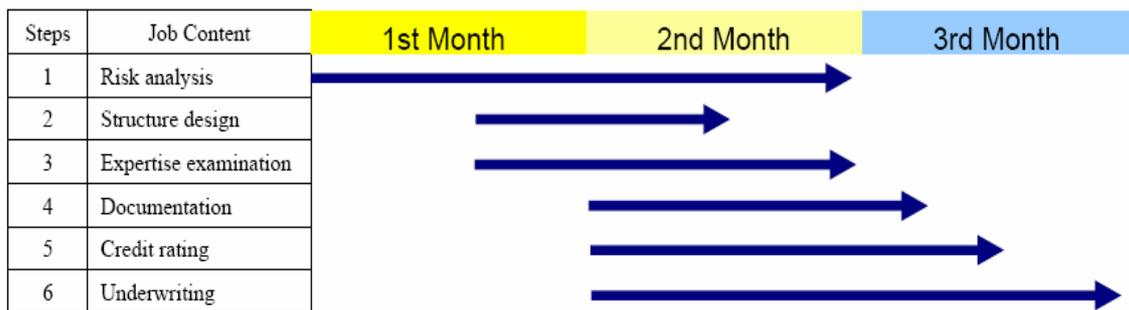


## Chapter 4 Designing Credit Card ABS

There are roughly 6 steps for producing a securitization product which are risk analysis, security structure design, professional expertise examination, documentation, credit ratings, and underwriting (see exhibit 4-1). Although all securitization transactions share similar framework, it requires dissimilar models and techniques for different collaterals. As for credit card receivables, it is quite unlike residential mortgages in cash flow patterns, default possibilities, and whole lot of details. Originators need theoretical models and pool selecting techniques designed specifically for credit card receivables to fully capture the characteristic of risks and rearrange cash flows into tranches to fulfill customers' needs.

**Exhibit 4-1 Procedures of Securitization Products**



Huge number of papers addressing on mortgage related securitization will focus on the prepayment risk which is not critical for credit card receivables backed securities. Credit card receivables backed securities are different from mortgage backed securities on the basis that they have pretty short-lived collaterals. Credit card receivables have fuzzy expected payment date and usually will be paid in three months which means there is no such a thing as prepayment for these accounts.

All credit card backed securities has longer maturity than its collaterals and purchasing new receivables become operating routines. While prepayment risk is silenced in credit card ABS, other uncertainties suchlike collateral performance fluctuations, the ability of issuer to refill trust with new receivables, and third party default risk still remained.

Most transactions start from multiple analyses. One of that is identifying internal uncertainties, such as receivables performance, and external downside risks including interest rate fluctuation and default risk of third parties, etc. How to locate all risks and find method to hedge or transfer them became the primary mission must

be completed before any transaction took place. As we may expect, there are a lot of models and theories trying to analyze the uncertainties inherent in a transaction. The researcher believes collateral pool selection and credit rating requirements are the most important ones among all these factors for credit card securitization transactions in Taiwan. In this section we will draw a bead on pooling and credit rating followed by a simulated case study.

#### 4.1 Asset Selecting

Selecting credit card accounts for securitization purposes is not as easy as looking at the statistics and calculating some numbers. The scope is broader than just staring at the collateral itself. There are two parts to the selecting job.

First, checking statistical numbers of profitability of receivables and forecasting the possibility of any unwanted results are must-done jobs and also the basic resorts to portrait the deal. Besides that, we have to diagnose the health of the card issuer since the issuer is almost always the servicer in a credit card ABS transaction. Keeping sufficient profit-making receivables in a trust also depends on the issuer's ability to market, underwrite, and collect.

Unable to perform the service job or refill draining trust will devastate the whole case and hurt investors. There are numerous jobs that need to be done by gathering data, developing models, and making sound decisions. The bottom line is finding the perfect combination of credit card receivables to construct a pool to support securities with secured cash flows in customers' demand.

##### **4.1.1 Key Variables of Receivables**

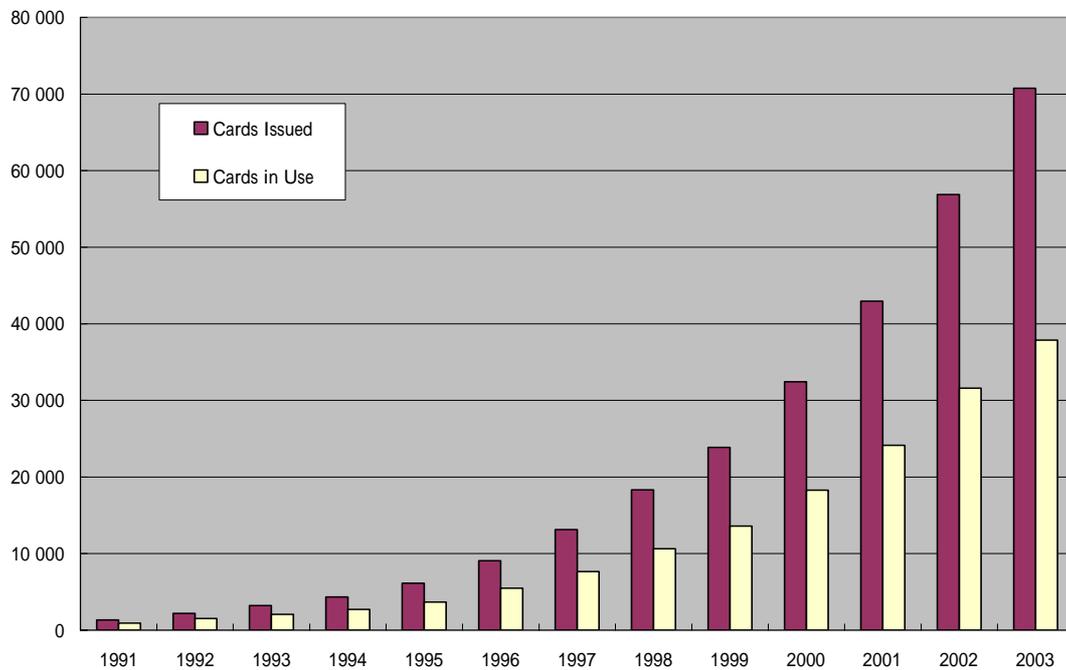
Through credit enhancement and cash flow rearrangement, most credit card receivables-backed securities have triple A to single A ratings released by famous rating agencies. In order to get wanted ratings to be competent on market and able to sell all securities within an accepted price range, credit card receivables collaterals have to be examined carefully.

Not like ordinary loans or other receivables, only part of credit card receivables will be revolved and turned out to be fully repaid with interest, which means how many convenient users are there in a collateral pool is also crucial. Based on those facts, the researcher analyzed several key variables and their effects to the whole securitization deal below.

## Profit Dilution

As mentioned in previous chapter, the fierce competition in credit card business has increased average number of cards held by cardholders, as a result, the number of average effective cards (cards which are in use) plummeted (see exhibit 4-6 and 4-7). Not only effective cards didn't grow as rapidly as total cards issued, the average revolving amount per card is declining. All this statistics showed the profitability of credit card accounts is deteriorating due to multiple factors which increased the risk of early amortization in credit card securitization transaction.

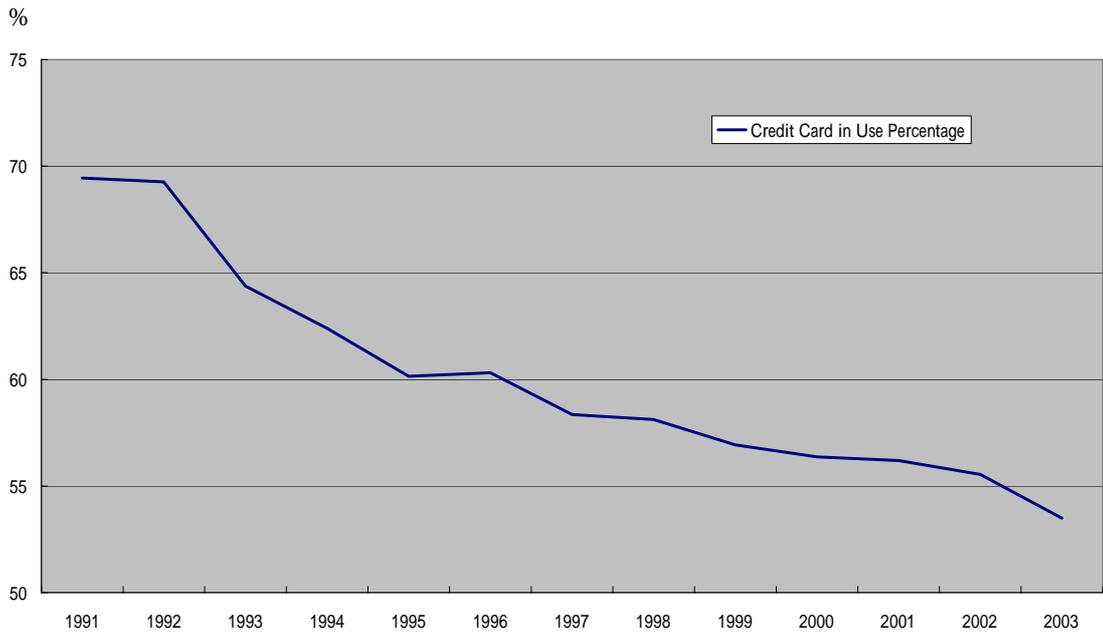
**Exhibit 4-2 Credit Card Issued and Credit Card in Use**



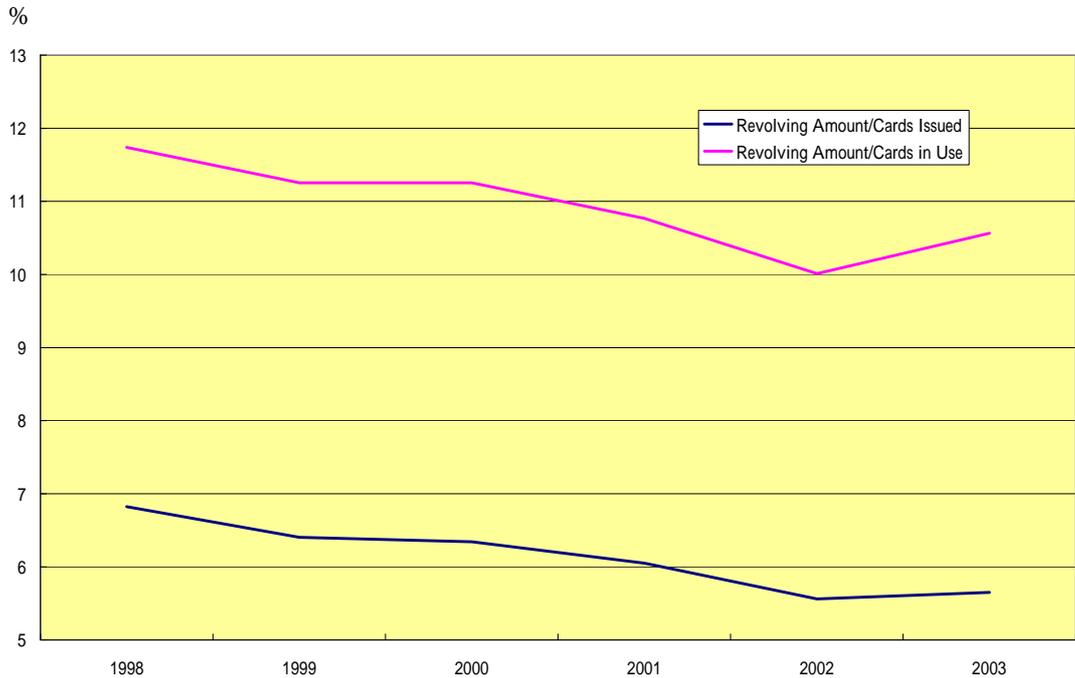
Source: BOMA Website

The growing percentage of convenient users is the first concern. When more and more cards are sent out by issuers, there is no evidence that revolving amount is growing as well (see exhibit 4-8). When pooling collaterals, originators have to put revolving users instead of convenient users into trust to support cash out flow. Originators should prevent convenience user accounts get into trust to dilute profit and shrink excess spread. If a collateral pool is composed mainly by convenient user accounts, the servicer/originator will be forced to add new receivables into account to maintain scheduled cash flow before maturity which is very dangerous for investors if the servicer is not efficient on repurchase. Early amortization will be easily triggered.

**Exhibit 4-3 Credit Card in Use Percentage**



**Exhibit 4-4 Revolving Amount/ Cards Issued & Cards in Use**



We can also analyze this issue from another angle. Resorts that card issuers seek to expand credit card or the motive of new credit card applicants played an important role. A better way to attract new customers is through innovations that create value to customers to use credit cards. Of course that is not a easy task to do the

value added job, as a result, some issuers took more controversial methods, for example, direct cash rewards. Fair market value of commission of a new card application paid to sales personnel is \$800 to \$1,200 NT dollars, however some issuers transformed the commission into rewards directly distributed to new card applicant as a cash application bonus trying to attract customers.

The average cash reward going to customers pockets is \$400 to \$800 NT dollars. This method is more cost effective than hire some credit card sales to sell cards and many issuers followed this trend. It seemed like an excellent new way to save expenses on credit card business. In fact, this is a terrible resort which usually will not attract profit making customers but convenient users and arbitrageurs.

## **Defaults**

Credit card receivables are not backed by any collaterals and the default rate is higher than secured loans as everyone may expect. Beside with high default rate, the recovery rate is lower than loans with collaterals. It is risk controller's highest priority mission to gauge default risk fairly and promptly to hold all good customers and take actions before any bad ones show up. Examining historical default rate gives the first hint of future performance of collaterals. Issuers having card receivables with higher than industry average default may have problem maintaining excess spread. This doesn't mean high default rate receivables cannot be securitized. With proper credit enhancement technique, it could be a triple A rating security.

Besides historical examination, predicting future collateral default rate should be proceeded by dedicated models which focused on characteristics of applicants. Cheng (1999) conducted research by interviewing senior bank lending personnel to get practical considerations and analyzed it. He concluded 5 dimensions of credit examination and the most influential factors (see exhibit 4-5). The percentage in bracket followed each factor indicated the explaining ability of them.

Shi (1999) used logit model to analyze credit cards accounts of an anonymous financial institution in Taiwan. He gathered background data of 300 normal cardholders and 300 abnormal cardholders (interest or principal payments are overdue) to evolve theory of factors related to default cardholders. Those factors are gender, education, occupation, working duration, number of cards held, and mortgage intercourse. This paper also made recommendations as follows: Credit card issuers should combine logit model and computer information system and database to construct an objective standard to evaluate risks exposed. Through sensitivity analysis of key variables, issuers can adjust risk structure and attain optimal risk level. Finally,

issuers have to build complete credit card database which included risk, consumer behavior, marketing, etc.

**Exhibit 4-5 Credit Card Lending Considerations**

1st tier factor	2nd tier factor
Creditability (25.8%)	Relationship with Other Banks (44%)
	Interest Payment Record (38%)
	Debts in Other Banks (18%)
Asset (24.8%)	Family Income (40%)
	House Ownership (23%)
	Other Assets (19%)
	Real Estate Status (18%)
Occupation Characteristic (20.8%)	Occupations (44%)
	Company Size (31%)
	Working Duration (25%)
Solvency (15.7%)	Annual Income (46%)
	Deposit and Withdraw Record (38%)
	Intercourse History (16%)
Trustworthiness (12.9%)	Check Transaction Record (55%)
	Reliability of Background Data (34%)
	Total Number of Holding Cards (19%)

Steenackers and Goovaerts (1989) adapted logistic model to find out criteria of the selection of new credits. They used personal loans collected in Belgian credit company from November 1984 to December 1986. Steenackers and Goovaerts (1989) listed 19 characteristics of applicants and concluded the selecting criteria as number of previous credits, possession of a house

Combined above credit evaluating model and development of credit card business in recent years in Taiwan we can conclude for credit card securitization pooling task to go on smoothly, originators/servicers have to develop quantitative models to monitor problematic receivables and control risk exposed.

#### **4.1.2 Issuer**

It is a pretty easy conclusion to draw that a bankrupted credit card issuer will never run a securitization case in investors desired way. Even a less competitive

originator with poor managing and marketing power will cause early amortization when economic condition turns and the performance of pools deteriorates resulted as insufficient collateral balance and excess spread.

This is the fundamental analysis no one should ignore and almost as consequential as evaluating the collateral itself. Only crunch numbers on an absolute basis will twist facts and leading analysts to a false conclusion and seeking comprehensive insights of critical variables will not be conclusive without supportive fundamental analysis results. These examines are not only crucial for a successful case to proceed but also the major focus of rating agencies. It is a matter of whether a product can get desired rating in the most cost effective way, i.e. the cheapest credit enhancement, and originators can run the case smoothly until the foreordained end.

The very first issue to talk about a credit card issuer should be the soundness and how possible it is that the issuer will file a bankrupt lawsuit. However, under particular economic and political concern, we all know that no bank will really go bankrupt in Taiwan, at least in the foreseeable future. Based on that fact, there is no need to analyze the default possibility and the researcher will simply focus on other topics. The competitiveness of originator and how it will affect the collateral's performance in a credit card securitization case is his first concentration.

### **Servicing and Marketing**

As we eliminated default risk, there is much less effort left. One question remained is “who can continuously attract more revolving customers?” This is actually a non-finance question that someone may say it is inappropriate to discuss it here but it is so related to the soundness of securitization transaction that every analyst should think about it. The significance of originator's competitiveness on credit card battle field is supported by S&P's inclusion as a rating factor. Another reason of the superiority is that this is a qualitative factor, not a quantitative one which makes it easily be mis-explained by the most professional analysts.

Fan (1999) listed top 10 triggers made consumer to apply for a new credit card. Not surprisingly, exemption of annual fees is the primary concern all customers think of while considering applying new credit card. Gifts, bonus and cash refund are attractive to new consumers too. One thing to notice, as we stated in chapter one that credit card is a fashion product and card holders do care about its appearance. Some good looking and fashionable cards emerge in market in last two years suchlike transparent card and mini card which have nothing new but appearance are another signal that shape and color of this small plastic may be determinative.

**Exhibit 4-6 Top 10 Triggers of Cards Application in Taiwan**

Rank	Content
1	Exemption of annual fees
2	Gifts
3	Bonus
4	Cash Refund
5	Service quality
6	Lost card insurance
7	Free traveling insurance
8	Revolving interest rate
9	Quotas
10	Card appearance

Source: Fan (1999)

Tang (2000) indicated how customers in Taiwan select credit card.

**Exhibit 4-7 Primary Concern of Card Selection in Taiwan**

Factor	Description
Quality of service and operating efficiency	<ol style="list-style-type: none"> <li>1. Replace duration of lost card</li> <li>2. World wide acceptance</li> <li>3. Application procedure</li> <li>4. 24/7 service provider</li> <li>5. Crystal clear monthly bill</li> <li>6. Traveling service, traveling insurance and medical coverage</li> </ol>
Quotas and interest rate considerations	<ol style="list-style-type: none"> <li>1. Revolving credit mechanism</li> <li>2. Interest rate and penalty</li> <li>3. Quotas</li> <li>4. Annual fee</li> </ol>
Convenience and accessibility	<ol style="list-style-type: none"> <li>1. Acceptance by merchants popularly</li> <li>2. Popularity of merchants</li> <li>3. Clear explanation of legal affairs</li> <li>4. Accessibility of cash collectors</li> <li>5. Consumers' guide</li> </ol>

Source: Tang (2000)

From these researches we can gather some information about how to tell a competitive issuer with strong customer attracting capability. A credit card issuer with innovation ability, passion to serve customers, operation efficiency, marketing edge, and price making ability would be a stable and qualified originator of a securitization transaction.

**Exhibit 4-8 Top 5 Credit Card Issuers in Taiwan**

Bank	Cards in Circulation*	Market Share (%)	Amount** (Billions)	Amount Share (%)
Chinatrust Bank	5.39	14.93	163.06	22.86
Citibank	1.82	5.04	92.00	12.90
Tai-Hsin Bank	3.82	10.58	74.31	10.42
Union Bank	2.28	6.32	43.24	6.06
Fubon Bank	2.27	6.31	63.11	8.85
Other	20.5	56.82	277.62	38.91
Total	36.08	100	713.34	100

\* To 09/30/2003

\*\* From Jan. 2003 to Sep. 2003

Source: BOMA, NCCC

**Exhibit 4-9 Top 5 Cash Card Issuer in Taiwan**

Market Position	Market Share (%)	Bank	Card Name	Interest Rate (%)	Individual Borrowing Limit (NT\$)	Number of Cards Issued (Thousand)	Outstanding Amounts (Million NT\$)
1	40.00	Cosmos Bank	George & Mary	18.25	600,000	1,200	60,000
2	10.00	Taishin Bank	You Be	18.25	150,000	520	15,000
3	5.50	Ta Chong Bank	MUCH	18.25	300,000	300	8,000
4	4.80	Chinese Bank	MIKE	18.25	500,000	240	7,020
5	4.30	Land Bank	Chun-Chiao & Chih-Ming	12.99	300,000	162	6,250
					Total	3,800	145,200

Source: S&P Rating Report (2003).

## **Underwriting**

Credit card issuers can be divided into three categories according to how their underwriting methodology is developed and practiced. First category is mass marketer who extends not much different credit offers to heterogeneous customers. This method is the cheapest solution however it is also the most inaccurate one. Mass marketer assumed there is not much difference between customers which is rarely the case and treated all customers in the same matter. Profitability will be damaged since good customers cannot get higher credit line and defaulters had been charged too low.

The second category is targeted approach. It involves more sophisticated analysis of customers' data collected by credit bureau, third party statistical service, or the issuer itself. Strengths of this approach are it is more accurate and can treat different customers in different ways to maximize profit. Weaknesses are it costs a fortune to collect data or buy from a third party, it needs frequently maintain to keep an eye on the dynamic account. The extra expenses caused by finer analysis should be compensated by larger profit or it is a better call to just be a mass marketer.

Credit scoring is a statistical tool used to evaluate the credit risk of potential customers. This model gathered useful information from credit card customer database and analyzed it with some assumptions and conditions in order to quantify the targeted approach. Customer's credit score is the result of a complex calculation that weighs various factors (such as number of accounts, debt-to-income ratio and length of time on the job) based on how frequently each one correlates with late payments from the creditor's current customers.

Credit scoring helps issuers to make credit offering decision with sufficient flexibility. By adjusting cutoff points, issuers can easily change the credit offering to desired risk exposure which is very competitive on market. Although, this method provided good evaluation of default risk of new customers, it didn't catch their profitability prospective profile. Other weaknesses include: it could cause adverse selection problem and needs frequently maintenance to keep it work accurately.

The last category is free riding approach. Card issuers who take this approach do not use any model to examine credit risk of card applicants to make credit offering decision, they just offer the same credit line as other issuers have already offered to the customer. For example, Mr. A has a credit card issued by bank B with NTD 100,000 credit line. Bank C which uses free riding approach will offer Mr. A NTD 100,000 only by the fact that Bank B offered the same amount instead of examining Mr. A's age, occupation, annual income, or any other relevant variables. This is a pretty good and cost effective method only if very few card issuers adapted it, which

seldom is the case. This method will cause moral hazard problem and encourage bad guys to gain illegal profit from issuers.

How the issuers underwrite credit cards is worth noting because different underwriting methods select different quality customers which will affect the performance of collaterals significantly. For securitization transaction, the originator should have a complete credit scoring system to fully monitor receivables and adjust risk exposures quickly. Lack of risk management ability will not be tolerated in ABS deals.

### **Collections and Recovery Rate**

The sweat following default events is collecting. Issuers must show determinant and efficiency on collecting delinquent accounts to protect certificate holders' interest. The effective of collecting process and measures are not only connected to recovery rate but also focuses of rating agencies. Quality of collecting team staff, collection strategy, and timeliness of implementation are all on the watch list of Standard and Poor's rating criteria.

Common collecting strategies are assigning senior collection employees to more serious delinquent account and predictive dialing system which identifies riskiest customers based on statistical evidence. We should note that most Taiwanese people have strong family support which is not seen in the U.S. This particular feature combined with high savings rate in most Chinese society creates a new hope for issuers to collect delinquent accounts, that is, turning to the senior family members.

This technique is controversial but widely used by banks in Taiwan not only for credit card delinquent accounts but other non-performing loans because it is efficient. Although this method is been discussed and discouraged by BOMA, collecting detail acted by contractors are hardly regulated. This means collecting results can be significantly different depend upon various collecting strategies implemented. Of course, for all investors' benefit, strong measures are preferred.

## **4.2 Getting Desired Ratings**

Credit card ABSs need proper credit enhancements to improve credit quality and to get wanted ratings. Before we go into rating criteria of rating agencies, we have to further discuss different credit enhancements. We don't repeat credit enhancement basics which is been introduced in chapter 2, instead, we focus on the characteristic

difference between methods that have effects to participants and the whole transaction to find out optimal credit enhancement mechanism for credit card ABS.

#### **4.2.1 Optimal Credit Enhancement for Credit Card Receivables Securitization**

Credit enhancement methods are divided into three categories: excess asset value or cash flow from the underlying pool, enhancement provided by the originator, and third party enhancement. These three categories can be further divided into seven major methods most frequently used by originators. They are not mutually exclusive ways yet can be used in combination to construct protection against adverse scenarios. Originators choose different resorts with minimum expenses according to collateral characteristics and investor preferences.

##### **Credit Tranching**

Credit tranching is current, the most commonly used way of credit enhancement due to its multiple advantages. Credit tranching rearranged cash flow available to investors into predetermined priorities. Under this structure, senior note is more secure with the support provided by junior notes. In credit card securitization, the cash flow is in a waterfall mode in the predetermined sequence. Using credit tranching, originators can enhance credit quality of notes by relocating risks. Also, this creates differentiated products to fulfill various preferences and needs of investors on the market. Different investors with different risk preferences can be satisfied by different tranches at the same time originator can complete a transaction. The higher the rating, the lower the cost to the originator.

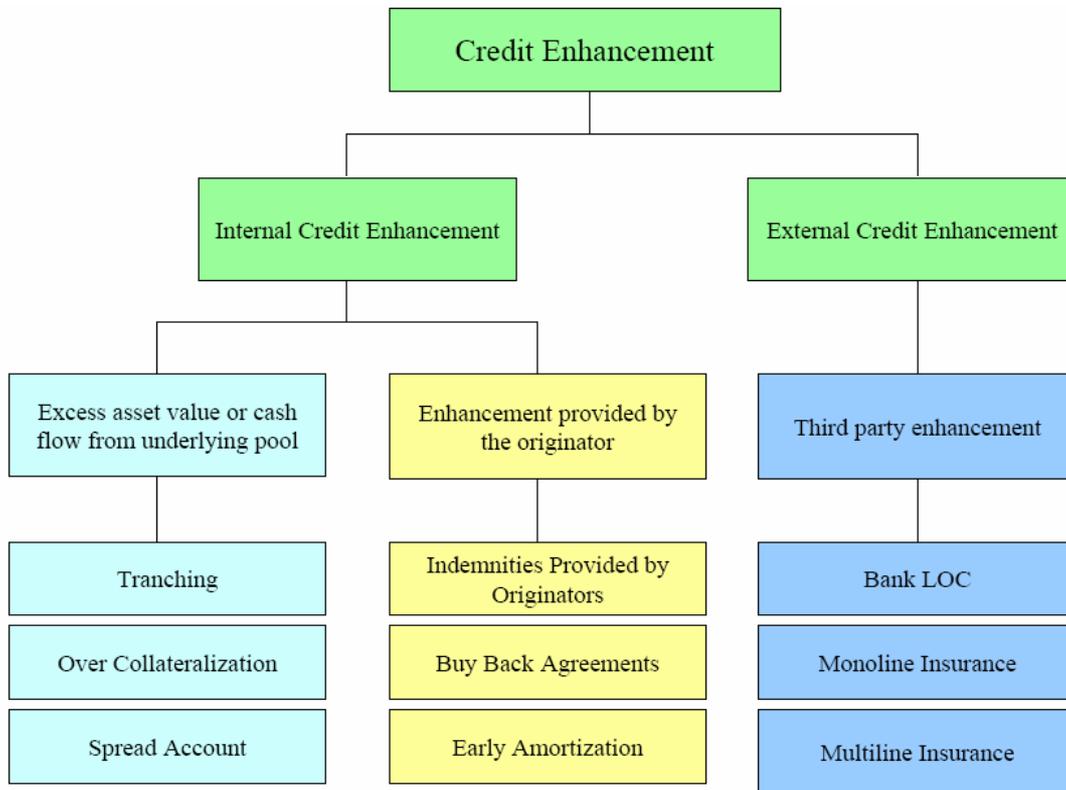
The major shortcoming is the lowest rating or sometimes unrated tranche usually goes back to the originator which means the originator still bears part of the risk. Once there is any receivables defaulted, the lowest tranche or more specifically, the originator's capital will be eliminated. Too many tranches tend to increase management difficulties.

##### **Over Collateralization**

Over collateralization is also simple and doesn't need a third party to perform which makes it very attractive to investors. The structure can be designed to be over collateralized by using excess assets or cash. When excess cash is funded, it is also called reserve fund. Actually, over collateralization and credit tranching are conceptually similar. For cases that use excess asset, it involves administrative

efficiency of the servicer and the liquidity of underlying asset. How long it takes and in what price to sell collaterals to release cash does matter.

**Exhibit 4-10 Credit Enhancement Methods**



For cases the use excess cash as backup, there is no liquidity problem at all and more preferable to investors. Of course, cash over collateralization is more expensive. Both modes have negative impact on originator’s balance sheet since leverage had been increased. For example, an originator sold NTD 100 million credit card receivables and took over collateralization (10%) to enhance credit quality, the originator will only took back 90 million cash in this transaction. And the other 10 million turned into asset with uncertainties which increased issuer’s leverage.

**Spread Account**

This method is very good for investors since it creates cash flow directly into excess account which can protect adverse events very efficiently. Investors will not be bothered by administrative uncertainties suchlike selling collaterals or insolvency of servicer. The concept and technique of spread account is very simple and can be applied to almost all kind of collaterals which made it a popular method.

More than that, since the excess spread actually is profit of originator/ servicer, using excess spread as credit enhancement can make servicer keep doing a good job of servicing and prevent moral hazard risk. This is a pivotal mechanism especially for credit card ABS because the servicer played a more decisive role than it did in transactions backed by other collaterals which may not require that much attention from originator.

Excess spread account is technically constructed from originators money, based on the rationale that the cash flow would be originators profit if it didn't go to excess spread account. This makes excess spread a very expensive method for originators to implement and it is so expensive that only a comparatively small amount is built for most cases. For credit card receivables, this will not be the only credit enhancement technique, it is usually accompanied by over collateralization or other enhancement efforts.

### **Indemnities and Buy Back Agreements Provided by Originator**

The issuers can provide support for underlying asset transferred to SPV. The content and degree of support may be controversial if the originator is still bearing most risks inherent in underlying assets. Some forms are less disputatious and used more commonly in advanced countries suchlike indemnities and buy back agreements. Indemnities provided by the originators to the SPV could be an assurance that the underlying assets were written within regulatory parameters correctly. Buy back agreements usually require originators to buy back receivables which are not qualified according to selection criteria agreed but are mistakenly sold to trust or other deteriorating receivables.

### **Letter Of Credit**

The traditional way of reducing financing risk still keeps its edge while it is the most familiar concept to investors. Bank LOC still functioned well that it can be structured to cover both absolute loss and arrears financing. However, securities enhanced by bank LOCs cannot get ratings higher than the guarantor banks. This would not be a problem in the U.S. or U.K. but it is in Taiwan.

Only very few banks in Taiwan had single A ratings and most of others has ratings below that (see exhibit 4-11) which means originators have to depend on foreign banks with higher premiums or resort to other methods. Another problem related to LOC is banks are subject to downgrading risk. If the guarantor bank is

downgraded, the credit quality and liquidity of the security will be affected, and the ability to arrange new transactions of originator is damaged too. Actually, this kind of third party credit risk is embedded in all third party depending credit enhancement methods.

#### Exhibit 4-11 Bank Ratings conducted by Standard and Poor

Rating Changes	Org Name	Outlook or	Counterparty		CD	Senior	Sub	CP	Pref.	ST
		CreditWatch	LT	ST	LT/ST	debt	debt	debt	Stock	debt
	Bank of Taiwan	NEGATIVE	A+	A-1						
	<i>Foreign Currency</i>	NEGATIVE				A+				
	Cathay United Bank Co. Ltd. (unit of Cathay Financial Holding Co. Ltd.)	STABLE	BBB	A-3	BBB/A-3					
	Chang Hwa Commercial Bank Ltd.		BBpi							
	Chiao Tung Bank	STABLE	A-	A-2	A-/A-2					
	<i>Foreign Currency</i>	STABLE						A-2		
	China Development Industrial Bank (unit of China Development Financial Holding Corp.)	NEGATIVE	A-	A-1	A-/A-1					
	Chinatrust Commercial Bank (unit of Chinatrust Financial Holding Co.)	STABLE	BBB	A-3	BBB/A-3					
<b>D</b>	Farmers Bank of China	STABLE	BB	B	BB/B					
	First Commercial Bank Ltd.		BBBpi							
<b>U</b>	Fubon Commercial Bank (unit of Fubon Financial Holding Co. Ltd.)	POSITIVE	BBB	A-2	BBB-/A-3					
	Hua Nan Commercial Bank Ltd.		BBBpi							
	International Commercial Bank of China (unit of Chiao Tung Bank)	NEGATIVE	A	A-1	A/A-1	A				
	SinoPac Holdings	STABLE	BB+	B						
	<i>Foreign Currency</i>	STABLE				BB+				
	Bank SinoPac	STABLE	BBB-	A-3	BBB-/A-3					
	Taipeibank (unit of Fubon Financial Holding Co. Ltd.)	STABLE	BBB+	A-2						
	<i>Foreign Currency</i>	STABLE			BBB+/A-2					
	Taiwan Cooperative Bank Ltd.		BBBpi							

Source: Standard and Poor, BankRatings Guide, March 2004.

### Monoline Insurance

Monoline insurance is also known as surety bonds. The difference between monoline and multiline is monocline insurance companies focus on only single line of business in writing financial guarantees and multiline companies do not. The initialization of monocline insurance companies is providing insurance to municipalities, not for ABS. Gradually, these companies expand business into insurance for structured debts and bank obligations. All these insurance companies have triple A ratings and are carefully monitored by the government. Rating agencies continuously keep an eye on their capital adequacy, diversification, and the over all book of business. There are many restrictions on their activities, just like the limits imposed on banks.

Since those monoline companies are strictly regulated, they can not provide insurance to below investment grade securities. As a result, originators take this as the last effort to push credit ratings from single A to triple A. Just like ordinary insurances,

those companies provide both partial insurance and full coverage. The choice between partial and full coverage should depend on the investors' attitude toward underlying collaterals. For credit card backed securities issuance in Taiwan, full coverage is a better choice because most investors are not familiar with the new product and will prefer more insurance.

Advantages of monoline insurance are: First, as the researcher mentioned above, full coverage help build investor confidence to participate in new products. Second, monoline insurance companies can help originators with educating investor to make securities more marketable, analyzing whole transaction to assist a successful securitization, and revising the structure and variables to fulfill rating agency's criteria and then shorten the period needed for rating. Third, the monoline insurance company is the most secured third party originators can depend on.

Disadvantages of monoline insurance are: First, originators resort to monoline insurance companies must complete preliminary credit enhancement to make collaterals to have investment grade rating. Originators must compare the benefit and cost of adapting a monoline insurer carefully to make a decision and this is not an easy task. Second, monoline insurers usually charge more because they can only operate limited business and there is no motivation for them to participate in non-profit business. Third, adding more participants in the transaction may increase the information burden of originator.

### **Optimal Credit Enhancement in Taiwan**

The optimal credit enhancement methods for credit card backed securities are credit tranching plus spread accounts and cash reserve. Analyzed below.

For transactions planned, executed and sold in Taiwan, we have to note the significant different legal system compared to the U.S. The situation here is originators can't do anything which is not pre-approved by governments and any controversial requests or product designs will cause longer than expected examining period with highly uncertain results. In article 103 of FASR, the legitimate credit enhancement ways are guarantee, credit insurance, over collateralization, asset swap, and other methods performed by originators or financial institutions.

We must be aware of the fact that other credit enhancement which is not listed in the FASR will lengthen the examining time needed by authority and ended as a rejection. Based on that reality, the best move is doing it according to existed regulations or following the path of pioneers. Any risk still bore by originators may be treated as an evidence of not a true sale.

Until now, there is not any one professional credit enhancement agency for securitization transaction in Taiwan and there is no credit insurance company either. This makes domestic issuers have to spend more money to hire foreign companies to complete a deal. This seriously discouraged card issuers to securitize. Moreover, there is only one domestic credit rating agency in Taiwan and the rating system is far from complete. There is no fair price for banks to issue a LOC to securitized product and the lack of relevant credit card information database compelled international insurers.

### Exhibit 4-12 Credit Enhancement Methods Comparison

Methods	Strength	Weakness
<b>Credit Tranching</b>	<ol style="list-style-type: none"> <li>1. It's the most commonly used and most widely accepted method</li> <li>2. It can satisfy different customers and preferences</li> <li>3. No third party risk</li> </ol>	<ol style="list-style-type: none"> <li>1. The lowest rating tranche goes back to originator</li> <li>2. It increases originator's leverage of securitized asset</li> </ol>
<b>Over Collateralization</b>	<ol style="list-style-type: none"> <li>1. It is simple</li> <li>2. No third party risks</li> </ol>	<ol style="list-style-type: none"> <li>1. Liquidity problem</li> <li>2. It increases originator's leverage of securitized asset</li> </ol>
<b>Spread Account</b>	<ol style="list-style-type: none"> <li>1. It is simple and very efficient</li> <li>2. It can be applied to almost all kind of collaterals</li> <li>3. It keeps servicer doing a good job</li> <li>4. No administrative bothers and uncertainties</li> <li>5. No third party risks</li> </ol>	<ol style="list-style-type: none"> <li>1. It is very expensive compared to other methods</li> <li>2. It is usually comparatively small</li> </ol>
<b>Provided by Originator</b>	<ol style="list-style-type: none"> <li>1. It can be completed by originator itself</li> <li>2. It has declaration effect to investors</li> </ol>	<ol style="list-style-type: none"> <li>1. It is a controversial of true sale</li> <li>2. It may not be applied universally</li> </ol>
<b>Letter Of Credit</b>	<ol style="list-style-type: none"> <li>1. It is the most traditional way and most customers accept it</li> <li>2. It can be used to cover absolute loss and arrears financing</li> </ol>	<ol style="list-style-type: none"> <li>1. Taiwan has rarely high rating banks can issue LOCs for ABS</li> <li>2. It has downgrade risk</li> </ol>
<b>Monoline Insurance</b>	<ol style="list-style-type: none"> <li>1. It is flexible</li> <li>2. It can provided the highest rating and buildup investors' confidence</li> <li>3. Monoline insurers can help transactions and educating investors</li> <li>4. Very little third party risk</li> </ol>	<ol style="list-style-type: none"> <li>1. Preparing work can be very burdensome and costly</li> <li>2. It is pretty hard to decide whether to adapt or not</li> <li>3. The insurer may increase work load</li> </ol>
<b>Early Amortization</b>	<ol style="list-style-type: none"> <li>1. It is a good mechanism to protect investor from losing principal</li> <li>2. It is objective</li> </ol>	<ol style="list-style-type: none"> <li>1. It could sent false alarm</li> <li>2. It could over reacted if the trigger events are not properly set</li> </ol>

#### 4.2.2 Cash Flow Stress Test

The rating procedure addresses “full and timely payment of interest and ultimate repayment of principal by the transaction’s legal final maturity date.”

Standard procedure and specific steps may be different between rating agencies, however, the primary framework is similar. There roughly 3 stages of a rating. First, the rating agency will examine the originator's fundamental business strength and its operational efficiency as well as legal, collateral, and structural framework of the underlying transaction.

#### **Exhibit 4-13 Controlled Variables in Cash Flow Stress Test**

**Portfolio Yield:** Portfolio yield is the combination of revolving interest revenue (also known as annual percentage rate), annual fees, overdue penalties, interchanges, over limited fees, and sometimes recoveries on charge-offs.

**Monthly payment rate:** The numerator of MPR is composed by collections of principal, finance charges, and all kinds of fees. The denominator is the total receivables outstanding balance at the beginning of the month. This is an important variable since higher MPR can provide better protect to investors in an early amortization event.

**Purchase rate:** Purchase rate is new accounts added to the pool divided by the total receivables outstanding balance at the beginning of the month. Credit card receivables will be repaid at certain speed which is the monthly payment rate. Servicers have the obligation and interest to refill the pool to prevent it from depletion. The outstanding principal amount will increase (decrease) every month if the purchase rate is larger (smaller) than MPR. The primary concern here is the risk of servier insolvency.

**Charge-offs:** Credit card receivable charge-offs are uncollectible loans recognized by issuers. According to domestic regulation, card issuers must charge off accounts which failed to make minimum level payment over six months. Charge-offs divided by the total receivables outstanding balance at the beginning of the month equals loss rate, which is the primary deduction when calculating excess spread.

**Certificate rate:** Certificate rate is coupon rate of the security. Stress test treats fixed rate securities, floating rate with cap securities, and floating rate without cap securites differently. Also, rating agencies take other factors like originator's ability to reprice its portfolio and ratings of certificates into consideration.

Source: Standard and Poor's (2002)

After that, rating agencies will conduct a cash flow stress test focused on key variables and ratios of underlying receivables and accounts to determine the rating.

Jobs are far from over yet, rating agencies will keep monitoring all rated receivables, accounts, or trusts to make sure they are in good condition. Direct quoted from rating report issued by Standard and Poor's, "There is no assurance that any rating will be sustained for any given period or that the ratings will not be lowered or withdrawn by Standard and Poor's if future circumstances so warrant." We have addressed on the first stage in previous chapter, here the researcher analyze how to deal with the cash flow stress test and rating surveillance from the issuers perspective.

According to rating criteria of credit card backed securities released by Standard and Poor's and Fitch, the controlled variables in a cash flow stress test of credit card ABS are portfolio yield, monthly payment rate, purchase rate, charge-offs, and certificate rate (see Exhibit 4-13). Other factors to take care of are principal allocation assumptions, assessing the value of servicer interchange, legal analysis of interchange income, servicing fee requirements and interchange dependency<sup>1</sup>.

The stress test is based on a base case which is been considered as a normal situation at the time of rating. Then different "stress" scenario was setup to test whether the investors of underlying tranche are not harmed under those severe conditions. These scenarios are designed based on statistical models and historical data analysis combined with latest global economic overview. Rating committees composed by analysts translate the information into rating results which means we are not going to get those secrets of every rating agency. However, through examining key variables and cash flow forecasts plus proper credit enhancements, most credit card backed securities can get desired ratings.

### **4.2.3 Rating Surveillance**

A rating result is a health report of a product. It examined the health condition at the time when rating is done. After a rating is released, rating surveillance continued to monitor the underlying product to make sure its performance fits its rating level. One surveillance team which is composed by analysts is responsible for watching transaction performance and identifying those transactions that should be considered for either an upgrade or a downgrade. Standard and Poor's has released its surveillance variables and surveillance ratios which is quoted as exhibit 4-14 and 4-15.

Again, the critical values of those variables and ratios are not released by

---

<sup>1</sup> Other performance variables include: underwriting standards, cardholder credit scores, card type, seasoning, servicing, management, etc, most of them are covered in previous contents.

rating agencies but the major emphases of surveillance can be identified resultingly. Those variables and ratios are information about how receivables and servicers worked. Are they stable and can they make a long term commitment to investors? We'll use those factors and ratios in the next chapter to monitor a simulated case to see whether it can maintain its ratings thereafter.

#### 4.2.4 Rating Report of Cosmos Bank's George & Mary Cash Card Securitization

We take two rating reports of George and Mary revolving cash card of Cosmos Bank which are completed by Standard and Poor's and Chinese Rating Company separately here to approach rating procedures and focuses of those two rating agencies.

##### Exhibit 4-14 Surveillance Variables

**Eligible principal outstandings:** Principal eligible credit card receivables in trust pool net of finance charges, and other fees ineligible, and so on, as of the end of reporting period, which is used as the analytical basis to determine minimum collateral required.

**Total gross principal outstandings:** Net eligible principal outstandings plus other receivables such as finance charges, and fee interchange, and other fees.

**Prefunding account balance:** Amount of cash on deposit in prefunding account available to purchase new receivables.

**Gross losses:** Losses on principal receivables. Erosion of collateral recognized during the reporting period resulting from delinquency criteria, bankruptcies, and so on, as specified in the trust documents.

**Recoveries:** Income on receivables that were charged off during any period, if applicable to the trust structure.

**Net losses:** Gross losses minus recoveries.

**Delinquencies:** Past due amounts not yet charged off and segmented by month correlated with the various aging criteria prior to charge off.

**Total income and its components:** Income flowing into the trust (excluding recoveries), specifically including cardholder interest payments and fees, interchange, discounted receivables discounts, and other miscellaneous income.

**Principal collections:** Cardholder aggregated principal payments collected from cardholders during reporting period to repay debt due.

**Purchases:** New receivables generated during the reporting period resulting from cardholder purchases and cash advances.

**Credit support balance and changes:** Period end balance of each credit support class or account used to meet trust covenants and any uses or repayments during the period.

**Outstanding invested amount:** Balance of each rated and unrated investor certificate (including collateral interest amount).

Source: Standard and Poor's (2002)

### Exhibit 4-15 Surveillance Ratios

**Seller's interest:** Principal eligible receivables minus total invested amount divided by principal receivables.

**Yield:** Total trust income divided by total outstanding receivables; annualized.

**Gross and net loss rate:** Losses on principal receivables divided by principal outstandings; annualized. Net loss rate includes recoveries.

**Certificate rate:** Certificate interest paid to investors divided by outstanding invested amount; annualized.

**Servicing fee rate:** Servicing fees paid from trust divided by outstanding invested amount.

**Base rate:** The addition of the certificate and servicing fee rates.

**Total payment rate:** Total monthly collections (obligor principal and finance charge payments) divided by the previous month's total outstandings.

**Principal payment rate:** Principal monthly collections divided by the previous month's eligible principal outstandings.

**Delinquency rates:** Past due amounts divided by principal outstandings, segmented by month; annualized.

**Purchase rate:** Monthly purchases divided by the previous month's eligible principal outstandings.

Source: Standard and Poor's (2002)