



## ***THE CHARGE-OFF RATIO OF CREDIT CARD RECEIVABLES IN HONG KONG***

### ***Key points :***

- *The charge-off ratio of credit card receivables has risen considerably in the last few quarters, after having been stable in the preceding five years. The amount charged off in the quarter as a percentage of total outstanding receivables rose from less than 1% in the first quarter of 2001 to 3.4% in the second quarter of 2002.*
- *Empirical analysis provides support to the significance of the following often-cited factors in contributing to a higher charge-off ratio:*
  - (a) *the rising unemployment rate and mounting bankruptcies, with the latter relating largely to a reduction in bankruptcy costs due to an easing in the conditions for discharge;*
  - (b) *increased risk profile of consumer lending, as reflected in fast expansion of credit card advances, a form of unsecured lending, relative to other domestic lending; and*
  - (c) *banks' adjustment of the write-off policy in late 2001.*
- *In view of the state of the labour market, an improvement in the quality of credit card lending portfolio is unlikely in the near future. Nevertheless, a strengthening in banks' credit card review process, and the sharing of positive credit information in the long term should help stem the bad debt problem.*

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## **I. INTRODUCTION**

The charge-off ratio of credit card receivables, measured by the amount of receivables written off as a percentage of total receivables, rose considerably in the recent few quarters.<sup>1</sup> It reached a high of 3.4% in the second quarter of 2002, compared with less than 1% in the first quarter of 2001 (Chart 1).<sup>2</sup> The worsening quality of credit card debt has raised increased concerns.

The significance of card lending in banks' loan portfolios has been growing. While it accounts for about 3% of total domestic lending, its importance varies among banks, with some having a portfolio much more concentrated in credit cards. Notwithstanding a higher intermediation margin for such lending, a further deterioration in the quality of credit card advances could affect some banks' profitability. It is therefore important to identify the forces that have led to the rise in the charge-off ratio. This paper examines possible factors behind the developments.

The rest of the paper is organised as follows. The next section examines some stylised facts of credit card lending in Hong Kong, including its significance in domestic lending, and reasons for the rapid expansion of this form of lending. Section III discusses factors which have been suggested to have contributed to the rise in the charge-off ratio, and Section IV provides estimates of their quantitative impact through an econometric analysis. The last section concludes.

## **II. CREDIT CARD LENDING IN HONG KONG: SOME STYLISTED FACTS**

Credit card lending in Hong Kong has registered rapid growth in the past few years, probably because of the weakness in other domestic loans (Chart 2). Its share in total domestic lending, though small, increased to nearly 3% from 1.7% at end-1998. It has provided a cushion to the downturn in domestic lending in the past few years (Table 1). The increase of credit card lending also outpaced the growth of consumption, income, and employment (Chart 3). Indeed, in the past three years, the ratio of the number of credit cards to the size of employed

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<sup>1</sup> Data were based on the Survey on Credit Card Receivables, which include some subsidiaries of authorized institutions that are engaged in credit card business.

<sup>2</sup> The charge-off ratio is often expressed in "annualised" terms, by multiplying the quarterly figure by four. However, the annualised figures overstates the charge-off rate, as a simple quadrupling fails to take into account that a substantial amount of the outstanding receivables (i.e. the denominator) are rolled over and repaid.

population rose from 1.6 to 2.9, and the ratio of credit card accounts to income (as proxied by real GDP) almost doubled (Charts 4 and 5).<sup>3</sup>

**Table 1. Developments in Credit Card Lending**

	Change between end-1998 and end-2001			Share of Domestic Loans	
	Value terms (HK\$bn)	% terms (%)	Contribution to % change in domestic loans (% points)	end-1998 (%)	end-2001 (%)
Credit card advances <sup>(a)</sup>	20	57%	1.0	1.7	2.9
Other consumer lending <sup>(b)</sup>	-2	-3%	-0.1	4.0	4.4
Total domestic loans	-231	-11%			

(a) Excluding credit card advances made by subsidiaries of authorized institutions that engaged in credit card business.

(b) Other consumer lending refers to loans to professional and private individuals for private purposes. Total domestic loan refers to loans and advances for use in Hong Kong including trade financing.

Some commentators have attributed growth in credit card advances to supply side factors. A number of banks have sought to expand beyond traditional lines of business in the face of ample liquidity in the banking system, sluggish demand for traditional lending (notably property-related loans), and increased competitive pressures. Credit card lending is deemed attractive because of the relatively wide intermediation margin as well as, until recently, a low delinquency rate. Banks have embarked on extensive marketing campaigns through offering various types of incentive schemes, such as waiver of annual fees, distribution of gifts, launch of discount programmes with retailers, and lower interest rate on newly transferred balances.

The brisk expansion also reflects increased use of credit cards both as a means of payment and a financing vehicle. Credit cards have been utilised more often along with merchants' wider acceptance even for small-value purchases, as well as increasingly popular internet- or telephone-based transactions. While receivables continued to increase, the rollover ratio, defined as rollover amounts as a percentage to credit card receivables, remained stable at around 55%, suggesting a larger amount of balances for which interest charges apply.<sup>4</sup> Borrowers' resort to

<sup>3</sup> The increase in the ratio of credit cards to employed population was due to rises in both the number of cards held per person and the number of cardholders.

<sup>4</sup> The rollover amount of a credit card account refers to the amount outstanding at the previous statement date less any amount paid between the previous statement date and the current statement date.

more costly credit, at a rate of around 16-24% p.a., likely reflects the fact that it is a relatively accessible form of lending (which requires no “upfront fees” and no further application procedures once a card has been issued), especially at times of financial difficulties.

### **III. FACTORS UNDERLYING CHANGES IN THE CHARGE-OFF RATIO**

It is generally suggested that a combination of cyclical and structural factors might have contributed to the rise in the amount of charge-offs, including the economic downturn, a change in risk structure of banks’ loan portfolio, and adjustments of banks’ charge-off policy.

First, unemployment and bankruptcies have increased as economic activity has weakened (Chart 6). The worsening employment situation erodes the debt-servicing ability of individuals and leads to an increase in problem loans. Bankruptcies also increased significantly in 2001, nearly doubling the number in the preceding year (Chart 7). Bankruptcies bear a direct effect on charge-offs for credit card receivables, as around 80% of them involved consumer credit according to statistics from the Official Receiver’s Office (ORO).

Surveys from the ORO suggest that one of the most commonly cited reasons for bankruptcy was “a lack of gainful employment”. Besides the economic slowdown, it has been suggested that the implementation of an automatic discharge period for bankruptcy in the Bankruptcy Ordinance, effective from April 1998, may also be a factor. Under the amended Ordinance, discharge from bankruptcy would be automatic after four years. By contrast, an order of discharge had to be applied for from the court previously.<sup>5</sup> This, coupled with what appears to be a shift in public attitudes towards bankruptcy, might have stimulated the resort to bankruptcy. Indeed, the number of such cases has been rising continuously since 1999 despite improvements in the economic condition in 2000. Also, the number of bankruptcy cases has risen beyond the level seen in 1998 at the peak of the Asian financial crisis. The proportion of petitions initiated by debtors (as opposed to creditors) rose from around 7% in the first quarter of 1998 to about 94% in the second quarter of 2002.

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<sup>5</sup> The old rules relating to discharge from bankruptcy were quite onerous and it was very difficult for a bankrupt to comply with the requirements and gain his discharge.

Secondly, some commentators have suggested that banks' expansion in the credit card business in the past few years is also a contributing factor. One indirect indicator is a rise in the share of credit card lending in total domestic loans. To the extent that card lending is unsecured, its increased share suggests a rise in banks' willingness to assume risk.<sup>6</sup>

The distribution of credit card lending by income groups is likely to have changed. The rise in the ratio of credit card accounts to real GDP suggests a decline in the average income requirement for issuing a card. Credit assessments, however, can be affected by insufficient sharing of credit information among banks.

Lastly, the marked rise in the charge-off ratio, particularly in the fourth quarter of 2001, was partly due to some banks' policy change in advancing the write-off of personal debt to the time a bankruptcy petition is presented rather than when the order is made. This had the effect of lifting the charge-off ratio and reducing the delinquency ratio. For example, adjusting for the effect, the charge-off ratio would be slightly under 1.8% for the December quarter of 2001 (instead of 2.07%), while the delinquency ratio would be around 1.6% instead of 1.28%.

#### IV. EMPIRICAL ANALYSIS

Econometric analysis was conducted to quantify the relationship between the charge-off ratio of credit card receivables and the above-mentioned explanatory variables. The charge-off ratio was specified as a function of the unemployment rate and the ratio of credit card lending to total domestic loans. An error-correction model was estimated on quarterly data, which span from the first quarter of 1996 to the first quarter of 2002.<sup>7</sup> The charge-off ratio is captured by the amount charged off in each quarter as a percentage of average receivables during the quarter.

The ratio of credit card lending to total lending is intended to capture the effect of changes in the volume and distribution of credit card lending. Following the change in the Bankruptcy Ordinance, the influence of unemployment on the charge-off ratio could have been exacerbated by the new bankruptcy procedures. A dummy variable ( $DM99_t$ ) that takes the value of 0 for the period

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<sup>6</sup> Anecdotal evidence suggests that, notwithstanding the increase in charge-offs, the credit card business enjoys very high margin – at 16%-plus – relative to that of other lending business. Thus banks would have incentive to accept more risk in competing for credit card business.

<sup>7</sup> Data for the charge-off ratio are only available starting from the first quarter of 1996.

before the first quarter of 1999 and 1 thereafter is added to capture this effect.<sup>8</sup> Any differential impact of the unemployment rate can be revealed by the coefficient of this dummy variable times the unemployment rate ( $u_t \times DM99_t$ ). Another dummy variable ( $DM01_t$ ) is added to reflect the change in banks' write-off policy in the fourth quarter of 2001 and the first quarter of 2002.<sup>9</sup>

The estimation of an error-correction model requires the variables to be stationary in first difference and co-integrated. These pre-requisites have been confirmed by Augmented Dickey Fuller unit root tests and Johansen co-integration tests. Following a general-to-specific modelling approach, four lags of each explanatory variable are included in the model.<sup>10</sup> A parsimonious model is obtained by sequentially deleting insignificant variables step-by-step, starting with the most insignificant one as indicated by the t-ratios (Table 2). Diagnostic tests do not find evidence of mis-specification.

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<sup>8</sup> While legislative amendments took effect in April 1998, it seems likely that behavioural changes took some time to emerge.

<sup>9</sup> Anecdotal information suggests that some banks have advanced the write-off of credit card debt to the time a bankruptcy petition is presented rather when the order is made in the fourth quarter of 2001 and the first quarter of 2002.

<sup>10</sup> The general model started with four lags for each explanatory variable alternatively because of the small sample size.

**Table 2. Estimation Results  
(1996:1 –2002:1)**

$$\Delta co_t = \alpha_1 + \alpha_2 \Delta u_{t-2} + \alpha_3 \Delta(u_t \times DM99_t) + \alpha_4 \Delta(u_{t-1} \times DM99_{t-1}) + \alpha_5 DM01_t + \alpha_6 (co_{t-1} + \beta_1 u_{t-1} + \beta_2 (u_{t-1} \times DM99_{t-1}) + \beta_3 lr_{t-1}) + \varepsilon_t$$

Variables	Coefficients	t-ratios
constant	0.001	1.81*
$\Delta u_{t-2}$	0.069	2.12**
$\Delta(u_t \times DM99_t)$	0.266	5.33***
$\Delta(u_{t-1} \times DM99_{t-1})$	0.132	2.44**
$DM01_t$	0.005	6.52***
$co_{t-1}$	-1.049	-10.49***
$u_{t-1}$	-0.113	-7.06***
$(u_{t-1} \times DM99_{t-1})$	-0.025	-2.59**
$lr_{t-1}$	-0.122	-3.05***
$\bar{R}_2$	0.93	
Equation standard error	0.0005	
LM test for serial correlation	1.77	[0.21]
Jarque-Bera test for normality	0.33	[0.85]
White test for heteroskedasticity	15.96	[0.0002] <sup>(a)</sup>

Notes: \*, \*\* and \*\*\* indicate statistical significance at 10%, 5% and 1% levels respectively. Numbers in [ ] are p-values.

<sup>(a)</sup> The rejection of the null hypothesis of no heteroskedasticity for residuals was largely due to an outlier in the first quarter of 2001.

where

$co$  = charge-off ratio;

$u$  = unemployment rate (deseasonalised);

$u \times DM99$  = the unemployment rate times  $DM99$  ( $DM99$  takes the value of 0 for the period before the first quarter of 1999 and 1 thereafter);

$lr$  = the ratio of credit card loans to total domestic loans;

$DM01$  = 1 for the fourth quarter of 2001 and the first quarter of 2002, and 0 for all other quarters; and

$\Delta$  is the first difference operator.

The model performs well in explaining the charge-off ratio. All coefficients have the anticipated sign and are highly significant. The results indicate that increases in the unemployment rate and the share of credit card lending tend to raise the credit card charge-off ratio. More specifically, a rise of 1 percentage point in the unemployment rate in the long run would raise the charge-off ratio by about 0.14 percentage point from the first quarter of 1999, *ceteris paribus*, compared with 0.11 percentage points beforehand. In the short run dynamics, the response to the change of the unemployment rate was instantaneous after 1999. These reflected to a large extent the impact of the reduced cost of bankruptcy following the legislative change. In addition, since the fourth quarter of 2001, the change in banks' charge-off policy has been associated with a rise in charge-offs. While these estimates are preliminary, they provide a basis to examine the relative effects of individual factors. Table 3 shows the contribution of each explanatory variable to the change in the charge-off ratio. The change in banks' charge-off policy aside, economic conditions remained the primary factor behind the increase of the ratio, although the increased share of card lending has gained importance in more recent quarters.

**Table 3. Contribution of Explanatory Variables on the Charge-off Ratio**

	1Q/1997 - 4Q/1998	1Q/1999 - 1Q2002
Total Change in the charge-off ratio (co)	0.43%	1.23%
<i>of which</i>		
u	91%	45%
lr	9%	16%
DM01	0%	39%

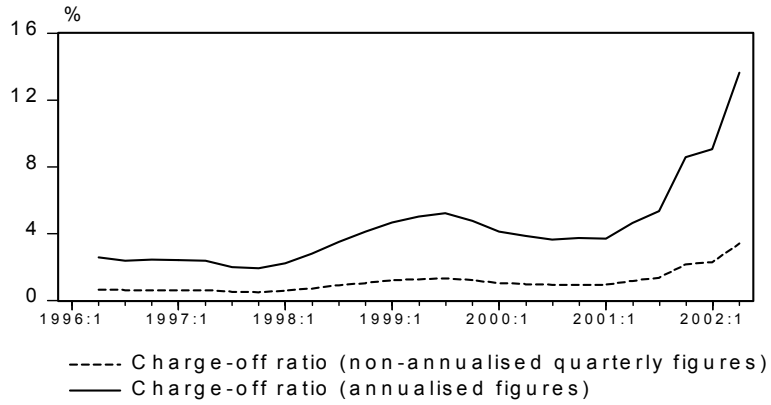


## V. CONCLUSION

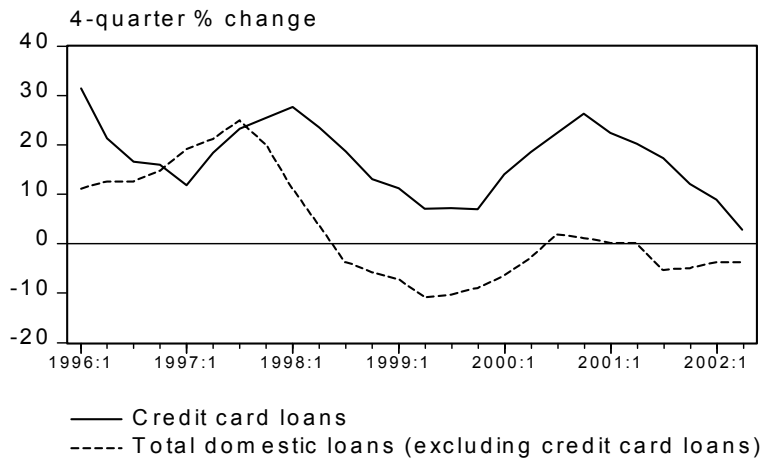
The empirical findings support the argument that the increase in the charge-off ratio reflects largely the effects of cyclical conditions. In particular, the impact of unemployment on the quality of credit card lending has been exacerbated following a change in the bankruptcy procedures. Nevertheless, increased risk profile of credit card lending, alongside strong expansion of this business segment, is also a contributing factor.

As the unemployment rate is generally expected to stay high in the short-term, an improvement in the credit card portfolio is unlikely in the near term. However, a strengthening in banks' credit card review process, which to a certain extent can be helped by the sharing of positive credit information, would improve the quality of the portfolio and contain charge-offs in the future. In the meantime, the effect of possibly higher write-offs of card lending on banks warrants close monitoring.

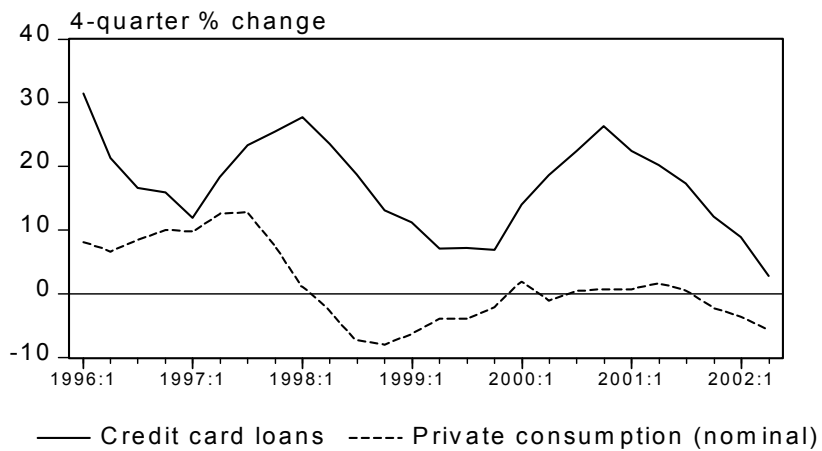
**Chart 1. The Charge-off Ratio of Credit Card Receivables**



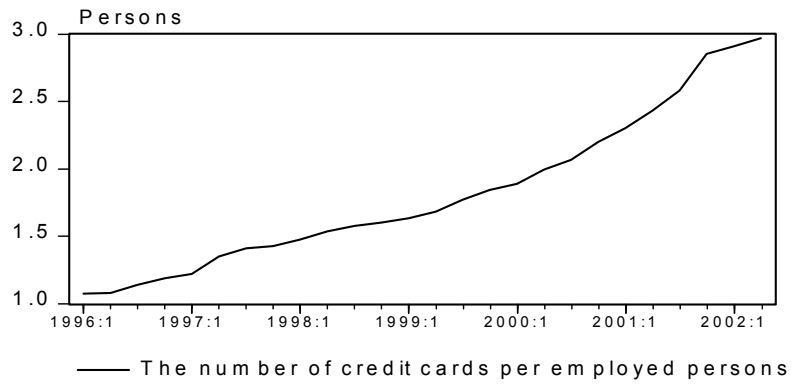
**Chart 2. Credit Card Loans and Other Loans  
(Quarterly figures)**



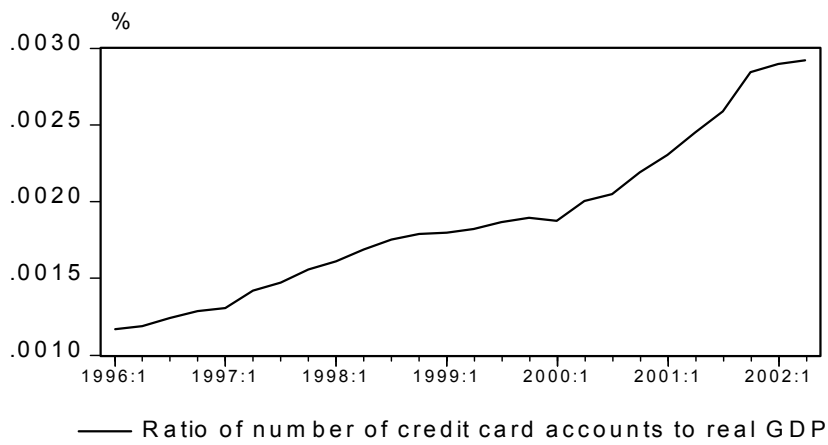
**Chart 3. Credit Card Loans and Nominal Private Consumption**



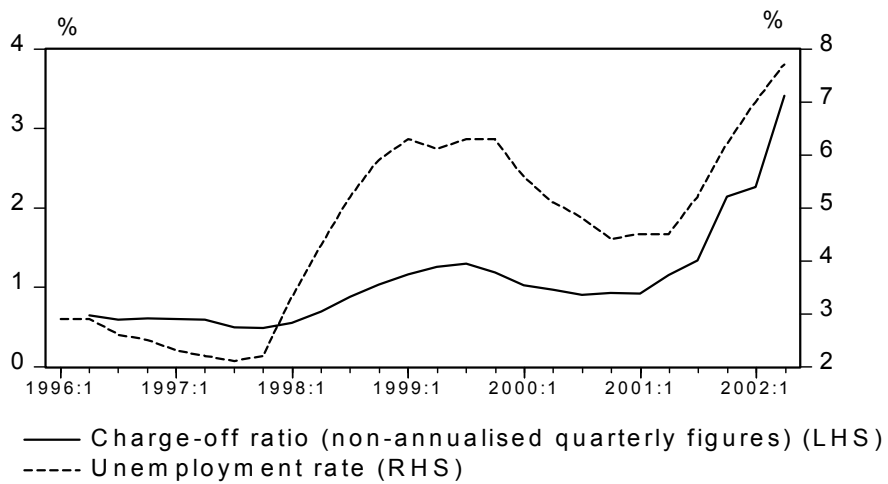
**Chart 4. Credit Cards Per Employed Persons**



**Chart 5. The Ratio of Credit Card Accounts to Real GDP**



**Chart 6. The Charge-off Ratio and Unemployment Rate**



**Chart 7. Charge-off Ratio and Bankruptcy Cases**