received widespread adoption[23] in theory and in practice, is the Capital Asset Pricing Model (CAPM). Simply described CAPM states that the cost of equity capital (the required return) is the risk-free rate plus a premium based on the systematic risk of the security.

A simple description of the application of CAPM follows.

- The risk free return is typically calculated based on long-term government bonds.
- The return for the market as a whole can be calculated and is assigned a beta[24] of 1. The difference between the risk free return (beta of 0) and the return for the market as a whole is the market systematic risk.[25]
- A line (the Security Market Line) can be created from these two points by plotting risk on one axis and return on the other axis.
- A beta can be determined for an individual enterprise based on the volatility of its returns in relation to the market as a whole. This is expressed as a multiple of the Beta for the market as a whole (e.g. 0.8, 1.2 etc)
- The systematic (market)[26] risk of a particular security can be determined by multiplying its beta by the systematic risk for the market (the market risk premium). This is then added to the risk free return to obtain the cost of equity for that enterprise.[27]

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[22] Because an investor's return on equity capital is typically realised over time, short term fluctuations in share price (and dividend payments) make forecasting more difficult and the determination of the cost of equity capital less precise.

[23] But not unequivocal support without a number of caveats or modifications.

[24] Beta is the term for systematic market risk.

[25] More specifically, a robust proxy of systematic risk is the regression coefficient that describes the slope of a line of "best fit" through a history of individual (dividend adjusted) stock returns and market-wide returns.

[26] Non-systematic risk is risk that the investor can eliminate by diversification; examples of non-systematic risk include loss of key management, unexpected market entrants etc.

[27] A discussion of levered and unlevered Betas, the work of Modigliani and Miller and the effect on required equity returns in Australia resulting from franked dividends is beyond the scope of this document

For the card issuing business, this requires establishing a beta for card issuing operations. To the extent that appropriate data are available, various approaches would be used, including:

- Constructed betas of the operating results against market returns.
- Portfolio betas or median betas for monoline issuers. This would need to be adjusted for differences in the capital markets and tax policies between the United States and Australia.
- Multi-variable regression betas based on businesses with similar size, growth, margins, risk factors etc.

The second method would use the banks' cost of equity as a basis on which the cost of equity for the credit card issuing business can be based.

- The banks' cost of equity can be estimated using CAPM or the dividend growth model (the Gordon-Shapiro model) in which, simply stated, the price of a security is the dividend per share divided by (the cost of equity less the dividend growth rate).[28]
- Historical volatility of the credit card issuing business operating profits in relationship to other lines of the business for the bank would be used to determine the relative risk of the credit card issuing business compare to other lines of business.
- The cost of equity capital for credit card issuing would be determined based on the cost of equity for the bank adjusted (upward or downward) by the volatility of the credit card issuing business compared to that of the bank in total.

The calculation of the cost of non-debt (equity) capital will inevitably require judgement in addition to quantitative analysis. Notwithstanding the requirement for judgement to augment quantitative analysis, a best estimate approach is better than no estimate at all.

*Cost of Capital and Sunk Costs*

As indicated above, unrecouped sunk costs are a valid financing (capital) requirement of the credit card issuing business and the costs of that capital should in principle be included in the total capital costs of that business.

The practical limitation in the actual calculation of these capital costs is that there does not appear to be a complete set of existing records for the credit card issuers in regard to the specific level of these investments (e.g. operating losses in early years that were not capitalised) and the portion of these have not been recovered.

Because they are difficult to account for quantitatively, another approach is to make an upward adjustment to the calculation of the amount of capital employed in the card issuing business (using the APRA and comparable business methodologies) and / or make an upward adjust to the return on equity capital calculated (using the CAPM and adjusted bank methodologies) approach. Without an adjustment for the sunk costs, the calculation of the credit card issuers return on equity and total return on capital will be conservative.

[28] Given the market price of a security, the cost of equity capital can be determined using market-based assumptions for the other variables.

**Summary**

The body of economic and business knowledge in regard to the deployment of capital is conclusive in arguing that all enterprises, no matter how narrowly defined, should generate sufficient revenue to recover their cost of capital. If not, value is not being preserved and created.

There are numerous tools and analytical techniques to calculate the total cost of capital. All require a calculation of the level of capital used, the type of capital used and the cost of that capital.

For the buy now, pay later functionality of credit cards the type of capital employed is primarily (1) the short-debt required to fund the cardholder receivables for domestic purchase transactions from the transaction date to the actual payment date for those transactions that are paid by the statement due date and (2) the non-debt (equity) capital that is prudently required to support its risk exposures.

- The level of debt capital is directly related to the level of receivables. The level of non-debt (equity) capital can be estimated using prudential capital requirements and comparable business analyses.
- The cost of debt capital for credit issuing can be readily determined by published rates for short-term interbank borrowing. The cost of equity capital can be estimated based on a number of analytic tools and judgement. Equity market returns and bank cost of equity capital provide the starting points for making these analytic and judgemental estimates.

The end result, the credit card issuers' cost of capital, is then included as a valid resource cost which must be included in the efficient pricing envelope.